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CONTENTS

EDITORIAL

Beáta Dávid & Ildikó Danis

Editorial – Foreword to the 2025 Special Compilation on “Family Therapy and Family Studies in Supporting Mental Health”. 2025(20), e0045, 1–4.

<https://doi.org/10.5708/EJMH.20.2025.0045>

This publication is part of the 2025 SPECIAL COMPILATION on “Family Therapy and Family Studies in Supporting Mental Health”.

REVIEW ARTICLES

Spencer L. James, Emma Howlett & Natércia Ribeiro Nuez

Navigating Global Family Diversity: Theory, Research, and Implications for Policy – A Narrative Review. 2025(20), e0040, 1–21.

<https://doi.org/10.5708/EJMH.20.2025.0040>

This publication is part of the 2025 SPECIAL COMPILATION on “Family Therapy and Family Studies in Supporting Mental Health”.

Anett Nagy, Magda Kalmár, Eva María Padilla-Muñoz, María Dolores Lanzarote-Fernández & Anna Mária Beke

Early Intervention Strategies for Enhancing Attachment and Interaction in Families with Premature Infants: A Systematic Literature Review. 2025(20), e0047, 1–18.

<https://doi.org/10.5708/EJMH.20.2025.0047>

PERSPECTIVE ARTICLES

Scott R. Woolley & Réka Koren

Using the Woolley Motivation Typology to Heal Infidelity With Emotionally Focused Therapy. 2025(20), e0035, 1–10.

<https://doi.org/10.5708/EJMH.20.2025.0035>

This publication is part of the 2025 SPECIAL COMPILATION on “Family Therapy and Family Studies in Supporting Mental Health”.

Lee N. Johnson, Shayne R. Anderson & Kaelie N. Wagner

The Marriage and Family Therapy Practice Research Network: Current Findings and a Call for Collaboration. 2025(20), e0036, 1–9.

<https://doi.org/10.5708/EJMH.20.2025.0036>

This publication is part of the 2025 SPECIAL COMPILATION on “Family Therapy and Family Studies in Supporting Mental Health”.

Máté Bence Szondy & Ágnes Magyary

Artificial Intelligence (AI) in the Family System: Possible Positive and Detrimental Effects on Parenting, Communication and Family Dynamics. 2025(20), e0038, 1–8.

<https://doi.org/10.5708/EJMH.20.2025.0038>

This publication is part of the 2025 SPECIAL COMPILATION on “Family Therapy and Family Studies in Supporting Mental Health”.

RESEARCH ARTICLES

Attila Pilinszki, Erzsébet Bata, Anna Demjén, Judit Gervai & Ildikó Danis

Coparenting Relationship Scale (CRS): Validation and Psychometric Properties of the Hungarian Version. 2025(20), e0037, 1–13.

<https://doi.org/10.5708/EJMH.20.2025.0037>

This publication is part of the 2025 SPECIAL COMPILATION on “Family Therapy and Family Studies in Supporting Mental Health”.

Yonathan Aditya, Ihan Martoyo, Firmanto Adi Nurcahyo & Dana Riksa Buana

The Role of Majority Status in Shaping Self-Esteem: A Comparative Study of Muslim and Christian College Students in Indonesia. 2025(20), e0039, 1–13.

<https://doi.org/10.5708/EJMH.20.2025.0039>

Márton Járay, Gergely Tóth, David J. Van Dyke & Fruzsina Albert

The Relationship Between Lutheran Pastors’ Well-Being and Depression and the Professional Support Available to Them: A Quantitative Study in the Hungarian Lutheran Church. 2025(20), e0041, 1–16.

<https://doi.org/10.5708/EJMH.20.2025.0041>

Maneela Sirisety, Mohana Rupa Nekkanti, Ravi Shanker Datti, Nalini Bikkina, Eduard V. Patrakov & Lioudmila Baturina

Necessary Condition Analysis on the Relationship between Fear of Missing Out, Social Networking Addiction, and Psychological Well-Being.

2025(20), e0042, 1–16.

<https://doi.org/10.5708/EJMH.20.2025.0042>

Csilla Almásy, Klára Soltész-Várhelyi & Anita R. Fedor

Self-Oriented and Socially Prescribed Perfectionism Among Hungarian Professional Folk Dancers. 2025(20), e0043, 1–21.

<https://doi.org/10.5708/EJMH.20.2025.0043>

Lindsay Tremblay, William Van Gordon & James Elander

Enhancing User Empowerment and Agency Through Co-Creation of a Nonattachment-Based Post-Traumatic Stress Reduction Intervention. 2025(20), e0044, 1–17.

<https://doi.org/10.5708/EJMH.20.2025.0044>

Tamara Martinac Dorčić, Tamara Mohorić & Miljana Kukić

Why Do Adolescents Use Social Media? Validation of the Croatian Version of Motives to Use Social Networking Sites Scale. 2025(20), e0046, 1–13.

<https://doi.org/10.5708/EJMH.20.2025.0046>

Réka Schutzmann, Klára Soltész-Várhelyi & Anna Kozák

Who Do Leaders Talk To? The Role of Workplace Friendships in Professional Discussion Networks and Burnout . 2025(20), e0048, 1–22.

<https://doi.org/10.5708/EJMH.20.2025.0048>

Foreword to the 2025 Special Compilation on “Family Therapy and Family Studies in Supporting Mental Health”

Beáta DÁVID ¹ and Ildikó DANIS ¹ 

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Harmonious and resilient relationships within couples and families contribute to the well-being and life satisfaction of individuals as well as to the strength of societies. Conversely, chronic challenges and difficulties in close relationships and family functioning can make individuals and wider communities vulnerable (Li et al., 2025; Walsh, 2016). Systemic family therapy, combined with informal support from family members and their communities, can be an effective intervention in child and family protection (Hertlein, 2023). The Special Call titled “Family Therapy and Family Studies in Supporting Mental Health” was announced in 2024 following a significant period of population stress in recent years, during which family resilience and support were of paramount importance globally due to health crises, natural disasters, geopolitical conflicts, wars, and economic hardships. The peer-reviewed and edited articles were published throughout the year, and we are now publishing the entire Special Compilation at the beginning of the academic year. In addition to other publications in our journal, this 2025 Special Compilation features five articles. In this short editorial fore-

word, we – a sociologist and a psychologist – aim to present some interdisciplinary thoughts on contemporary family life, family studies, and family interventions.

The concept of family occupies a central position across a wide range of scientific disciplines and professional practices. However, interpretations of what family means vary significantly depending on the perspective and focus of each field. Understanding family concepts and relationships in medicine, psychology, sociology, and education directly influences interventions designed to support the physical and mental well-being of individuals and families. Developing a shared language for discussing and examining family life is essential for ensuring the effectiveness of decisions, interventions, and actions that affect families (Crosbie-Burnett & Klein, 2009).

In a broad sense, a family may be defined as “a group of individuals who are connected to each other emotionally, cognitively, and usually behaviorally, regardless of legal ties and physical locations, potentially even including deceased persons” (Crosbie-Burnett & Klein, 2009, p. 38). Family forms and family life are fundamentally shaped by culture, social structures, and historical context. This means that definitions and understandings of family are

not universal and are continuously evolving. In the early stages of family studies, particularly in Euro-American contexts, the theoretical framework predominantly encompassed more restrictive definitions with a pronounced emphasis on legally recognized nuclear households of middle-class families (Cheal, 2008). However, demographic trends, developing social ideologies, and shifting cultural expectations have contributed to a wider recognition of family diversity over time, highlighting the increasingly pluralistic and dynamic nature of family forms and functioning in contemporary societies (Kramer, 2021; Smock & Schwartz, 2020). Thus, family can be conceptualized as a social construct that emerges through the interactions and observations of individuals within particular cultural and historical contexts. Consequently, families can be regarded as dynamic systems that create meaning for their members and the wider environment (Cheal, 2008).

Contemporary demographic phenomena are often interpreted as signs of social or familial crises and relational uncertainty. Examples include declining marriage rates, increasing rates of non-marital cohabitation, rising divorce rates, declining fertility, the postponement of childbearing, and rising rates of childlessness (OECD, 2011; Seltzer, 2019; Smock & Schwartz, 2020). However, as Hungarian sociologists Tóth and Dupcsik (2007) pointed out, families as social institutions have historically undergone significant changes, which are often accompanied by moral panic and societal anxiety. Currently, there is a demonstrable shift in family and individual life courses, a phenomenon reflected in measurable demographic trends. Despite these structural and demographic changes, Tóth and Dupcsik (2007) conclude that the role of the family remains fundamental: *“There is no societal entity that questions the significance of the family in society and individuals’ lives”* (p. 432). While forms of cohabitation and family structures are diversifying, the functional significance of families in supporting individual and societal well-being remains indisputable (Tóth, 2012).

In recent decades, a variety of factors, including changes in working patterns, economic conditions, technological developments, and diverse personal and family choices, have significantly impacted societies in developed countries. Economic and social changes occurring simultaneously in developing countries have also led to a change in how families are viewed, as well as the practical preferences associated with family life (Furstenberg, 2019; Mokomane, 2023). In such contexts, researchers and practitioners must demonstrate a high level of cultural sensitivity. Translation studies, where scientific knowledge informs practice, serve as a crucial bridge between current family theories and family-related interventions (Thoburn & Sexton, 2016).

Although the traditional concept of the nuclear family remains important to many, it does not reflect the experiences of many others around the world. Therefore, when helping couples and families, it is important to consider both their structure and how they function (Weston & Hayes, 2012).

Theoretically, systemic family psychology views the family as a complex, open system that is constantly changing and interacting with its surroundings. The model identifies three interconnected processes: the individual level within the self, the relationship level between people, and the social and environmental level representing the wider world. These processes affect each other over time. Family systems operate at various levels, including individuals, couples, families, extended families, communities, and cultures (Carr, 2016; Stanton, 2009). The way a family functions is an indication of how well each individual and the family as a whole will fare (Harjis, 2025; Izzo et al., 2022), significantly impacting various domains, including mental and emotional health, relationship quality, personality development, academic performance, and social integration. This raises the question: Is there a form of family functioning that can be considered “normal”?

In her 2012 article “The New Normal”, Walsh — a leading researcher in family resilience studies — argues that modern families are far more diverse than those of the past. The concept of “normal” in psychology, once widely used, is now being replaced by the idea that there is significant variation and that what is “optimal” depends on the situation. What is considered normal is determined by societal norms and prevailing attitudes. Walsh (2012) notes that most well-known ideas about family development originate from Euro-American sources and were created by white, middle-class individuals who studied families from similar backgrounds. As families become more diverse, we need to recognize that there is no single type of family. The way a family functions cannot be understood universally, but rather in relation to a family’s values, organization, relationships, social environment, and lived experiences (Nichols, 2013; Walsh, 2003, 2016).

Twenty-first-century families face many challenges. International organizations such as UNICEF, the WHO, the World Bank, the OECD, and the European Union discuss key issues (see policy papers and reviews on these organizations’ websites). These issues include balancing family, work, and private life; addressing the challenges posed by ageing populations, such as the burden on care systems and the “sandwich generation”; reducing social inequalities and child poverty; managing community crises and trauma, such as war, terrorism, and migration; tackling the growing prevalence of mental health disorders; and responding to global environmental threats such

as climate change and pandemics. In order to address these complex issues, it is crucial to engage individuals, families, communities, society as a whole, and regions at multiple levels. In times of crisis, it is vital to have supportive policies in place. While families naturally provide individuals with protection, they can also be at risk. In such cases, societal systems can offer additional support. It is essential to recognize and value diversity, promote strategies that leverage people's strengths and resources, and foster supportive social environments (Nichols, 2013).

The articles included in this Special Compilation are related to the above themes in several ways. They explore family structures and demographic trends in different regions of the world; contemporary issues related to artificial intelligence in family life; the stability and vulnerability of couple relationships and co-parenting; and monitoring the effectiveness of couple and family therapy interventions.

In their narrative review, *James L. Spencer et al. (2025)* provide a concise summary of global family trends, including marriage, cohabitation, divorce, parent-child relationships, and kinship patterns. The findings suggest that, alongside modernization and economic development, shifting gender norms as well as cultural and religious factors influence family transformation, resulting in distinct regional patterns. Policymakers and researchers must be aware of these trends in order to support family well-being.

Integrating AI into family life is a significant and multifaceted issue. While AI can offer benefits such as enhancing communication, supporting various family roles, and promoting family cohesion, it also introduces challenges. The key message of *Szondy and Magyary's (2025)* perspective article is that, to ensure AI aligns with family values and strengthens bonds, a careful balance must be struck to avoid the negative effects of over-reliance and address ethical and privacy concerns. This emphasizes the importance of fostering AI literacy within families.

In their perspective article, *Woolley and Koren (2025)* present a practical framework for addressing infidelity. They integrate Woolley's (2011) motivation-based typology of affairs into Emotionally Focused Therapy (EFT) and the Attachment Injury Repair Model (AIRM). This framework offers both general and specific treatment recommendations, based on an understanding of different motivational types, which could help therapists support their clients more effectively.

Co-parenting is a key concept in developmental psychology and systemic family therapy. Over the past decades, several theorists have developed various dimensions and measurement tools for it. Using a sample of Hungarian mothers, *Pilinszki et al. (2025)* validated the long and short versions of the widely used Coparenting Relationship Scale (CRS; Feinberg et al., 2012), a reliable and valid measurement tool based on Feinberg's theoretical concept (2003). This instrument reliably and validly assesses parental cooperation across several national adaptations, including the Hungarian context. Information gathered by the instrument can serve as an important reference point in family research, family therapy, and child welfare and protection work.

In their article, *Johnson et al. (2025)* introduce the Marriage and Family Therapy Practice Research Network (MFT-PRN; Johnson et al., 2017) and summarize the network's existing research findings. After providing a brief introduction to Routine Outcome Monitoring and the practice research network approach in marriage and family therapy, the article reviews the MFT-PRN's procedures and assessment instruments, emphasizing the advantages and disadvantages of implementing them. It then summarizes key topics and findings from studies based on MFT-PRN data, including work on questionnaire development, therapeutic alliance, therapy outcomes, and the use of teletherapy. Given the rising prevalence of mental health and relational difficulties, the authors argue that networks such as the MFT-PRN are especially valuable for bridging research and practice, improving client care, and advancing systemic therapy. To date, the MFT-PRN has collected data on over 14,000 clients and continues to undergo further improvements and expand its network of partners.

In summary, the objective of the Special Compilation is to contribute to ongoing efforts by integrating perspectives from family sociology and family psychology. The compilation highlights both the theoretical foundations and the practical interventions required to address the evolving realities of family life and the diversity of family structures and processes. It also explores the resilience mechanisms that enable families to navigate contemporary social, economic, and environmental challenges. In a rapidly changing world, it is crucial for those seeking to promote family well-being and social cohesion — including researchers, policymakers, and practitioners — to understand families as dynamic, contextually embedded systems that demonstrate adaptability and evolution.

Budapest, 30 September 2025

Beáta Dávid, Editor-in Chief and **Ildikó Danis**, Deputy Editor-in-Chief

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Navigating Global Family Diversity: Theory, Research, and Implications for Policy – A Narrative Review*

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Introduction: Families, as foundational social institutions, are undergoing significant transformations worldwide. Understanding these shifts is critical for researchers and policymakers seeking to support family well-being.

Aims: This study examines global family trends across marriage, cohabitation, divorce, parent-child relationships, and kinship patterns. It integrates theoretical perspectives with empirical data to assess both converging and diverging family dynamics.

Methods: We conducted a narrative review of peer-reviewed studies in multiple languages, utilizing translation tools where necessary. Studies were selected based on thematic relevance and geographic representation, focusing on research published since 2010 while allowing flexibility in underrepresented regions.

Results: Findings indicate that while family transformations are driven by modernization, economic development, and shifting gender norms, cultural and religious factors ensure distinct regional family patterns.

Conclusions: Family structures continue to evolve in response to global and local influences. Policies supporting family stability, social cohesion, and mental well-being are essential for sustaining strong family systems. Future research should further explore the role of policy in mediating family transitions across diverse cultural contexts.

Keywords: global family trends; family policy; social change; marriage, cohabitation, and divorce; kinship systems

Introduction

What we think of as “family” varies based on background, experiences, and culture. In some places, family means a nuclear form – two parents with their children; elsewhere, it may be an extended family with aunts, uncles, cousins, and grandparents. In other places, family may mean a chosen set of people with close ties.

Family remains a key social institution, despite changes. Although definitions vary, families are social groups bonded by blood (or adoption) and legal obligations – often via marriage – who share living spaces and whose lives are intertwined across economic, political, educational, social, and emotional domains. Not all families meet all these conditions, but they are generally recognizable because they meet most of them.

Because families are universal, studying them is essential. Families are the central decision-making units of society. Economists worry about GDP, demographers about fertility, policymakers about legislation, but families

* An extended draft of this article is available upon request from the first author.

decide where to live, how many children to have, and who attends school. Families decide how to take advantage of programs and policies aimed at them. Ignoring families often means policies do not have the intended effect. In other words, families are ignored at one's own peril.

This study synthesizes empirical research on global family trends, focusing specifically on marriage, cohabitation, divorce, parent-child relationships, and kinship patterns across world regions.

Global Family Trends

Understanding global family trends requires attention to both broad patterns of convergence and the persistent diversity shaped by geographic, cultural, economic, and religious factors. While many regions have experienced declining fertility, shifting gender roles, and changes in family formation, these trends manifest differently across distinct social and historical contexts (Stone & James, 2022). To capture this variation, the study adopts World Bank regional classifications with minor modifications to reflect sociopolitical realities. Notably, we differentiate between Asia and the Pacific to account for distinct sociohistorical and demographic trends. Overseas territories and collectivities are categorized based on their level of political and economic integration. For instance, U.S. territories such as Puerto Rico are grouped within Latin America and the Caribbean, while Hawaii is considered part of North America. Similarly, French Guiana is categorized under Europe due to its governance structure, whereas French Polynesia is classified under Oceania.

Gender and Family Dynamics

Changing gender ideologies drive global family change. The Gender Revolution (Goldscheider et al., 2015) unfolded as women entered the labor force in large numbers, disrupting traditional family structures due to greater economic, decision-making, and cultural power. This led to more divorce, less marriage, and fewer children as women gained access to educational and economic resources. Research suggests that more equitable gender roles within households may foster greater stability in family life and potentially increase fertility rates (Esping-Andersen & Billari, 2015).

Socioeconomic Development and Family Transformation

Economic development plays a crucial role in shaping family structures (Mokomane, 2012), particularly in low- and middle-income countries (LMICs). Change does not mean convergence; “persistent diversity with development” occurs as progress, shaped by local contextual and cultural factors, fashions family life distinctly. In sub-Saharan Africa, traditional family forms remain resilient despite rapid economic transformations (Pesando, 2019). In LMICs, family configurations vary widely, reflecting different partnership regimes, gender relations, and fertility patterns (Castro Torres et al., 2022). Marriage, marital childbearing, and extended family households remain the norm in the Middle East and North Africa (Doignon et al., 2023) and many parts of Asia (Raymo et al., 2023), sustaining the importance of structural changes and cultural characteristics in global family patterns.

Globalization and Family Patterns

Globalization has had a profound but non-uniform impact on family life (Ziehl, 2003); regional and cultural differences continue to shape family patterns. Globalization introduces new dynamics, mediated by local contexts, resulting in diverse family forms rather than a single, homogenized model. A cross-cultural analysis of family systems in 30 nations showed diversity and commonality of family dynamics, driven by psychological processes shaped by cultural and socio-economic factors, leading to diverse family forms (Georgas et al., 2006).

Marriage and Family Formation

Family diversity includes changes in marriage patterns, diverging across most LMICs (Pesando & Abufhele, 2019). Family change is uneven and multidirectional, with differences between rural and urban settings (Castro Torres et al., 2022), underscoring the importance of cultural and economic contexts. In Western societies, marriage is evolving, with increasing acceptance of cohabitation, delayed marriage, and alternative family forms, such as single-parent households, same-sex partnerships, and lifelong singlehood (Furstenberg, 2019). These changes reflect broader societal shifts, including greater individual autonomy and declining influence of traditional insti-

tutions. Traditional theories of family dynamics fail to account for these realities, necessitating a re-theorization that captures the interplay between structural and ideational factors, especially accounting for shifts in gender ideologies across the Western world (Esping-Andersen & Billari, 2015).

Migration, Urbanization, and Family Fragmentation

Migration and urbanization influence family dynamics by disrupting family arrangements. Urban living leads to smaller, nuclear families as city life makes extended family living less practical (Trask, 2022). The global urban population has increased from about 25% in 1950 to more than 50% today, a number that is only expected to rise in coming decades (UN Habitat, 2022).

Theoretical Perspectives on Family Diversity

Family structures and dynamics have always been part of the human experience across cultural, economic, and social contexts, driven by globalization, technological change, economic development, and shifting cultural norms. Traditional theories such as Modernization Theory, World Systems Theory, and Developmental Idealism have provided valuable insights into the mechanisms of family change (Inglehart & Baker, 2000; Thornton, 2005; Wallerstein, 1974). However, as societies become more interconnected yet retain distinct cultural identities, there is a need for a theoretical framework that synthesizes existing theories to explain the diverse patterns of family life worldwide. We propose a new model, the *Integrative Convergence-Divergence Model (ICDM)*, which builds on prior work and adds explanatory power to the motivations and drivers behind differing global family patterns.

The ICDM accounts for the simultaneous convergence and divergence of family patterns globally, driven by the interaction of global and local forces, by integrating key elements from existing theories, creating a fresh perspective that more fully accounts for the heterogeneity in family forms and functions observed worldwide. It offers a more comprehensive understanding of the forces shaping family dynamics. Below, we briefly overview the primary theories on which ICDM is based and then describe the ICDM in greater detail.

Prior Theories

These theoretical perspectives each highlight how broader societal transformations – from industrialization and global capitalist structures to shifts in values – can influence family formation, composition, and behavior.

Industrialization Theory posits that as societies industrialize, family patterns will converge to those seen in the West, focusing on how economic development is linked to family dynamics (Goode, 1963).

Developmental Idealism suggests that beliefs about modernity and development developed in the Western experience have become a global influence on family structures and behaviors. Under developmental idealism, Western ideas about family become global ideals because they are seen as both causes and consequences of social and economic development (Thornton, 2005), as education, media, and cross-national organizations help shape individuals' family aspirations.

World Systems Theory examines how global economic power structures shape family patterns by highlighting how capitalist systems make some family patterns more or less likely, particularly in peripheral and semi-peripheral countries, focusing on economic dependency and power imbalances (Wallerstein, 1974).

Second Demographic Transition Theory claims that in industrialized societies, an ideational shift toward post-materialist values has led to delayed (and less) marriage, more cohabitation, and lower fertility, clarifying how cultural shifts contribute to family convergence in relatively wealthy regions (Lesthaeghe, 2010).

Convergence and Divergence Theories are key and demonstrate that as countries develop and change, their family patterns may become more similar, whereas divergence theories suggest the opposite, emphasizing the important role of local contexts and the influence of traditions, religions, and cultural practices (Inglehart & Baker, 2000).

The Integrative Convergence-Divergence Model

We propose an integrative approach, the Integrative Convergence-Divergence Model (ICDM), which incorporates key insights from previous theories to better understand patterns of family change and similarity around the world. According to the ICDM, global family change reflects complex interactions between converging global

forces and diverging local contexts. ICDM acknowledges that family patterns shape and are shaped by myriad social forces, not limited to economic or ideational change. It acknowledges predominant trends toward similarity in family patterns, such as decreasing marriage rates and declining fertility, while emphasizing that strongly rooted local contexts produce diverging family patterns.

In terms of converging influences, ICDM recognizes that global forces like modernization, economic development, higher education levels, female labor force participation, and technological interconnectedness provide the energy to overcome prevailing family norms (Welzel & Inglehart, 2005). Economic prosperity is accompanied by more frequent nuclear family structures, delayed marriage, and more cohabitation, while the diffusion of individualistic values leads away from traditional, collectivist family dynamics toward more gender-egalitarian and individualistic relationships (Thornton, 2005). This occurs only to the extent individuals are in contact with such forces, explaining why researchers have observed large differences between rural and urban areas (Castro Torres et al., 2022), as cultural tradition and religious practices are often stronger in rural areas.

Furthermore, the global capitalist system shapes labor markets, migration, urbanization, and economic dependencies (Wallerstein, 1974), contributing to converging family patterns as individuals seek economic opportunity beyond their hometowns, leading to changes in both sending and receiving countries as transnational families navigate difficulties.

Not all influences are convergent. Local contexts are important due to proximity. Cultural traditions, religious beliefs, local political structures, and social praxis shape how families react to global diversity. In some countries, extended family networks remain central for cultural and economic reasons. Some scholars argue that the nuclear family is a historical aberration rather than the norm (Coontz, 2005). Extended kinship networks provide greater help with parenting, access to shared economic resources, and stronger social support (Glick, 2010). Examining local contexts means paying attention to religious beliefs and practices, linked to fertility rates and gender roles around the world, despite pressure from globalizing influences (Norris & Inglehart, 2004; Stone & James, 2022).

Similarly, researchers observe divergent patterns in how societies resist or reinterpret global norms like cohabitation and divorce; although rising globally, these terms can mean different things (Cherlin, 2009). In some parts, cohabitation is the first step toward traditional marriage, or a divorce may be mediated by kinship groups, leading to ambiguity about whether a divorce officially took place. These realities lead to policy contexts and legal frameworks that build upon local divergences, which can inhibit or accentuate global family diversity (Therborn, 2004).

While Convergence and Divergence Theory explains how a society's family patterns grow similar or remain distinct, it does not fully account for why these processes operate differently across contexts. The ICDM extends this perspective by incorporating insights from Modernization Theory, World Systems Theory, and Developmental Idealism to illustrate how global forces – such as economic development, media, and transnational organizations – interact with local institutions and cultural norms to shape diverse family outcomes. Additionally, it addresses within-country differences that Convergence and Divergence Theory tends to treat broadly, recognizing how socioeconomic inequalities, rural-urban divides, and cultural pluralism shape family patterns. This multilevel approach explains both converging trends, such as declining fertility and delayed marriage, and persisting or emerging divergences, like the resilience of extended kin networks or the continued power of religion to shape family life. By emphasizing how global influences are filtered through regional and community contexts, ICDM provides a more nuanced and comprehensive understanding of family change.

Additionally, the ICDM expands the focus beyond nation-states, consistent with Pesando (2019), to view global family diversity at the regional or larger level, while allowing for local idiosyncrasies. As Pesando (2019) states, “nation-states might be too small a unit to study changes in families” (p. 622) due to the interconnectedness of global economies, production mechanisms, technological advances, and media. Given increasing inequality within countries, studying family patterns at the national level may obscure family diversity. Integrating both converging and diverging processes with the ICDM allows for theoretical and empirical flexibility to study global family patterns, diversity, and change. In summary, the ICDM provides a comprehensive framework that integrates global and local influences to explain the diverse patterns of family life worldwide.

Methods

We identified relevant studies by reviewing published literature in English, French, Spanish, and Portuguese. When necessary, translation software (e.g., Google Translate, Microsoft Word, ChatGPT) was employed to facilitate access to sources in other languages.

Articles were selected based on relevance to study themes, with an eye toward geographic representation. While we enforced no strict publication period, preference was given to research published since 2010, although flexibility was required in regions where recent literature was sparse. Given the wide geographic scope of this review and the wealth of diversity across countries, we include selected examples to illustrate key trends and patterns rather than attempting an exhaustive account for each region.

Results

In the following sections, we outline how distinct world regions have experienced shifts in family life, focusing on marriage, cohabitation, divorce, parent-child relationships, and kinship structures. Each regional overview highlights key processes, dynamics, and changes shaping these family domains, setting the stage for an integrative understanding of both convergent and divergent patterns in contemporary family life.

Central Asia

The institution of the family in Central Asia is undergoing significant transformation due to cultural traditions, economic and technological change, and the aftermath of the Soviet empire. Urbanization, migration, and shifting gender roles have changed marriage practices, fertility rates, divorce trends, and family dynamics, redefining relationships and shaping family interactions.

Historically, marriage in Central Asia was family-arranged, especially in rural areas, where extended kinship networks dominated social life. Parts of these practices remain today in the form of Kyrgyzstani bride kidnapping, where between 1 in 6 and 1 in 4 rural marriages involve the nonconsensual abduction of the bride (Becker et al., 2017). Many still favor the practice due to its traditional roots, whereas others have linked nonconsensual abduction to psychological distress, lower marital satisfaction, higher divorce rates, and poor health outcomes for women and children (Borbieva, 2012).

While traditional marriage practices remain in rural areas, urban centers in Kazakhstan and Uzbekistan are seeing emphasis on love marriages due to modernization and increased numbers of women seeking education. Consequently, women seek greater decision-making control over their romantic partners (Dommaraju & Agadjanian, 2008). However, traditions such as patrilocal customs expect women to move into their husband's family home and care for their families-in-law, reinforcing patriarchal values (Nedoluzhko & Agadjanian, 2015). Women are expected to maintain household responsibilities even while pursuing employment (Kuehnast & Dudwick, 2004).

Rising divorce rates, particularly in urban areas in Kazakhstan and Kyrgyzstan, result from economic development, ideational changes, and women's growing autonomy among younger couples (Werner et al., 2018). Women are less reliant on men economically and increasingly able to leave unhappy marriages, despite strong stigmatization prevalent throughout the region, especially in rural areas (Spoorenberg, 2018). In these areas, societal pressure to maintain family ties remains strong, even in the presence of domestic conflict (Clifford et al., 2010).

Marital quality varies across the region. Marriages that begin as bride kidnappings tend to have lower levels of marital happiness and higher levels of intimate partner violence due to traditional gender norms and feeling trapped within such marriages (Borbieva, 2012). On the other hand, love marriages based on mutual consent report higher satisfaction and more equitable decision-making, especially in urban areas where female education and progressive gender norms are more common (Werner et al., 2018).

Collectivist values shape family patterns in Central Asia. Care for aging parents enjoys high social approval, and strong stigma is generated when children fail to do so, especially in rural areas where family networks influence marital, educational, and living decisions (UNICEF, 2021). Older children are expected to care for younger ones to enable adults to pursue economic necessities such as farm labor (Kuehnast & Dudwick, 2004).

An aspect specific to Central Asia is the large influence from Russia, where many labor migrants search for

employment. Labor migration influences family structure as men leave home, leaving women to manage care-giving and household responsibilities (Rahmonova-Schwarz, 2012). Children often suffer an emotional toll due to the prolonged absence of their parents. Migration empowers women to have greater household control and autonomy but often comes at the cost of economic hardship as they depend on remittances (Sagynbekova, 2017), which can reinforce traditional gender hierarchies.

As in many parts of the world, religion plays a significant role in family life in Central Asia. Despite Soviet efforts to minimize Islamic practices, Islamic traditions shape gender roles and family expectations, particularly in Uzbekistan and Tajikistan (Buckley, 1998). Religious leaders influence family planning decisions by speaking against contraception and encouraging large families (Spoorenberg, 2018). The persistence of polygamy owes its continuity to religious norms and cultural rites (Cleuziou & McBrien, 2021).

Thus, families in Central Asia encounter a diverse family landscape shaped by tradition and modernization, Eastern and Western influences. In urban areas, love marriages, increasing divorce rates, and women's growing education and autonomy signal cultural shifts. Rural areas remain tethered to arranged marriages, high fertility rates, and collectivist decision-making. Migration to find work continues to shape family structures, gender dynamics, and caregiving responsibilities. Religion exerts a powerful influence on families at both individual and societal levels.

East Asia

Recent decades in East Asia have seen rapid social, economic, demographic, and political change as industrialization, urbanization, and shifting cultural norms have transformed family dynamics. Countries such as China, Japan, South Korea, and Taiwan have witnessed changes in marriage, cohabitation, divorce, parent-child relationships, and kinship patterns. Family shifts have also been observed in the Philippines, Cambodia, and Thailand. Together these trends have redefined family life in the region.

Marriage maintains its central place in East Asian family formation despite shifts toward cohabitation, divorce, and singlehood. Declining marriage rates and rising age at first marriage have been observed in China, Japan, South Korea, and Taiwan. In China, the marriage rate declined from 9.9 to 4.8 per thousand between 2013 and 2022, with average age at first marriage approaching 30 (Luo, 2024). Similar patterns have been observed in Japan (Raymo et al., 2023). In South Korea, financial insecurity means many are delaying or forgoing marriage (Kim et al., 2012). The Philippines, Cambodia, and Thailand have experienced similar shifts (Abalos, 2023; Heuveline & Nakphong, 2023).

These changes in marital behavior can be tied to economic insecurity, especially in China, where accelerating housing and living costs and dowry practices place marriage out of reach, hitting rural areas acutely (Luo, 2024). Chinese norms dictate that men should be property owners prior to marriage, so many delay or forgo marriage. China's skewed sex ratio (with men outnumbering women), a remnant of the one-child policy, compounds this issue (Dyson, 2012). South Koreans face similar challenges with rising housing prices and high student debt (Kim et al., 2012). Economic concerns affect young adults in Thailand, where remarriage is becoming more common among women who can support themselves post-divorce (Pothisiri et al., 2023). Rising economic inequality and uncertain job prospects influence marriage decisions throughout the region (Park, 2021).

Beyond economics, women's increasing education and changing gender roles have reshaped marriage patterns. Filipino, South Korean, and Japanese women often prioritize careers over family as cohabitation becomes more accepted (Abalos, 2023; Park, 2021). Traditional norms create tension between career opportunities and care-giving responsibilities (Frejka & Gietel-Basten, 2016), leading to falling fertility rates due to delayed marriage (Cheng, 2020).

Cohabitation has become more accepted, particularly in urban areas, though less so than in Western societies (Mu, 2024). Taiwanese young adults see cohabitation as a more flexible option (Wang & Yang, 2023). Similar trends are observed in the Philippines and Cambodia, though it remains somewhat stigmatized (Abalos, 2023; Heuveline & Nakphong, 2023). These changes reflect broader shifts in family formation.

Divorce is becoming more common, more than doubling in China, from 0.96 (2000) to 3.1 (2020) to 2.0 (2022) per 1,000 population, despite a "cooling-off period" (Luo, 2024). Similar increases are observed in South Korea (Kim et al., 2012). Cambodia has reported greater acceptance of divorce, and Thailand has seen increases in remarriage rates (Heuveline & Nakphong, 2023; Pothisiri et al., 2023).

Shifting patterns in relationships have led to changes in family structures, as single-parent households, remarriage, and non-traditional family forms emerge. In Japan and the Philippines, rising divorce rates have led to more

single-parent households (Abalos, 2023; Raymo et al., 2023). In South Korea and Thailand, increasing remarriage challenges cultural norms (Pothisiri et al., 2023).

Parent-child relationships have evolved. In China, Japan, and South Korea, filial piety and respect for elders remain central (Sodei, 2004). However, industrialization and urbanization have weakened traditional influence as multigenerational households yield to nuclear ones. Japanese young adults are less likely to live with older parents (Sodei, 2004). This shift places greater pressure on social services as elder care responsibility transfers to the state. South Korea has implemented policies to address aging society needs, whereas Cambodian young adults continue to care for aging parents despite urban pressures (Heuveline & Nakphong, 2023).

Urbanization and economic development drive these changes. As families move to urban areas, traditional kinship influence wanes in favor of smaller, nuclear units (Raymo et al., 2023). Soaring costs make raising children challenging, leading to more people remaining single or having smaller families (Abalos, 2023; Kim et al., 2012; Luo, 2024).

To sum, families in East Asia are both beneficiary and casualty of complex changes. Changing marital patterns, increased acceptance of cohabitation and divorce, and declining marriage rates mean families experience greater uncertainty. Parent-child relationships are evolving as multigenerational households recede. Elder care, traditionally the domain of families, can be outsourced as urbanization and economic development transform the social landscape. The story of East Asian families is one of change and evolution.

South Asia

Like many parts of the world, the family is a core social institution across South Asia while undergoing significant social, demographic, political, and economic change. Patterns of marriage, cohabitation, divorce, and family dynamics have been influenced by cultural mores, social norms, globalization, urbanization, and debates about gender roles. Although characterized by a collectivist family outlook, where marriage and family are central to life, macro trends have influenced marriage, parent-child relationships, and intergenerational relationships.

Marriage remains central to family life yet is the focus of social change. Traditionally viewed as the union of two families rather than individuals, marriage has been seen in light of family and kinship dynamics such as caste, religion, socioeconomic status, and consolidation of power and honor (Jones & Yeung, 2014). In urbanized areas of the Indian subcontinent, especially India, love marriage is increasingly common as young people seek autonomy, although family involvement remains common (Vikram, 2024). Marriages in South Asia are increasingly the result of strong parental influence but ultimately the choice of individuals, a trend reflective of female education. In Pakistan and Bangladesh, marriage remains a key transition in a young person's life, and many women are still expected to marry early (Scott et al., 2021) if not pursuing higher education and lucrative careers (Ilie & Rose, 2016).

Age at marriage differs across South Asia. In India and Nepal, age at marriage is climbing in urbanizing areas, whereas in rural ones, where child marriage persists, age at marriage appears stable or declining (Kamal & Ulas, 2020). Early marriage is also common in Afghanistan and Pakistan, especially rural regions, where traditional values and gender roles, combined with limited educational opportunities for women, ensure the practice endures. Child marriage in the region also means women suffer from limited job opportunities and poorer health outcomes (Scott et al., 2021), affecting family dynamics and economic mobility.

Despite the growing presence of love marriages, practices common in the West, such as cohabitation, remain rare. Cohabitation is still stigmatized due to religious taboos and cultural mores, even in urban centers where Western values are increasing in relevance (Jones & Yeung, 2014). Strong emphasis on kinship and elder relations means the stigma ensures cohabitation remains legally and socially controversial. Familial piety continues to be deeply interwoven with marriage and sexuality.

Divorce, though highly stigmatized in many parts of the region, is slowly gaining acceptance across South Asia, most commonly among highly educated populations in urban centers. In Sri Lanka and India, women's economic independence means women can resort to divorce if necessary, although it is still considered a last option given the societal importance of marriage (Dommaraju & Jones, 2011). In contrast, in countries with an Islamic emphasis on marriage, such as Afghanistan and Pakistan, divorce remains difficult or impossible due to traditional gender roles and societal opprobrium toward divorced women, making remarriage more difficult. However, divorce is increasingly available in cases of marital violence, marking growing societal acceptance of women's autonomy and the importance of equity in relationships (Jejeebhoy et al., 2014).

New research focuses on family dynamics such as marital quality, linked to children's wellbeing. In Nepal, studies show parental marital quality is linked to children's transition to adulthood by shaping expectations

for family life (Brauner-Otto et al., 2020). In India and Bangladesh, marital quality has been linked to mental health and family harmony (Chowbey, 2017). Intimate partner violence is common across South Asia, especially among married women (Jejeebhoy et al., 2014), driving down marital and relationship quality with influences on children and parent-child relationships, as women and children experience hostile family environments.

Parent-child interactions are changing as labor markets welcome more women and migration makes traditional family structures difficult to maintain. In many countries, it is common for one or both parents to work abroad, especially in Bangladesh and Sri Lanka, where many migrate overseas for better economic opportunities. In countries with limited social security systems, elderly parents depend on their children for support, creating a shift in intergenerational relations in places like China, Taiwan, and Singapore (Cheng, 2015). Migration strains filial piety as elderly parents, often left in rural areas due to high urban living costs, are cared for by other family members rather than their children. This shift influences family relations in countries where child-based elder care has been historically established (Chung et al., 2021).

In summary, families in South Asia are responding to and shaping rapid social change as traditional values meet modern influences. Marriage continues to occupy the primary place in family life yet is increasingly delayed. Family influence over marital choice is pervasive but gradually yielding to love marriages. Cohabitation and divorce, although rare and stigmatized, are becoming more common due to education and economic independence. Migration and urbanization create challenges and opportunities for families as South Asia's populations seek to maximize their wellbeing in a world shaped by modern changes undermining traditional approaches.

Middle East and North Africa

Family serves as the core social institution in the Middle East and North Africa, shaping individual identities, social relationships, and community sense. Families are deeply rooted in tradition and intertwined with dominant religions, primarily Islam but also Christianity and Judaism. Extended families sustain members emotionally, socially, and economically, enmeshing them in intergenerational kinship systems with deep involvement in personal affairs, collective decision-making, shared responsibility, and an enduring family reputation. Family facilitates cultural, religious, and moral transmission, leading to widely shared yet increasingly challenged understandings of gender roles and social mores, enabling it to serve as a key source for social cohesion and individual identity. Islamic principles continue to shape family and political life, while the pervasive role of religion is hotly debated throughout the region.

Marriage is central to family life but is in flux. Traditionally a key marker of adulthood arranged with strong familial influence, marriages today are delayed due to economic barriers. Islamic principles teach that marriage is sacred and roles of husbands and wives are complementary, but evolving social norms seek new applications as young adults navigate financial and social difficulties (Jarallah, 2022). Soaring living and housing costs coupled with pressures for high educational attainment make marriage inaccessible for some, resulting in "Waithood", where major decisions are deferred (Kovacheva et al., 2018). In conservative sectors, the importance of marriage remains entrenched, despite rising marital ages and declining but still high rates of consanguineous marriages (Sharkia et al., 2015). Where family ties and wealth preservation are emphasized, such as in Oman, consanguineous marriage remains common (Islam, 2012).

Cohabitation is largely stigmatized due to strong religious teachings prohibiting sexual relationships outside marriage, even criminalizing them in some countries. Some wealthier urban areas have shown signs of acceptance toward cohabitation among the educated class (Al-Hakami & McLaughlin, 2016; Kolman, 2018). Though rare and met with cultural resistance, this trend reflects a slow shift in how some segments of society approach relationships (Gilbert & Brik, 2022).

Divorce, though low by international standards, is becoming more prevalent as traditional views of lifelong marriage give way, even as divorce remains seen as a final resort under Islamic law. The United Arab Emirates' rising divorce rates signal changing social expectations and realities (Al Gharaibeh & Bromfield, 2012), often led by women seeking gender equality. Divorce's influence on child wellbeing is receiving greater attention. Saudi Arabian girls from divorced families struggle with interpersonal adjustment due to the psychological impact of divorce, linked to lower self-esteem and poorer social relationships (Al-Zamil et al., 2016). In Israel, divorce disproportionately affects women and the economically disadvantaged, widening the gap between rich and poor (Endeweld et al., 2022). Across the region, Islamic law and social norms intertwine, as individuals navigate divorce and its consequences.

Marital quality emerges from economic, gender, social, and religious influences as couples seek family harmony and gender complementarity, rather than the autonomy commonly sought in other regions. While becoming less

frequent, polygamy remains important, even if research has found it detrimental to Saudi women's marital satisfaction (Merdat et al., 2023). Families where fathers are involved report higher marital satisfaction and improved child outcomes, such as among Omani children who describe better emotional development and stronger family bonds (Baig et al., 2021).

Parent-child bonds remain strong because parents are heavily involved in their children's lives, shaped by cultural traditions, religious teachings, and filial piety. Parents influence children's educational and career goals. Jordanian parents promote children's critical thinking while grounded in traditional values like respect for Islamic principles (Al-Hassan & Rothenberg, 2021). The tension between autonomy and traditional values extends beyond Jordan as Qatari parenting styles emphasizing family cohesion are juxtaposed against children's independence (Ihmeideh, 2019).

In summary, families remain central even as marriage practices evolve, divorce rates rise, and many struggle with contemporary pressures. Marital quality, parent-child relationships, and kinship networks remain strong, as younger generations challenge traditional hierarchies while seeking to preserve family cohesion and religious traditionalism.

Oceania

In Oceania, families live across a vast geographic area and comprise a wide set of cultural traditions deeply embedded in historical and social landscapes. Family units are central to community life. In some areas, families are nuclear; in others, broader kinship networks prevail. Westernization, modernization, and urbanization have influenced family trends across marriage, cohabitation, divorce, parent-child relationships, and kinship patterns throughout this culturally diverse region.

Marriage has transformed in recent years. In East Timor, marriage-related exchanges reinforce social bonds and family identity, remaining influential despite modernization pressures (Silva, 2018). However, declining marriage rates and rising cohabitation are seen, as in Vanuatu, where adoption and child fostering respond to parental instability, leaving children in the care of extended family or trusted community leaders. Child fostering is sometimes used to strengthen social ties (Brandl et al., 2023). As traditional marriage and its rites are under strain, cohabitation becomes increasingly common as young couples opt for fewer formal constraints.

As marriage comes under pressure, divorce has become more common. In Papua New Guinea, divorce remains comparatively rare but is slowly becoming more common due to modernizing gender roles and search for greater gender equity (Stewart & Strathern, 2023). New Zealand has seen sharp increases in divorce, especially where social change and economic disadvantage burden marriage (Newton et al., 2024). Such shifts have consequences for the wellbeing of children and adults, contributing to changes in family structures.

Marital and family relationship quality, especially concerning intimate partner violence, is of increasing interest. Research shows attending to socioecological factors can buffer against violence and safeguard relationship quality (Bird et al., 2021). Father involvement in Papua New Guinea can protect against intimate partner violence, highlighting the interplay between masculine identities and parenting (Chan et al., 2017). Relationship quality depends on complex norms and expectations, leading to potential conflicts when traditional gender roles confront modern views on equality.

Parent-child relationships are challenged by migration due to economic pressure, leading to changing family situations with various caregivers (Brandl et al., 2023). Parental involvement in educational activities is positively correlated with children's developmental outcomes, especially among poor households (Sun et al., 2018). Conversely, economic and social disadvantages have strained parent-child relationships as parents navigate caregiving demands with educational and labor market expectations (Rarau et al., 2019).

Changes in intergenerational and kinship relationships are visible. In Micronesia, acceptance of modern family planning may lead to tensions between older and younger generations, as extended family systems accommodate shifting gender and reproductive norms (McDonald et al., 2024). Similar tensions are observed in Tonga, where older generations cling to traditional practices while younger generations seek individualistic financial wellbeing (Ongolea & Houkamau, 2024). Such tensions influence family dynamics, straining trust between family members.

Despite homogenizing influences from globalization and Westernization, many countries seek to preserve their cultural heritage. New Zealand emphasizes cultural heritage and community connection via retention of traditional knowledge among indigenous women, maintaining vibrant ethnic identities (Newton et al., 2024), leading to stronger intergenerational ties. While family dynamics are changing, efforts to preserve cultural practices allow families to bond and maintain social cohesion.

In conclusion, families in Oceania continue to value traditional practices while adapting to modern life and economic reality. Cohabitation and divorce are on the rise amidst changing gender roles, economic pressures, and migration. Parallel efforts to preserve cultural traditions maintain strong family bonds enabling families and societies to thrive.

Sub-Saharan Africa

Sub-Saharan Africa is a region where social and familial relationships constitute the basis of communal society. Families are viewed as the fundamental unit, and children are accorded high value. These realities mean individuals are embedded within support networks extending beyond the nuclear household. Family dynamics, shaped by tradition, religion, and socioeconomic conditions, interact with urbanization and economic development. Marriage, cohabitation, divorce, relationship quality, and parent-child relationships are evolving at different paces across this diverse region.

Marriage remains the lynchpin in social relationships, drawing upon rich cultural values and practices. Differing approaches to marriage, including legal, traditional, customary, and religious marriages, make specifying when one is considered married difficult because marriage is often a process rather than an event. Child marriage is common in some areas, such as Mali, where rates are increasing among the rural and urban poor (Batyra & Pesando, 2023), despite some progress due to recent government efforts aimed at reducing the practice. In Kenya, bridewealth practices continue nearly universally in rural and commonly in urban areas due to their symbolic creation of family ties (Chae et al., 2021).

Interethnic marriage has increased – about 20% of marriages occur between different ethnic groups (Crespin, 2019). Such trends are shown in Ghana, Gabon, and the Republic of Congo, where interethnic marriage is increasingly common despite lack of societal acceptance in some areas (Bandyopadhyay & Green, 2021).

Cohabitation is increasingly accepted, at least in rapidly growing cities. In South Africa, cohabitation has become an alternative to marriage, indicating changing approaches to traditional customs, as younger generations emphasize economic success and autonomy over long-term relationships amidst uncertain labor market prospects (Moore & Govender, 2013). Similar patterns are observed in Tanzania and Burkina Faso (Pesando, 2021).

Divorce has been rising, leading to declining union stability and effects on children's schooling because disruptions to the parental union can harm educational attainment (Odimegwu, 2020). Rising divorce rates suggest shifting social norms and conversations about gender roles as divorce becomes more accepted (Clark & Brauner-Otto, 2015).

Declining marital quality due to economic and social constraints contributes to relationship failures. In rural Niger, younger age at marriage is linked to lower satisfaction and participation in decision-making, leading to feelings of seclusion (Tomar et al., 2021). Traditional practices such as bridewealth are linked to poor outcomes when they take precedence over affection (Jensen, 2015).

Parent-child relationships are influenced by cultural norms surrounding family structure and parenting customs. In Senegal, child fostering reflects a commitment to the collective wellbeing of children and extended family. Despite potential benefits, this system may pose risks to children's health (Beck et al., 2015). The importance of children is also seen in strained marriages of couples struggling to conceive, destabilizing relationships (Fledderjohann, 2017).

Families often live in close proximity and experience pressure to provide support to extended kinship networks. In South Africa, grandparents often raise grandchildren when parents face financial difficulty or migrate (Mtshali, 2015), pulling children into extended family networks and creating strong intergenerational bonds.

Sub-Saharan African families remain at the core of society yet continue to endure profound changes as transformations sweep across the continent. Marriage remains key but practices like child marriage, interethnic unions, brideprice, and cohabitation challenge its supremacy. Union instability is common, as women seek autonomy and equity, challenging traditional gender roles. The family will likely remain a key site of social and political conflict as well as a rallying point.

Latin America and the Caribbean

Family dynamics in Latin America and the Caribbean are central to social organization, cultural identity, and economic activity. While traditional family structures remain central, the region is experiencing significant changes in marriage patterns, cohabitation, divorce, parent-child relationships, and kinship ties. These changes reflect broader shifts reshaping the family landscape.

Marriage rates have fallen as younger generations opt for alternative family patterns, particularly in Uruguay (Bucheli & Vigorito, 2019). This is driven by economic pressures and gender roles that undergird increases in female-headed households, as many women view marriage as risky and unstable in places like Mexico and Nicaragua (Altamirano Montoya & Teixeira, 2016; García & Oliveira, 2011). Wealthier countries like Costa Rica and Brazil report similar trends, as cohabitation and informal unions replace traditional marriage (Gibbons, 2024).

Cohabitation's rise reflects cultural and economic shifts driving increased diversity in family forms. Young Chileans opt for cohabitation due to its perceived flexibility and affordability, whereas in Bolivia and Paraguay, economically independent women choose to cohabit for greater autonomy (Lesthaeghe & Esteve, 2016). In Argentina, cohabitation is seen as a "trial" marriage that can precede marriage rather than displacing it (Esteve et al., 2022).

Family diversity has led to more divorce, as unions become less stable. This is partly driven by more liberal divorce laws advocated by educated women seeking freedom from unhappy marriages (Bucheli & Vigorito, 2019). In Brazil and Colombia, divorce results from poor economic circumstances and shifting gender norms, making marriage navigation difficult (Grace & Sweeney, 2014). Post-divorce economic consequences can render women and children at risk of socioeconomic decline, as seen in Hispaniola (Flake & Forste, 2006).

Despite changes, family remains central, seen in strong intergenerational and kinship ties. Guatemalan and Costa Rican families report that extended families are key to navigating strains (García & Oliveira, 2011), particularly in rural areas where financial straits force families to pool resources. Parental poverty and migration necessitate grandparental childcare to maintain family stability (Castro Torres, 2023).

Parent-child relationships remain strong but evolve with changing structures. In Mexico, parenting styles are becoming more democratic, encouraging open communication (Gibbons, 2024). This shift may be evident in Guatemala, Honduras, and Nicaragua, where educational advancements and economic development have led to changes in family formation and parent-child relations due to instability in cohabiting unions (Grace & Sweeney, 2014). Traditional, hierarchical structures persist in countries like Peru and Paraguay, where obedience and respect for elders remain central (Esteve et al., 2022; Glaser et al., 2006).

Economic inequality shapes family dynamics across the region. In wealthier countries like Argentina, Chile, and Brazil, wealthier families access high-quality education and healthcare, contributing to stability (Esteve & Lesthaeghe, 2016). In poorer areas like Haiti and Honduras, limited resources mean precarious conditions and more stress as households struggle to provide necessities (St. Bernard, 2003). Such inequality is visible in rural areas, making families reliant on informal networks (Castro Torres, 2023).

To sum, families in Latin America and the Caribbean are changing as key pillars like marriage, cohabitation, and divorce shift. Intergenerational kinship and extended family ties often fill gaps when formal resources are insufficient or unavailable.

North America

Just as in other regions, the family in North America has experienced significant transformations, as marriage, cohabitation, divorce, and family structures continue to shape and be shaped by changing social norms. These have led to changes in social policies, economic, health, and educational outcomes, translating into heterogeneity in well-being for adults and children.

Marriage remains a fundamental yet contentious institution. Declining marriage rates and rising age at marriage reflect an eschewal of traditional models, with many Canadian young adults opting for alternatives like prolonged singlehood or cohabitation (Ménard, 2011). Similarly, fewer adults in the United States are married, as the median age at first marriage approaches or exceeds 30 for both men and women (Smock & Schwartz, 2020). Such changes reflect broader economic and cultural shifts, as marriage becomes increasingly the purview of the educated elite and becomes deinstitutionalized (Cherlin, 2020). Educated and affluent individuals are more likely to marry and maintain stable and happy marriages compared to those without similar social advantages (Cherlin, 2020; Smock & Schwartz, 2020).

As marriage declines, cohabitation ascends as a common step toward or replacement of marriage. Canadian and American young adults are more likely to cohabit rather than marry for their first coresidential union. In Quebec, cohabiting couples approach 40%, and nearly 60% of births occur outside marriage (Hamplová et al., 2021). In the United States, cohabitation is viewed as an alternative or precursor to marriage, even as such unions remain less stable (Sassler & Lichter, 2020). This difference in stability leads to high rates of relationship churning, as individuals enter and exit long-term relationships at higher rates than most other countries (Raley & Sweeney, 2020).

Divorce has become more common, although it remains about half as common in Canada than in the United States. Both countries have seen dramatic rises in divorce among individuals aged 50 and over, termed “gray divorce” (Margolis et al., 2019), suggesting changing expectations for marriage at older ages. However, the general divorce rate in Canada has declined among younger cohorts due to increased hesitancy to marry (Margolis & Choi, 2020). In the United States, similar declines among younger cohorts are observed, while older adults experience rising divorce rates (Raley & Sweeney, 2020; Smock & Schwartz, 2020).

Researchers focus on how the quality of romantic relationships impacts family stability and well-being, demonstrating positive effects of high-quality relationships for better outcomes for adults and children. Canadian studies underscore how happy marriages improve health, whereas conflicts can damage marital quality, especially among older couples (Mitchell & Dhillon, 2023). While the link between premarital cohabitation and divorce has weakened, as cohabitation becomes normative (Sassler & Lichter, 2020), cohabitators generally report lower satisfaction and happiness compared to married individuals, reflecting different expectations, social support, and resources (Cherlin, 2020).

Family complexity influences how parents and children interact and affects intergenerational and extended family dynamics. In the United States and Canada, widespread divorce and remarriage have resulted in complex family structures, including stepfamilies and multigenerational households. In the United States, nearly one-third of children are expected to share a household with a grandparent, as extended family support becomes essential (Berger & Carlson, 2020). In Canada, more young adults live with their parents due to labor market struggles, rising debt, and high housing prices, a pattern mirrored in the United States (Mazurik et al., 2020).

Family change reflects broader socioeconomic and racial disparities, resulting in increasing inequality for children and parents. Single parents, often at risk of economic hardship and elevated stress, remain a concern in both countries because they have less access to valuable resources, resulting in more work-family conflict and emotional strains than coupled individuals (Nomaguchi & Milkie, 2020). While extended family can help mitigate risks associated with single parenthood (Buehler, 2020), ethnic and racial socialization within families is essential for children’s healthy social development, as the United States becomes more ethnically diverse (Umaña-Taylor & Hill, 2020).

Overall, transformations in marriage, cohabitation, divorce, and family relations highlight increasing complexity in family relationships across North America as cultural, social, and economic norms challenge traditional ideals of family stability and cohesion. Such changes are reflected in public policy and social welfare programs designed to support a wide array of families and promote the wellbeing of every family member.

Europe

While the family remains fundamental in Europe, transformations in marriage, cohabitation, divorce, and other patterns reflect shifting support for the family’s role. These shifts are crucial for understanding and addressing social concerns and inequalities that undermine wellbeing.

Recent decades have seen a marked decline in marriage across Europe, as fewer people marry and, when they do, at older ages. Swedish women reported a mean age at first marriage of 33 in 2011 (Coleman, 2013). This pattern is repeated across the continent, with the average age at first marriage increasing between 2010 and 2018 in most countries, Spain and Sweden leading (Majdzińska, 2022). In Estonia, the marriage rate dropped from about 10 per 1,000 in the 1970s to less than 4 per 1,000 in 2010 (Kutsar et al., 2012). Despite the decline, marriage retains symbolic value, especially in Central and Eastern Europe, where it remained the most common type of first partnership during the transition from communism, though numbers have begun to decline (Mureşan & Oláh, 2019). Education is key to understanding marriage patterns; highly educated individuals in Hungary, Poland, and Romania were more likely to marry than their less educated counterparts (Mureşan & Oláh, 2019).

As marriage falls, cohabitation rises, though some choose prolonged singlehood. Cohabitation often serves as an alternative or precursor to marriage and is nearly universally spreading across Europe, with regional diversity (Kasearu & Kutsar, 2011). In Northern European countries like Sweden and Denmark, over 60% of marrying-age adults have cohabited, and nearly half of individuals aged 26–35 currently cohabit. Estonia also shows high rates, with nearly 6 in 10 of those aged 18–45 having ever cohabited (Kasearu & Kutsar, 2011). Cohabitation remains less common in Southern and Eastern Europe, where only 8% and 4% of young adults reported cohabiting in Spain and Portugal, respectively. In Poland, the percent of those cohabiting more than doubled in a 4-year period (Kasearu & Kutsar, 2011). In Hungary, cohabitation has become the preferred first union, as direct marriages have fallen (Mureşan & Oláh, 2019).

More people are choosing to end their marriage. Across Europe, between one-half and two-thirds of first marriages are expected to end in divorce, as relationships become increasingly unstable (Mortelmans, 2021). In 2002 in Estonia, the divorce rate surpassed the marriage rate (Coleman, 2013). Legal and policy changes, such as unilateral and no-fault divorce laws, have resulted in divorce rates that increase annually (Mortelmans, 2021). Increased selection into marriage and greater cohabitation have contributed to a plateauing of divorce rates in some countries, though premarital cohabitation is associated with higher divorce risk (Mortelmans, 2021).

Married and cohabiting couples report differing levels of relationship quality. Cohabitors often report lower satisfaction and higher breakup intentions than married couples, with greater differences in countries where cohabitation remains deinstitutionalized (Wiik et al., 2012). Cohabiting couples report more disagreements overall than married couples across 22 European countries, even after accounting for economic and demographic factors (Van der Lippe et al., 2014). Married individuals tend to report high levels of satisfaction with their relationships (Sorokowski et al., 2017).

Parent-child relationships vary across the continent as changes in parenting practices and the impact of divorce influence interactions. Estonia has shifted from authoritarian parenting to more democratic approaches. Over half of young adults agreed their parents respected their opinions (Kutsar et al., 2012). Kalmijn and Leopold (2021) found that the negative association between parenthood and separation, as well as educational stratification, has resulted in growing inequalities in children's experiences, as their parents end relationships.

Intergenerational ties remain strong throughout the Mediterranean region, where families report close-knit relationships, coresidence, and frequent contact (Montoro-Gurich & Garcia-Vivar, 2019). Half of older adults live with their children in Spain and Italy, and 4 in 10 do so in Greece (Montoro-Gurich & Garcia-Vivar, 2019). More than half of grandparents across Europe provide care for their grandchildren, and more than a third of Italian parents report their parents help with daily childcare responsibilities (Bordone et al., 2017). Young adults leave the parental home at later ages in Southern Europe compared to other parts; Spanish and Italian young adults are often nearly 30 before establishing independent homes, while in Germany, France, and Britain, the age is often between 23 and 24 (Montoro-Gurich & Garcia-Vivar, 2019).

Declining marriage rates and climbing divorce and cohabitation rates mean European families feel the ground shifting as social, cultural, and economic change requires confrontation of new realities. Relationships are less stable, though many, especially marriages, continue to report high satisfaction. Some regions, especially the Mediterranean, report strong family ties as support networks sustain members through difficult transitions. Policymakers' ability to understand and address these developments will be essential to ensure access to opportunity for all European families.

Strengths and Limitations

This manuscript has several strengths. First, it provides a comprehensive narrative synthesis of global family trends by integrating theoretical perspectives and empirical findings across diverse geographical, cultural, and socioeconomic contexts. By employing multilingual research literature and translation tools, the review ensures broad representation and inclusivity of findings, particularly from regions often overlooked in family scholarship. Second, the proposed Integrative Convergence-Divergence Model (ICDM) helps address simultaneous convergence and divergence in global family dynamics by aiming to capture complexity in global-local interactions influencing family structures and processes, enhancing explanatory power over previously fragmented theories. Third, the integration of policy implications bridges research, theory, and policymaking.

However, the manuscript also has limitations. The narrative review format lacks the methodological rigor associated with systematic or meta-analytic reviews and may introduce selection bias. Although efforts were made to include diverse geographic regions, some areas – particularly less-researched countries – remain underrepresented due to limited data availability or insufficient recent studies. Another limitation pertains to the inherent complexity of global family dynamics, which makes comprehensive coverage challenging in light of important regional subtleties. Consequently, we provide illustrative rather than exhaustive examples. Lastly, the proposed ICDM requires further empirical validation. Recognizing these limitations, future research could employ rigorous, systematic methodologies to validate theoretical propositions, expand empirical coverage in underrepresented regions, and clarify the complex interplay of global and local influences on family life.

Conclusion, Implications, and Future Directions

Family structure and stability are deeply connected to individual and societal well-being. Shaped by global and local forces, marriage, cohabitation, parent-child relationships, and broader kinship networks intersect with modernization, economic development, and shifting gender norms. These trends do not unfold uniformly across regions, as cultural traditions, religious values, and policy frameworks mediate the effects of global influences.

This concluding section highlights two critical areas that underscore the importance of strong family systems: the relationship between family dynamics and mental health and the role of policies in fostering family well-being. Understanding these connections provides valuable insights for researchers and policymakers seeking to strengthen families amid shifting social, economic, and political tides.

Family Dynamics and Mental Health

Family dynamics and mental health are inextricably linked throughout the life course. Family structure, relationship quality, and the stability of the home environment influence psychological wellbeing. Research from across the world demonstrates how marriage, divorce, cohabitation, and relationship quality impact mental health.

Marriage, especially when happy and stable, is associated with better mental health outcomes across time and space. One review found marriage accounts for around two-thirds of the variance in mental health indicators such as depression, suicidality, and alcohol use, after accounting for genetic factors (Braithwaite & Holt-Lunstad, 2017). Research shows that transitioning from singlehood into marriage is protective of mental health for both men and women (Amato, 2014), and Norwegian research demonstrates that the effects endure over time (Kravdal et al., 2023).

Not all marriages are equally beneficial, as the quality of family relationships shapes the benefits. When individuals report highly cohesive family relationships characterized by low conflict, depression tends to be lower across the life course from adolescence to midlife (Chen & Harris, 2019).

How cohabitation shapes mental health is more nuanced. Some research found that stable companionship, whether marriage or cohabitation, offers similar benefits, as entry into either relationship is associated with reductions in depressive symptoms and suicidal ideation (Amato, 2014). However, these benefits tend to be temporary, often dissipating in the first few years. Poorer mental health outcomes among cohabitators compared to married individuals have been found in Europe, particularly among women (Yucel & Latshaw, 2023).

Perhaps the clearest association of family structure and mental health is for divorce, which is consistently linked to substantial poor effects. A meta-analysis with over half a million participants found that experiencing parental divorce during childhood was associated with more depression and substance abuse in adulthood and increased risk of suicidal ideation (Auersperg et al., 2019). Family instability, with divorce as the primary cause for many children around the world, often leads to emotional and behavioral problems, with many adults and children experiencing persistent declines (Braithwaite & Holt-Lunstad, 2017).

Beyond spousal relationships, childbearing and the number of children can also affect mental health – though in complex ways. Parenthood often brings both stress and emotional rewards, depending on factors like social support, financial resources, and family functioning (Nomaguchi & Milkie, 2020). At the same time, supportive intergenerational relationships – such as help from grandparents – can provide a buffering effect, offering emotional and practical resources that help protect against negative mental health outcomes. These additional dimensions of family life illustrate how broader kinship dynamics and parental roles can shape psychological wellbeing alongside marriage, cohabitation, and divorce.

The complex interplay between family dynamics and mental health is well established. Marriage generally bestows mental health advantages, especially when the relationship is happy and stable. Cohabitation may offer similar benefits, yet relationship instability can make realizing these benefits difficult. Divorce and family instability are nearly universally associated with negative outcomes, emphasizing how crucial stable and supportive family environments are.

The Policy Imperative of Supporting Families – How Policymakers Can Leverage Family Policies to Strengthen Social Cohesion and Improve Societal Well-Being

A key objective of this manuscript has been to showcase the diversity of family forms, dynamics, and trends across the globe, highlighting the importance of tailoring policy efforts not only to international agendas but also to each

country's cultural, socioeconomic, and political reality. Global policy frameworks offer overarching principles – such as promoting gender equality or securing child welfare – but regional and national policy measures must address local nuances. The responsibility for harmonizing these broad goals with on-the-ground needs often falls on interdisciplinary teams of experts working at both national and international levels, ensuring that research, policy, and practice remain meaningfully integrated and responsive to the needs of local families.

Such integrated teams of policymakers and experts confront the challenge of promoting social wellbeing in a complex global landscape. One effective way is by implementing policies that leverage the fundamental role of families. As the cornerstone of societies, families have a profound impact on social structures and individual lives. Policymakers have the opportunity and responsibility to enact policies that support families to prevent poverty, socialize children, and ensure families are characterized by legitimacy, companionship, and stability. These efforts benefit individual families and contribute to broader societal well-being and cohesion.

First, policymakers can help prevent poverty via family-centric economic policies. Poverty undermines social cohesion and hampers societal progress. Families, when supported appropriately, can prevent and alleviate poverty. Policymakers can implement a range of family-centric economic policies, including:

- **Comprehensive Social Safety Nets:** Establishing or strengthening social protection programs that provide financial assistance to low-income families can reduce poverty rates;
- **Affordable Childcare and Education:** Subsidizing childcare and ensuring access to quality education enable parents to work, increasing household income and reducing poverty. Offering support for parents who choose to stay home with their children fosters family wellbeing while recognizing the value of caregiving and the concomitant benefits for children;
- **Parental Leave and Flexible Work Policies:** Instituting paid parental leave and promoting flexible work arrangements help families balance work and caregiving responsibilities, strengthening family bonds while ensuring financial stability;
- **Housing Assistance Programs:** Ensuring families can find safe and affordable housing creates a stable environment conducive to children's healthy development and social cohesion.

By focusing on these areas, policymakers can strengthen families, reduce poverty, and alleviate social challenges. Such policies must account for diverse family structures and cultural contexts to maximize effectiveness.

Second, policymakers can ensure families have the resources to socialize children successfully.

The socialization of children is a critical family function that enables societies to both produce and benefit from productive citizens. Policymakers facilitate this by focusing on the following priorities:

- **Investing in Early Childhood Development:** Programs that support learning and development during early years have long-term benefits;
- **Strengthening Education Systems:** Involving parents in children's formal education improves outcomes;
- **Promoting Health and Wellness:** Access to healthcare services, including mental health, is essential to family wellbeing;
- **Supporting Positive Parenting Practices:** Governments can encourage positive parenting through resources and campaigns focusing on communication, discipline, and emotional support.

These policies create an environment where children can flourish, as they develop social skills, empathy, and a sense of civic duty. When policymakers invest in supporting children's healthy socialization, they ensure that families have the support they need to be successful.

Finally, policymakers can support families by ensuring romantic relationships are anchored in legitimacy, companionship, and stability. Legitimacy, or legal recognition of family relationships, provides access to rights, protections, and benefits. Viewing families as legal, economic, and social units reinforces social stability via shared norms and values.

Companionship, where individuals are committed to each other's wellbeing, leads to more stable relationships. Policies that focus on companionship in marriage are economical ways to support families. Marriage and relationship support programs can offer counseling, education, and conflict resolution resources, strengthening family relations.

Family stability is critical because stable families are the foundation of a healthy, prosperous society. When families break down, societies experience negative outcomes that strain government resources and impede devel-

opment. Therefore, maintaining family stability is essential. Governments can support families experiencing economic insecurities with policies providing job security, fair wages, and unemployment benefits.

Policies focusing on legitimacy, companionship, and stability can improve family life and societal wellbeing. Policymakers should recognize diverse family structures and cultural practices, shaping policies accordingly. Community engagement ensures policies are culturally appropriate and effectively address local needs.

Families – though they evolve in response to economic, social, and ideological shifts – remain central. The Integrative Convergence-Divergence Model (ICDM) provides a framework for understanding these complex patterns, recognizing that while family trends often converge globally, cultural and historical forces ensure continued regional singularity.

As policymakers consider strategies to enhance family stability and well-being, a nuanced approach is essential – one that acknowledges the interplay between economic development, social policies, and cultural and religious norms. Future research should explore how policies interact with family structures in diverse contexts and how emerging trends, such as digital transformation and shifting labor markets, will continue to shape families. Because the health of families directly impacts the health of nations, policymakers must prioritize families. Investing in families safeguards the success of the Sustainable Development Goals and ensures a high quality of life for all while building resilient communities.

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REVIEW ARTICLE

Early Intervention Strategies for Enhancing Attachment and Interaction in Families with Premature Infants: A Systematic Literature Review

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Introduction: Preterm birth poses significant risks to neonatal health and development, impacting parental roles and early bonding.

Aim: Our systematic review explores recent interventions aimed at enhancing parent-premature infant interactions and attachment, particularly in NICU settings.

Methods: Following PRISMA guidelines, articles published between 2010 and 2024 were searched across major databases. 19 English-language studies assessing interventions to promote bonding, attachment, and interaction with preterm infants met the final inclusion criteria for the systematic review after rigorous screening and bias assessment.

Results: The reviewed studies presented diverse interventions targeting parent-infant relationship. The interventions included kangaroo care, parent education, and psychological support, conducted predominantly in hospital settings. Positive outcomes were consistently reported in enhancing attachment, improving parental sensitivity, and reducing maternal anxiety and depression. Father involvement also showed beneficial impacts on attachment outcomes.

Conclusion: Early interventions can mitigate the risks threatening the development of prematurely born infants by fostering secure parent-infant attachments and enhancing parental competence. The findings underscore the clinical significance of integrating bonding-focused interventions into routine NICU care, emphasizing the role of both parents in supporting infant development. Future healthcare strategies should prioritize the early comprehensive support to optimize the long-term developmental outcomes in preterm infants.

Keywords: preterm infants, parent-infant interaction, attachment, early intervention, NICU

Introduction

Preterm birth is a prevalent perinatal risk, affecting about 13.4 million premature infants annually (Ohuma et al., 2023). According to the World Health Organization, a premature infant is defined as any newborn delivered before the completion of 37 weeks of gestation (World Health Organization, 2023). Prematurity and its complications are responsible for over a third of neonatal deaths (World Health Organization, 2023).

Premature birth presents challenges and risks for both the newborns and their families. From the infant's perspective, the immature organism is forced to exist in an inadequate extrauterine environment; therefore, its survival often depends on medical support. Perinatal complications such as intraventricular haemorrhage (IVH), periventricular leukomalacia (PVL), bronchopulmonary dysplasia (BPD), and retinopathy of prematurity (ROP) are frequent (Ding et al., 2025; García et al., 2024; Yan et al., 2024). The untimely termination of intrauterine growth and the exposure of the immature central nervous system to the external world involve risks for the child's later development, potentially affecting cognitive (Arhan et al., 2017; Behboodi et al., 2025; Doyle et al., 2015; O'Meagher et al., 2017; Potharst et al., 2012), language (Breeman et al., 2015; Jurišová et al., 2025; Reis et al., 2012), and motor skills (Behrman & Butler, 2007; Jurišová et al., 2025).

The implications of prematurity for mental development have generated a wealth of research since the mid-20th century (Behrman & Butler, 2007). For decades the developmental impairments related to preterm birth had been conceptualized as the consequences of purely medical hazards (Aylward et al., 1989; Hadders-Algra, 2005). However, as the first follow-up studies reached the children's higher ages it became clear that even the most complex medical risk scales could reliably predict the developmental outcomes merely for the first years of life (Hadders-Algra, 2005). The failures of prediction from medical variables have directed the researchers' interest toward the potential role of the caretaking environment. More recent studies similarly highlight that neurodevelopmental outcomes are influenced by a wide range of medical and psychosocial risk factors (Axford et al., 2025). In addition, children born preterm may be particularly susceptible to environmental quality and caregiving (Jaekel et al., 2015; Lionetti et al., 2025).

A preterm delivery is a highly stressful life event for the whole family. The sight of the tiny, fragile infant is shocking, and anxiety over the infant's survival and health (Hendy et al., 2024) as well as feelings of guilt for failing to carry the pregnancy to term (Behrman & Butler, 2007) aggravate the stress. The relationship between mother and infant often begins with weeks or even months of separation if the infant needs to be placed in a Neonatal Intensive Care Unit (NICU). Premature infants may remain different from their full-term counterparts for a long time. They are often less responsive to the developmentally relevant (including social) stimuli but at the same time get easily overstimulated. Their state-regulation is poor, making them difficult to soothe, and their signals are less readable and interpretable (Als & Brazelton, 1981; Bozzette, 2007). For these reasons, mothers may struggle to understand and attune to their infant, a challenge intensified by their own anxiety (Ionio et al., 2024; Shaw et al., 2023). All these inevitably have impacts on the parent-infant interactions and consequently on bonding or attachment¹ which plays a crucial role in the child's later social and emotional growth (Posada & Kaloustian, 2010; Shaw et al., 2023). Therefore, fostering the development of a harmonious relationship between premature infants and their primary caregivers is vital for the child's development.

How parents cope with the atypical beginning is highly variable. The parental behaviour is inevitably moderated by the untimely delivery and the atypical infant, but it may either be adaptive or become a source of further risks (Sameroff, 2009). Research findings on the attachment between premature infants and their mothers are inconsistent (Shaw et al., 2023). The review by Korja et al. (2012) suggests no greater likelihood of insecure attachment; however, Wolke et al. (2014) found higher occurrence of disorganized attachment in high-risk preterm infants, and an earlier review (Bozzette, 2007) concluded that perturbed conditions for mothers to interact with their preterm infants were typical. Maternal behaviour during the first six months proved to be more influential on attachment quality than the infant's characteristics (Korja et al., 2012), which is particularly notable in light of the elevated risk in preterm mothers for depression and anxiety (Brandon et al., 2011; Pace

¹ Both the term "bonding" and that of "attachment" refer to the early relationship between the parents and their infants. The two concepts in developmental science originate from different theoretical and methodological backgrounds. Central to both theories is the reciprocity of parent-infant relationship, yet the two terms are not synonyms as they cover distinct processes of the early relationship formation. The concept of bonding applies to the very early stage (directly post-birth and the subsequent weeks), and focuses on the caregiver's emotions, cognitions, behaviours, and the physical proximity of the dyad (Klaus & Kennel, 1976). Attachment theory interprets the relationship as a result of gradual building-up processes and internal representations over an extended period of the child's development and emphasizes the role of the caregiver's sensitivity (Bowlby, 1969; Ainsworth, 1979). Despite all this, confusion and inconsistencies frequently occur even in the scientific literature (Ettenberger et al., 2021; Kim et al., 2020).

et al., 2016; Treyvaud, 2014) as well as symptoms of posttraumatic stress (Gondwe & Holditch-Davis, 2015). The coping resources of parents depend on a host of background variables, including the availability of social and psycho-educational support (Halford & Petch, 2010). Participation in parenting intervention may well be one of the factors explaining the diversity in parental adjustment to the preterm infants' specific needs, thence the variety in the attachment quality in preterm infants.

Publications on intervention efforts to help parents of preterm infants have been available since the 1980s. Evans et al. (2014) reviewed controlled studies published until 2013 on parenting intervention aiming to improve the quality of the relationship between mothers and preterm infants. Out of 536 studies 17 met their rather strict selection criteria and of those, only eight demonstrated the effectiveness of the intervention. Recent reviews, however, suggest that attachment- and relationship-based interventions in NICU settings significantly improve mother-preterm infant interactions (Kim & Kim, 2022; Siva et al., 2025). All of these interventions share the facilitation of the parents' involved interactions with their infants as their core component while varying in terms of complexity, the personnel in contact with the parents, the parents' role in the sessions, the intensity, and the duration. In the Family-Centered Care Interventions (Evans et al., 2014; Kim & Kim, 2022; Siva et al., 2025), parents are encouraged to participate in the care of the infant while in the NICU and provided with education on the prematurity-related specific tasks. In the Video Interaction Guidance Interventions (Kim & Kim, 2022; Siva et al., 2025) parents watch a video on newborn interaction and discuss it with professionals, or the parents' interaction with their own infant is videotaped and subsequently discussed. The Kangaroo Mother Care Interventions (Evans et al., 2014; Kim & Kim, 2022; Siva et al., 2025) which may also be included in the more complex programs are based on the beneficial effects of skin-to-skin contact and ensure a quiet intimate dyadic situation with the high-risk infant with whom more active interactions are not yet feasible. The Infant Massage and Multisensory Interventions (Siva et al., 2025) encourage and teach parents how to use proper and sensitive stimulation.

Objectives

The risks threatening the parental role of the mothers and fathers of preterm infants on the one hand and the preterm infants' increased need of sensitive parenting on the other hand underscore the importance of early support for the parent-premature infant dyads. In recent years a rapid growth of the number and the variety of interventions offered to the families with preterm infants could be witnessed. The objective of this systematic review was to explore recent interventions aimed at enhancing parent-preterm infant bonding, attachment, and interaction.

The recent reviews of the published interventions are selective in that Kim and Kim (2022) included only studies using randomized controlled trials (RCT), while Siva et al. (2025) focused exclusively on the mother-infant relationship, and both of them covered solely NICU-based interventions. Our intention was to gain a wide overview of the present state of the art in the field, including not only NICU-based studies but also those conducted in the home of the families or by phone and the interventions involving fathers. We paid specific attention to the methodological challenges of the intervention effect research, such as the characteristics of samples, timing of assessments, measures of outcome, mediating, and moderating factors.

Methods

The protocol for this review adhered to the PRISMA Guidelines and Checklist. The review was not pre-registered at PROSPERO.

Eligibility Criteria and Search Strategy

The literature search was conducted between March 1 and March 31, 2024. Peer-reviewed articles published between January 2010 and March 2024 were reviewed, restricted to those published in English. Database searches were conducted through Web of Science, EMBASE, Medline, Pubmed, PsycInfo, EBSCO, and Cochrane databases. Only full-text articles with results presented were considered. Inclusion criteria applied to the sample (parent – preterm infant dyads or triads) and the focus of intervention (parent-infant interactions, bonding, or attachment). Search terms, exclusion, and inclusion criteria are presented in [Table 1](#).

Article selection was completed by the research team. The steps of selection were as follows: With the use of the search terms (Table 1) 10,162 publications appeared which were screened for duplicates, and subsequently the inclusion and exclusion criteria were applied. After screening by title 242 articles remained; having examined the abstracts, 41 were picked out, and on the basis of the full texts, 19 studies were selected for final assessment (Figure 1). The 19 articles were published in 17 journals.

Assessment of Risk of Bias

The risk of bias was assessed using the Cochrane Risk of Bias Tools (2019) by the first and second authors (Anett Nagy and Magda Kalmár). Categories included randomization, deviation from intended interventions, missing outcome data, outcome measurement, and selection of reported results. The overall bias assessment was defined as follows: low risk of bias meant that the study was judged to have a low risk of bias in all domains; some concerns were noted if at least one category raised concerns; and high risk of bias was assigned if the study had a high risk in at least one category or concerns in more than one category. Disagreements were resolved by consensus discussion.

Results

Description of the Studies

The characteristics of the 19 selected studies are summarized in Table 2, with the following distribution by country: five (26.3%) from Iran, two (10.5%) from the United States, two (10.5%) from the Netherlands, two (10.5%) from Turkey, and one (5.2%) each from Japan, South Korea, Finland, Norway, Ireland, Hong Kong, and India. One study (5.2%) involved multiple countries: Argentina, Colombia, Israel, Norway, and Poland. The studies were published between 2010 and 2024, with two published in 2013, 2018, 2019, 2022, and 2024, one in 2010, 2011, 2015, 2017, 2020, and 2023, and three in 2021. The average number of clinical centers involved in the studies was 1.67 ($SD = 1.49$, range = 1–7). In terms of research design, 18 studies used experimental design (94.8%), of which 13 studies (68.4%) were randomized controlled trials (RCT), while the remaining one study (5.2%) was quasi-experimental.

Samples

In 16 studies the mother, in one study the father, and in two studies both parents participated. The samples altogether consisted of 1445 premature infants ($M = 80.28$, $SD = 44.57$, range = 30–186) and their parents. The total number of mothers was 1295 (18 studies; $M = 76.18$, $SD = 35.33$, range = 36–150); the total number of fathers was 242 (3 studies; $M = 80.67$, $SD = 62.14$, range = 30–150).

Designs

The typical design (in all studies except for two) was between-group comparison, with intervention groups compared to standard-care groups. Two studies (Chavan et al., 2024; Ghetti et al., 2023) used within-group design with pre- and post-intervention assessments in the target groups. The composition of the samples is shown in Table 2.

The target and the comparison groups were matched for gestational age and birth weight in all studies and in 11 also for parental education (mother: Cho et al., 2013; Jafarzadeh et al., 2019; Kadiroğlu & Güdücü Tüfekci, 2022; Khoramirad et al., 2024; Meijssen et al., 2010; Vahdati et al., 2017; father: Ravn et al., 2011; both parents: Heo & Oh, 2019; Hoffenkamp et al., 2015; Shoghi et al., 2018; Yu et al., 2022).

Table 1. Search Terms, Inclusion and Exclusion Criteria

Search terms, keywords	preterm OR prematur* OR „early delivery“ OR „early onset of labour“ AND mother OR father OR parent* OR family AND intervention OR attachment OR bond OR care OR interaction* OR parenting OR education* OR support* OR relation* OR NICU
Inclusion criteria	English language articles published between January 2010 and March 2024 Type of the article: full text, peer reviewed article Qualitative or quantitative methods Results presented Participants: parent-infant dyads Infants were born preterm with no congenital abnormalities Parents had no diagnosed mental disorders Intervention focused on parent-infant interactions, bonding or attachment
Exclusion criteria	Type of the article: review, pilot study or theoretical articles Duplicate articles Focus on medication, effect of COVID Interventions not aiming to enhance the interaction, bonding or attachment of parents-preterm infants The lack of the parents' competence in the language of intervention High Risk of Bias according to Cochrane Risk of Bias Tools

Figure 1. Flow Diagram for Study Selection (PRISMA)

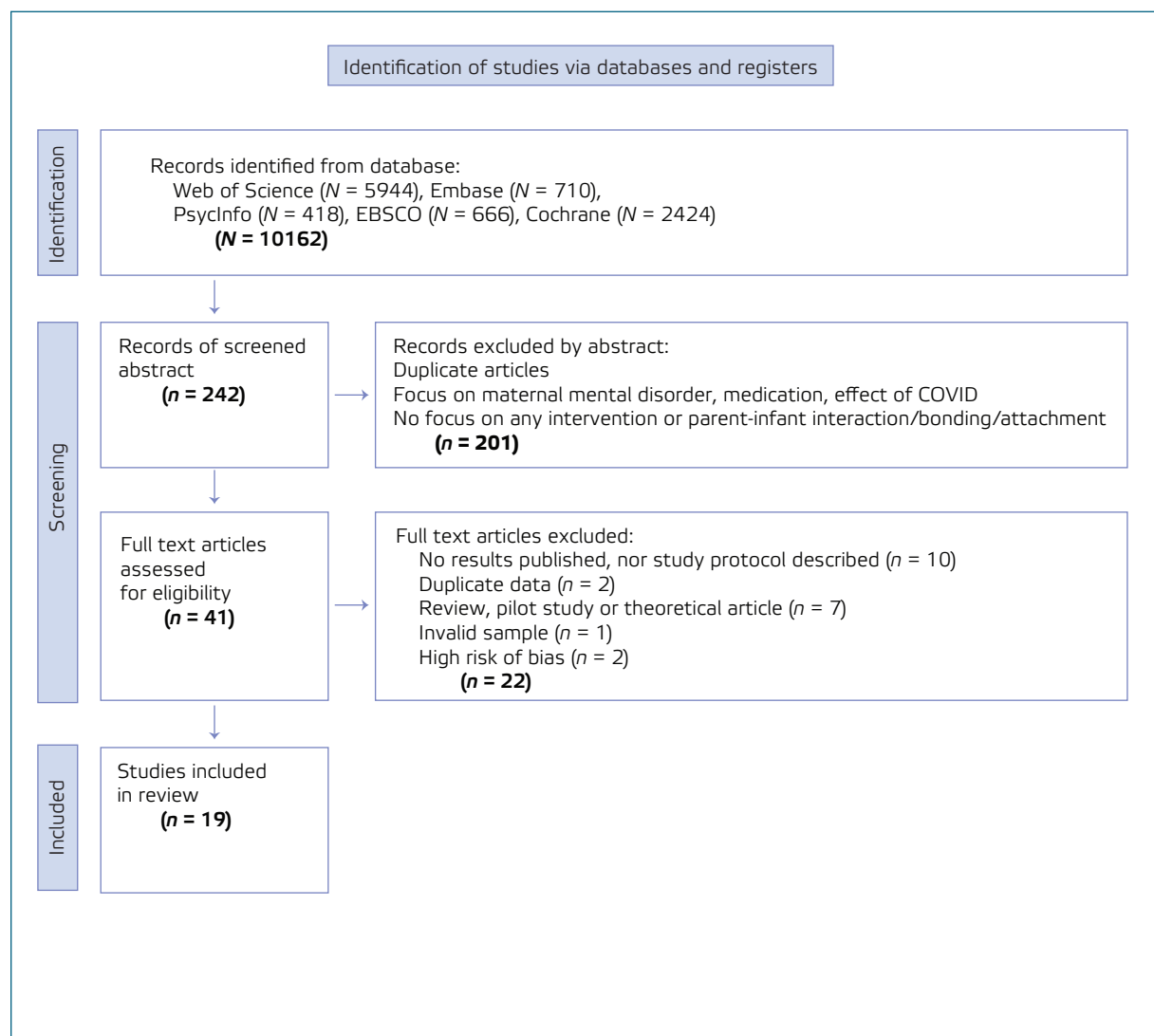


Table 2. Evaluation of Studies (N = 19)

First Author(s) (Year)	Study design	Risk of bias	Country of study	C (M)	Inf (M)	Parents (M)	Groups		Gestational Age (weeks) Mean (SD) or range		Birth Weight (grams) Mean (SD)	Follow-up: duration / timing (corrected ages)	
							IG	CG	IG	CG			
Beebe et al., 2018	RCT	low	United States	1	71	71 M	39	32	26-34	26-34	IG	CG	4 m
Chavan et al., 2024	exp	low	India	1	30	30 F	30	-	32.13 (2.36)	-	1270.27 (162.76)	-	3 m
Cho et al., 2013	quasi-exp	some concerns	Japan	3	43	43 M	23	20	29.51 (3.97)	30.76 (3.74)	1377.57 (624.6)	1451.5 (644.06)	12 m
Ghetti et al., 2023	RCT	low	Argentina, Colombia, Israel, Norway, Poland	186	186 M	186 M	103	102	30.2 (2.6)	30.69 (2.7)	1391.3 (420.9)	1423.45 (446.15)	12 m
Heo & Oh, 2019	RCT	low	South Korea	1	62	62 M-F	30	32	28.42 (2.67)	29.75 (3.19)	1139.6 (424.32)	1228.13 (441.79)	2 w
Hoffenkamp et al., 2015	RCT	low	The Netherlands	7	150	150 M-F	75	75	32 (3.1)	32 (3.1)	1828 (735)	1770 (663)	1 d - 6 d - 1 m - 6 m (post-partum)
Jafarzadeh et al., 2019	exp	some concerns	Iran	1	50	50 M	25	25	34.33 (1.11)	34.34 (1.05)	2178.6 (104.52)	2192.61 (363.82)	1 w after discharge
Kadiroğlu & Gülüçü Tüfekci, 2022	exp	some concerns	Turkey	1	63	63 M	30	33	34-36	34-36			1 m
Khoramirad et al., 2024	exp	low	Iran	2	123	123 M	34+39	50	IG1: 30.7 (2.6); IG2: 31.5 (2.1)	31 (2.7)	IG1: Mean rank = 34(51); IG2: Mean rank = 57.5(48)	Mean rank = 62.4(33)	min 4, max 10 d
Kostilainen et al., 2020	mixed-method; RCT	low	Finland	3	36	36 M	24	12	30.2 (24.7-33.3)	30 (27.1-33.3)	1522 (900-2800)	1314 (925-2000)	40 gw
Kurt et al., 2020	quasi-exp	some concerns	Turkey	1	60	60 M	30	30	32.97 (2.47)	32.77 (2.65)	1985.83 (501.14)	2028.83 (542.89)	5 d

(continued on the next page)

Table 2. (continued)

First Author(s) (year)	Study design	Risk of bias	Country of study	C (N)	Inf (N)	Parents (N)	Groups		Gestational Age (weeks) Mean (SD) or range		Birth Weight (grams) Mean (SD)		Follow-up: duration / timing (corrected ages)
							IG	CG	IG	CG	IG	CG	
Meijssen et al., 2010	RCT	low	The Netherlands	1	112	112 M	57	55	29.5 (2.1)	30.1 (1.9)	1246 (356)	1328 (335)	6 m
Ravn et al., 2011	RCT	low	Norway	1	93	93 M	46	47	33.3 (1.4)	33.2 (1.3)	1935 (361)	1919 (448)	12 m
Seiedi-Biarag et al., 2021	RCT	low	Iran	1	66	66 M	34	32	31.53 (1.76)	31.29 (1.97)			8 w
Shoghi et al., 2018	RCT	some concerns	Iran	1	40	40 M	20	20	34-37	34-37	2500 >	2500 >	5 d
Twohig et al., 2021	RCT	low	Ireland	1	72	72 M	37	35	28.4 (2.5)	28.3 (2.4)	1179 (475)	1176 (402)	9 m (6 and 12 m developmental assessment)
Vahdati et al., 2017	RCT	some concerns	Iran	1	64	64 M	32	32	32.74 (1.81)	33.04 (1.98)	1673.90 (503.94)	1775 (567.08)	mean 5.9 (SD 4.21) d
White-Traut et al., 2013	RCT	low	United States	2	142	142 M	66	76	32.2 (1.7)	32.5 (1.6)	1816 (374)	1865 (435)	6 w
Yu et al., 2022	RCT	low	Hong Kong	1	48	48 M ¹	27	21	32.2 (2.7)	31.9 (2.8)	1700 (600)	1600 (500)	3 w - 3 m - 6 m (9 m -12 m developmental assessment)

Notes: IG = intervention group; CG = control group; RCT = randomized controlled trial; Exp = experimental; C = centers; Inf = Infants; M = mothers; F = fathers; M:F = mothers and fathers; CA = corrected age; gw = gestational week; d = day; w = week; m = month; Empty cells indicate that no data were reported.

Interventions

The direct targets of interventions were promoting parent-preterm dyad attachment, enhancing psychological and social relationships, improving parental sensitivity, fostering the newborn's self-regulation, and reducing socio-emotional disorders. Indirectly, the interventions aimed to reduce maternal stress, anxiety, and depression, while promoting maternal competence and mental health. The interventions are listed in [Table 3](#).

Most of the interventions involved the parent - newborn dyad, with both the parent and infant actively participating, such as in kangaroo care or infant massage (13 studies, 68.4%). We regarded parent-focused interventions those in which the parent received education or psychological support while the preterm infant was passively present, such as discussing videotaped sessions or involving the parents in the care of the infant in the hospital. In three studies (15.8%) the target was the mother, in two (10.5%) both parents, while in one (5.3%) the father.

The professionals implementing the interventions, in addition to the authors, included nurses, psychologists, psychologist assistants, paediatric physical therapists, and in one case a music therapist. The interventions can be sorted into seven categories:

1. Comprehensive programs of parental education (including video recordings), aiming at enhancing the engagement in care, promoting breastfeeding, skin-to-skin contact, and other bonding activities such as singing (eight studies);
2. Skin-to-skin interventions: kangaroo care (two studies) or infant massage (one study);
3. Music therapy (one study), singing or listening to music during kangaroo care (one study each);
4. Mindfulness-based neurodevelopmental care with the mother (one study);
5. Discussing video recordings of parent-child interaction (one study);
6. Hospital-based group or individual counselling (one study each);
7. Providing information via a phone app (one study).

The interventions were predominantly conducted in hospital settings (18 studies, 94.7%), with six studies continuing at home via home visits or ongoing therapy (Cho et al., 2013; Ghetti et al., 2023; Jafarzadeh et al., 2019; Kadiroğlu & Gülüçü Tüfekci, 2022; Ravn et al., 2011; White-Traut et al., 2013), and one study (5.3%) was exclusively home-based (Meijssen et al., 2010).

Assessment of Outcomes

The majority of the studies followed up the subjects for periods ranging from a few days to a maximum of the child's corrected age of 12 months. In two studies (Jafarzadeh et al., 2019; Vahdati et al., 2017) post-tests were administered only immediately after completion of the intervention (see [Table 2](#) for details).

The instruments used in the studies are summarized in [Table 3](#). The studies employed a range of assessment techniques: Eight studies (42.1%) video-recorded mother-preterm dyad activities, though the coding used for analysis differed across studies. Trained professionals conducted the coding in all cases. In addition to behaviour coding, questionnaires were used to assess mother/father-infant bonding or attachment, maternal mental health, maternal competence, and infant behaviour. With respect to attachment outcomes, some studies focused on bonding, while others on attachment, typically reflecting the measures employed. However, conceptual distinctions were rarely discussed; in the papers by Kurt et al. (2020) and Shoghi et al. (2018), the two terms were even used interchangeably. In one study mothers were instructed to keep a diary, which was later analysed.

Statistical Analysis

The data analysis in the reviewed studies included t-test, ANOVA, ANCOVA, repeated measure analysis, linear regression, and mixed-effect model. Evaluation of the results was mainly based on the p values; effect sizes were reported only in five studies. The Cohen d 's were typically moderate (0.5; Kurt et al., 2020; Twohig et al., 2021; Yu et al., 2022). The d values were higher (0.5–0.8) in Cho et al. (2013), and lower (0.3–0.5) in Hoffenkamp et al. (2015).

Table 3. Studies According to Interventions, Outcomes and Effectiveness (N = 19)

Intervention	Data collection tools	Outcome variable(s)	Intervention effective	Preterm sample	First author(s) (year)
Family Nurture Intervention (FNI) Involving the mother in the care of the infant in the NICU	Demographic data Observation (video recording, coded)	Interaction	Yes	extremely preterms; very preterms; moderate to late preterms	Beebe et al., 2018
Kangaroo Father Care (KFC)	Postpartum Bonding Questionnaire (PBQ)	Bonding	Yes	very preterms; moderate to late preterms	Chavan et al., 2024
Japanese Infant Mental Health Program (JIMHP) Involving the mother in the care of the infant in the hospital	Demographic data Center of Epidemiologic Studies Depression Scale (CES-D) Nursing Child Assessment Feeding Scale (NCAFS) Social Support Scale (SSS) Parenting Stress Index (JPSI) Kyoto Scale of Psychological Development (KSPD)	Interaction Maternal mental health	Yes Yes	extremely preterms; very preterms; moderate to late preterms	Cho et al., 2013
Music therapy (MT) Individualized MT with a high level of parental involvement, provided in the NICU and at home during the first three months following discharge	Postpartum Bonding Questionnaire (PBQ) Edinburgh Postnatal Depression Scale (EPDS) Generalized Anxiety Disorder tool (GAD-7) Parental Stress Scale (PSS) Ages and Stages Questionnaire (ASQ)	Bonding Maternal mental health	No No	very preterms; moderate to late preterms	Ghetti et al., 2023
Parent Participation Improvement Program Involving the parents in the care of the infant in the hospital	Demographic data Pediatric Nurse-Parent Partnership Scale (PNPPS) Maternal Attachment Inventory (MAI)	Attachment	Yes	extremely preterms; very preterms; moderate to late preterms	Heo & Oh, 2019
Hospital-based video interaction guidance (HbVIG)	Demographic data Observation of parent-infant interaction (video recording, coded) Postpartum Bonding Questionnaire (PBQ) My Baby and I Questionnaire (MBI) Yale Inventory of Parental Thoughts and Actions (YIPTA) Parental Stress Scale: Neonatal Intensive Care Unit (PSS:NICU) Edinburgh Postnatal Depression Scale (EPDS) State-Trait Anxiety Inventory (STAI-State) State-Trait Anger Expression Inventory (STAXI2-State) Traumatic Event Scale (TES)	Interaction Bonding Maternal mental health	Yes Yes No	very preterms; moderate to late preterms	Hoffenkamp et al., 2015
Telenursing Consultation service by phone	Demographic data Parent Stressor Scale: Neonatal Intensive Care Unit (PSS-NICU) Maternal Postnatal Attachment (MPA)	Attachment Maternal mental health	Yes Yes	moderate to late preterms	Jafarzadeh et al., 2019
Infant Care Training (ICT) Involving the mother in the care of the infant in the hospital	Demographic data Maternal Bonding Scale (MBS) Perceived Maternal Parenting Self-Efficacy Scale (PMP-SE) Pharis Self-Confidence Scale (PSCS)	Bonding	Yes	moderate to late preterms	Kadiroğlu & Güdücü Tüfekci, 2022

(continued on the next page)

Table 3. (continued)

Intervention	Data collection tools	Outcome variable(s)	Intervention effective	Preterm sample	First author(s) (year)
Mindfulness based neurodevelopmental care	Demographic data Parental Stressor Scale: NICU (PSS: NICU) Mother-to-Infant Bonding Scale (MIBS)	Bonding Maternal mental health	Yes Yes	very preterms; moderate to late preterms	Khoramirad et al., 2024
Singing during Kangaroo Care	Demographic data State-Trait Anxiety Inventory (STAI) Parent diary Singing Experience Questionnaire (SEQ)	Interaction Maternal mental health	Yes Yes	extremely preterms; very preterms; moderate to late preterms	Kostilainen et al., 2020
Kangaroo Care	Demographic data Maternal Attachment Scale (MAS)	Attachment	Yes	very preterms; moderate to late preterms	Kurt et al., 2020
Infant Behavioral Assessment and Intervention Program (IBAIP) Education of parents	Demographic data Still-face procedure – video recording Infant and Caregiver Engagement Phases (ICEP) Maternal Sensitivity and Responsivity Scales (MSRS)	Interaction	Yes	very preterms and/or very low birth weight	Meijssen et al., 2010
The Mother Infant Transaction Program (MITP) Involving the mother in the care of the infant in the hospital Education of parents	Demographic data Observation of mother-infant free play and semistructured play (video recording, coded) Qualitative Ratings for Parent-Child Interaction	Interaction	Yes	very preterms; moderate to late preterms	Ravn et al., 2011
Supportive counselling on mental health in parent groups	Demographic data General Health Questionnaire (GHQ) Postpartum Bonding Questionnaire (PBQ)	Bonding	Yes	very preterms	Seiedi-Biarag et al., 2021
Infant massage by mothers	Demographic data Maternal Attachment Behaviors Scale (MABS)	Attachment	Yes	moderate-to late preterms	Shoghi et al., 2018
Preterm infant-parent programme for attachment (PIPPA study)	Demographic data Observation (video recording, coded) Child Adult Relationship Evaluation (CARE)-Index The Ages and Stages Questionnaire-Social-Emotional Development version (ASQ-SE)	Interaction	Yes	extremely preterms; very preterms	Twohig et al., 2021
Music during Kangaroo Care	Demographic data Video recording Avant's Maternal Attachment Assessment Scale (AMAAS)	Attachment	Yes	very preterms; moderate to late preterms	Vahdati et al., 2017
Hospital to Home: Optimizing the Infant's Environment (H-HOPE) Infant-directed: stimulation Mother-directed: education and social support	Demographic data Observation (video recording, coded) Nursing Child Assessment Satellite Training – Feeding Scale (NCAST-Feeding) Dyadic Mutuality Code (DMC)	Interaction	Yes	very preterms; moderate to late preterms	White-Traut et al., 2013
Mother-Infant Transaction Program (MITP) – modified version Individual coaching	Demographic data Observation (video recording, coded) Parenting Stress Index-Short Form (PSI-SF) Edinburgh Postnatal Depression Scale (EPDS) Infant Behavior Questionnaire (IBQ) Merrill-Palmer-Revised Scales of Development (MPR)	Interaction Maternal mental health	Yes Yes	very preterms; moderate to late preterms	Yu et al., 2022

Synthesis of the Outcomes

Parent-Infant Bonding and Attachment

As mentioned earlier, the studies employed a wide range of self-report questionnaires and rating scales to assess bonding or attachment (Table 3), covering parental attitudes, feelings, and behaviours. None of the studies measured attachment from the infant's perspective.

All but one of the 11 studies which assessed parental bonding or attachment reported positive impact of the intervention in comparing the target and the control groups (Heo & Oh, 2019; Hoffenkamp et al., 2015; Jafarzadeh et al., 2019; Kadiroğlu & Güdücü Tüfekci, 2022; Khoramirad et al., 2024; Kurt et al., 2020; Seiiedi-Biarag et al., 2021; Shoghi et al., 2018; Vahdati et al., 2017) or between the pre- and the post-intervention results (Chavan et al., 2024). The only exception was the music therapy intervention (Ghetti et al., 2023) which had no effect on bonding. Kadiroğlu & Güdücü Tüfekci (2022), who measured both within-group and between-group changes, found significant improvement of bonding between the pretest and the posttest in both groups; however, the changes were more marked in the intervention group.

The two studies in which both mothers and fathers participated led to interesting results in that while the intervention had beneficial effects on bonding (Hoffenkamp et al., 2015) and attachment (Heo and Oh, 2019) in both parents, the improvement of fathers was particularly pronounced.

Parent-Infant Interaction

In all of the nine studies in which mother-infant interactions were observed, the interactions became more favourable following the intervention. The mothers became more sensitive (Beebe et al., 2018; Meijssen et al., 2010; Yu et al., 2022) and more involved (Cho et al., 2013). They were more likely to maintain positive contact using touch and vocalizations (Beebe et al., 2018), found it easier to connect with the infant (Kostilainen et al., 2020), and felt more responsive (White-Traut et al., 2013). Meijssen et al. (2010) reported that mothers in the intervention group showed more positive behaviours and were less controlling than the control mothers. In the study of Hoffenkamp et al. (2015), which covered both maternal and paternal interactions, the intervention led to an increase in sensitivity in both parents and a decrement in withdrawal behaviour in the mothers.

Mental Health and Maternal Competence

The studies which included maternal mental health measures reported promising results: Depression (Cho et al., 2013; Hoffenkamp et al., 2015; Yu et al., 2022), anxiety (Hoffenkamp et al., 2015; Kostilainen et al., 2020), and stress (Cho et al., 2013; Hoffenkamp et al., 2015; Jafarzadeh et al., 2019; Khoramirad et al., 2024; Yu et al., 2022) decreased in the mothers following the intervention. Kadiroğlu & Güdücü Tüfekci (2022), who measured maternal self-confidence, found positive changes between the pretest and the posttest in both groups; however, the improvement was more pronounced in the intervention mothers.

Discussion

Our systematic review aimed to explore intervention techniques aiming to facilitate high-quality attachment between parents and premature infants, as well as to promote harmonious interactions during the early postnatal period. 19 studies published between 2010 and 2024 from a range of countries, including the USA, Argentina, Colombia, Israel, Turkey, Iran, India, Japan, Hong Kong, South Korea, and several European countries (the Netherlands, Finland, Norway, Ireland, and Poland) were processed.

Statistically significant results of all but one (Ghetti et al., 2023) of the reviewed studies indicated that the interventions were successful in improving the quality of interactions and fostering the development of secure attachment. Various types of intervention were represented in the studies; with one exception all were based on the parent-infant dyadic context. Eight studies implemented comprehensive programs of parental education, comprising parent-infant interaction in various ways: involving the parents in the infant care in the NICU (Beebe et al., 2018; Cho et al., 2013; Heo & Oh, 2019; Ravn et al., 2011), after-discharge individual developmental care and assessment sessions (Meijssen et al., 2010), observing and discussing mother-infant interactions (Twhig et al., 2021; Yu et al., 2022), and multiple-modality infant stimulation (White-Traut et al.,

2013). Further interventions included parental education in less complex forms: video interaction guidance (Hoffenkamp et al., 2015), infant care training (Kadiroğlu & Güdücü Tüfekci, 2022), and „telenursing” by phone app (Jafarzadeh et al., 2019). Khoramirad et al. (2024) provided mindfulness-based neurodevelopmental care; Shoghi et al. (2018) trained the parents to use infant massage. Two studies implemented Kangaroo Care. The results of Kurt et al. (2020) are somewhat questionable since the potential influence of maternal education was not controlled for, although it was higher in the Kangaroo group and also had a significant effect on the outcome measure. The favourable findings of Chavan et al. (2024) are notable because the subjects were fathers, even though this study had a between-subject design with no control group. In two studies the basic condition for both the target and the control groups was Kangaroo Care, and music was used as intervention (singing: Kostilainen et al., 2020; listening: Vahdati et al., 2017). In the single exclusively parent-focused program (Seiiedi-Biarag et al., 2021) the mothers participated in group counselling on mental health.

The reviewed studies reflect a broad range of the methodological challenges of the field of intervention impact research, from the target samples and the duration of follow-up to the handling of the mediator and moderator factors.

As far as the subjects are concerned, these studies shared a common methodological shortcoming of prematurity research in that the subjects represent a wide range of preterm infants, hence hampering the generalization of the findings. The practical implication of this is a compelling need to tailor the interventions to the specific needs of individual premature infants, especially those in severe medical conditions whose needs might be obscured in such mixed samples. Most of the studies were conducted with very to moderately preterm infants. There was a notable lack of interventions specifically targeting extremely premature (i.e., born before 28 weeks of gestation) or extremely low birth weight (ELBW; i.e., birth weight of less than 1000 g) infants, despite this group being at the highest risk for attachment difficulties (Yerlikaya Oral & Karaçetin, 2024). The scarcity of interventions for ELBW infants may be explained by recruiting obstacles due to their critical health status and longer stays in the NICU.

In all but three studies parents were represented only by the mothers. The difficulty of recruiting fathers for such kinds of research is well-known and is unfortunate in light of the increasingly acknowledged importance of the fathers' role (e.g., Bakermans-Kranenburg et al., 2019; Brown et al., 2012; Lamb, 2002) as well as the psychological challenges and feelings of isolation fathers are exposed to when their infant is born prematurely (Baldoni et al., 2021). The findings by Chavan et al. (2024), Heo and Oh (2019), and Hoffenkamp et al. (2015), suggesting that the father's bonding to the infant improved owing to the intervention (even more than the mother's, in the study of Hoffenkamp et al. [2015]), are particularly noteworthy.

A typical methodological difficulty of longitudinal research pertains to the duration of the follow-up, which is also clearly represented in the reviewed studies. Five studies followed the samples until the infants reached 12 months of corrected age (Cho et al., 2013; Ghetti et al., 2023; Ravn et al., 2011; Twohig et al., 2021; Yu et al., 2022), while the rest did so only for a few months or weeks. The lack of the longer-term follow-ups is particularly regrettable in light of the fact that attachment stability may not fully develop before the infant reaches one year of age.

Only two studies included multiple outcome measurement points (Hoffenkamp et al., 2015; Yu et al., 2022), and in both the interventions effects tended to fade (although remained significant) over the 6-month period following the termination of the treatment.

As far as the instruments measuring the outcome are concerned, there was a variety to assess interactions (coded observation and rating scales); however, for attachment it was restricted to the use of parental self-report questionnaires and rating scales. Observational data, particularly such covering the infant's behaviour, would have increased the validity of attachment measurement.

The review cannot answer the question as to which types of interventions might be more valuable than the others. In addition to the heterogeneity of subjects, duration, and assessment tools and measures, the lack of reporting of the effect sizes in the majority of studies prevents the quantitative comparison of the intervention effects. In addition, it is hard to rule out that involving the parents in intervention may be beneficial in itself, regardless of the actual components of the program.

Several interventions were complex, consisting of various components (parental counselling, video recordings, singing, skin-to-skin contact, etc). As far as research is concerned, it becomes a shortcoming since in case the program proves to be successful, it is impossible to identify to what extent each of the components contributed to the results. It is quite likely that decision makers could more easily be persuaded to finance such intervention programs if there were clear-cut evidences of the power of the various activities. On the other hand, a combination of different types of support to the parents of high-risk infants may be natural in the clinical practice, and the use of any techniques for which competent providers are available can be recommended.

The variances in the impact of intervention on the participating parents are considerable. Parental and infant characteristics as well as external circumstances may well influence the action mechanisms. Potential moderator effects

were investigated in several studies; however, significant results were reported only in three. In the study of Hoffenkamp et al. (2015), the subset of mothers who experienced the preterm birth as traumatic benefited more from the intervention both in interactive behaviour and bonding. Ravn et al. (2011) found that being a first-time mother enhanced the effects of the intervention on sensitivity, responsiveness, and dyadic synchrony. Infant variable was detected to have an effect only by Beebe et al. (2018): Gaze interactive contingency improved only in mothers of male infants.

Inclusion of potential mediators (e.g., the infants' medical status, available social support, the setting - hospital vs. home, provision of conditions) and sophisticated multivariate statistical analyses could ensure deeper understanding of what factors the impacts of a particular intervention may have depended on and why it turned out more effective in some dyads than in others.

Strengths and Limitations

Whereas this review provides insights into the interventions which appear to promote bonding and attachment between parents and premature infants, several limitations should be noted.

Although a meta-analysis might have provided an even more informative overview of the studies available in the field, in this case it was not feasible due to the lack of homogeneity of the preterm infant groups in perinatal status (gestational age and medical conditions) as well as the diversity in other aspects of methodology (assessment instruments, intensity and duration of intervention, statistical analysis). The methodological heterogeneity cautions against the generalization of findings.

The studies primarily focused on very to moderate preterm infants. The research interest in the extremely immature or extremely low birth weight (ELBW) infants seems to be rather limited, which is unfortunate since this group is at the highest risk in every respect, including the attachment difficulties. Although it is explained by the much greater proportion of moderate and very preterms, as well as the difficulty of working with the most fragile infants, designing and testing interventions tailored specifically for ELBW infants would be desperately needed, given the increasing survival rates of the latter group owing to the rapid advances in neonatal care.

With respect to the theoretical foundations of the studies, the lack of clear distinction between the concepts „bonding” and „attachment” as the target of intervention (hence in the choice of outcome measures) renders the comparability of studies questionable (Ettenberger et al., 2021) and hampers the interpretation of the results (Kim et al., 2020).

Conclusion, Implications, and Future Directions

Taking into consideration the methodological challenges of the intervention effect research, the results of the reviewed studies mainly suggest that the successes of the programs are noteworthy.

The major message to be inferred from the reported findings is that early intervention may counteract the risks threatening the parent–preterm infant interactions and attachment by enhancing parental sensitivity and reducing parental anxiety, depression, and stress. Most of the interventions focused on maternal-infant bonding, while some also covered paternal involvement, which proved to be particularly efficient. A wide range of techniques were implemented in the intervention programmes from medium-intensity ones such as telenursing or group activities to high-intensity individual counselling and therapy, with all appearing beneficial.

The few studies involving fathers suggest a promising new direction of research. A further recommendation for future research is that in order to understand the variation of outcomes and design interventions to fulfil the specific needs of preterm infants and their families, more attention should be paid to the potential moderator and mediator factors.

Even though the duration is a common challenge of longitudinal studies, researchers should make all efforts to extend the follow-up to reach the age when attachment is stabilized to make it feasible to assess the long-term effects of early interventions.

The implications of these findings for clinical practice are that early intervention targeting the parent–infant interactions and bonding should be included in the routine care provided to families with preterm infants. The intervention, preferably beginning in the Neonatal Intensive Care Units (NICUs), may include kangaroo care, skin-to-skin contact, and parental education, counselling, or therapy. The involvement of both parents, especially the fathers, may strengthen the family unit and promote secure attachment in both the mother-infant and the father-infant relationships. Healthcare professionals should be trained to support parents in bonding with their premature newborns, including providing emotional and psychological support throughout the NICU stay and beyond.

GLOSSARY OF ABBREVIATIONS

- AMAAS** – Avant’s Maternal Attachment Assessment Scale
ASQ – Ages and Stages Questionnaire
ASQ-SE – Ages and Stages Questionnaire-Social–Emotional Development version
BPD – Bronchopulmonary Dysplasia
CA – Corrected Age
CARE – Child–Adult Relationship Evaluation
CES-D – Center for Epidemiologic Studies-Depression Scale
CG – Control Group
COVID – Coronavirus Disease
DMC – Dyadic Mutuality Code
ELBW – Extremely Low Birth Weight
EPDS – Edinburgh Postnatal Depression Scale
FNI – Family Nurture Intervention
GAD – Generalized Anxiety Disorder (scale)
GHQ – General Health Questionnaire
HOPE – Hospital to Home: Optimizing the Infant’s Environment
IBAIIP – Infant Behavioral Assessment and Intervention Program
IBQ – Infant Behavior Questionnaire
ICEP – Infant and Caregiver Engagement Phases
ICT – Infant Care Training
IG – Intervention Group
IVH – Intraventricular Haemorrhage
JIMHP – Japanese Infant Mental Health Program
JPSI – Japanese Parenting Stress Index
KFC – Kangaroo Father Care
KSPD – Kyoto Scale of Psychological Development
MABS – Maternal Attachment Behaviors Scale
MAI – Maternal Attachment Inventory
MAS – Maternal Attachment Scale
MBI – My Infant and I Questionnaire
MBS – Maternal Bonding Scale
MIBS – Mother-to-Infant Bonding Scale
MITP – Mother–Infant Transaction Program
MPA – Maternal Postnatal Attachment
MPR – Merrill–Palmer–Revised Scales of Development
MSRS – Maternal Sensitivity and Responsivity Scales
MT – Music Therapy
NCAFS – Nursing Child Assessment Feeding Scale
NCASAT – Nursing Child Assessment Satellite Training
NIC – Neonatal Intensive Care (used as short form)
NICU – Neonatal Intensive Care Unit
PBQ – Postpartum Bonding Questionnaire
PIPPA – Preterm Infant–Parent Programme for Attachment
PMP – Perceived Maternal Parenting (e.g., PMP-SE)
PNPPS – Pediatric Nurse–Parent Partnership Scale
PSCS – Pharis Self-Confidence Scale
PSI-FS – Parenting Stress Index-Short Form
PSS – Parental Stress Scale (or NICU version: PSS:NICU)
PVL – Periventricular Leukomalacia
RCT – Randomized Controlled Trial
ROP – Retinopathy of Prematurity

SEQ – Singing Experience Questionnaire
SSS – Social Support Scale
STAI – State–Trait Anxiety Inventory
TES – Traumatic Event Scale
WHO – World Health Organization
YIPTA – Yale Inventory of Parental Thoughts and Actions

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Using the Woolley Motivation Typology to Heal Infidelity With Emotionally Focused Therapy

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Introduction: Infidelity is a common challenge in couple therapy and requires nuanced understandings and interventions tailored to the underlying motivations of the affair.

Areas covered: This paper offers a practical framework for addressing infidelity by integrating Woolley's (2011) motivation-based typology of affairs into the practice of Emotionally Focused Therapy (EFT) and the Attachment Injury Repair Model (AIRM). The typology categorizes infidelity into three broad categories, and seven specific types based on motivations, offering a lens through which couple therapists can focus their approach.

Expert opinion: This article provides both general and specific treatment recommendations for each of the motivational types, which can help clinicians more effectively assist in ending affairs, reducing blaming, healing emotional wounds, creating safe emotional connection, and preventing future infidelity.

Conclusion: This article helps fill these gaps by laying out how the Woolley (2011) motivational typology can be used to guide treatment.

Keywords: affair, infidelity, EFT, motivations, typology, treatment

Introduction

A wealth of research has shown that the quality of romantic relationships and marriage itself offers various health benefits for the partners and can serve as a protective factor against health issues (Robles, 2014; Smith et al., 2011; Troxel et al., 2007; Wang et al., 2020) and the risk of mortality (Robles et al., 2014). Couple satisfaction is associated with lower stress levels, less depression, and is also linked to higher life satisfaction (Randall & Bodenmann, 2017). Infidelity presents a major threat to couple satisfaction and stability and is often confusing and difficult to treat for therapists. Consequently, this article lays out basic guidance for therapists who work with infidelity with a focus on how to use the Woolley (2011) typology on affairs.

Literature

Couples typically agree, either implicitly or explicitly, to limit sexual and romantic activities to within the relationship or additionally agreed upon relationships or people such as in the case of polyamory or open relationships (Davalá & Mims, 2024). Infidelity involves engaging in romantic or sexual activities outside of the agreed upon boundaries (Fife et al., 2007; Rokach & Chan, 2023). The associated secrecy fosters mistrust, and undermines emotional safety, transparency, and mutual respect. This usually leads to profound emotional pain and long-lasting relationship problems or dissolution (Amato & Previti, 2003; Stavrova et al., 2023).

The prevalence of affairs is increasing (Fincham & May, 2017), likely due to several factors including a higher number of premarital sexual partners (Mark et al., 2015), increased access to pornography (Braithwaite et al., 2015), and greater opportunities for extradyadic involvement facilitated by the internet and fewer barriers to such behaviors (Fitzgerald et al., 2022; Glass & Staeheli, 2004; Hertlein & Piercy, 2006). Technology can reduce inhibitions and lower anxiety through perceived anonymity, physical distance, and control over communication and timing, thus encouraging behaviors that might be avoided face-to-face (Gonzales & Hancock, 2011; McKenna & Bargh, 2000). Regardless of the reasons, the incidence of affairs has become increasingly common, leading to a higher likelihood that therapists will encounter couples dealing with the challenges of infidelity in practice (Warach & Josephs, 2019).

Clinicians report that dealing with infidelity is among the most challenging issues in therapy (Girard et al., 2018; Timm & Hertlein, 2020), requiring significant skills in navigating the complex emotions and trust issues that arise. Emotionally Focused Therapy (EFT) for couples has been found to be highly effective in multiple outcome studies and meta-analyses (e.g. Beasley & Ager, 2019; Johnson et al., 1999; Spengler et al., 2024). It has also been found to be effective in enhancing forgiveness and intimacy and reducing burnout in women after their partner's infidelity (Najibzadegan et al., 2024). Additionally, it has been found to be more effective than Cognitive Behavior Therapy in fostering forgiveness and intimacy in women whose spouses engaged in infidelity (Asvadi et al., 2022).

Infidelity usually results in what Johnson et al. (2001) called attachment injuries. Attachment injuries involve a profound betrayal of trust or abandonment by an attachment figure, often at times of high need, which fundamentally undermines foundational trust and security in a relationship. Johnson and her colleagues developed the Attachment Injury Repair Model (AIRM), which is an effective, empirically validated approach used within EFT to heal attachment injuries (Halchuk et al., 2010; Johnson et al., 2001; Makinen & Johnson, 2006). Johnson (2005) proposed using this model with infidelity and laid out the general process of using EFT and the AIRM model with affairs. However, she did not address how to help ensure the infidelity has stopped, preventing it from starting again, and helping people understand why it happened and how it will not happen again. This is a gap in the model as applied to infidelity since understanding the motivations behind infidelity can be critical to ensure it has stopped, prevent it from starting again, and help people understand why it happened and why it will not happen again.

Purpose

In 2011, Woolley proposed seven types of affairs based on motivations. Girard et al. (2018), in a survey of 210 people who had affairs, found that all types were endorsed, and each type was related to insecure attachment styles. However, nothing has been published regarding how the typology can be used in therapy. Consequently, the purpose of this paper is to help fill this gap by discussing how this motivational typology can help treat infidelity using EFT. We begin by reviewing some of the basics of treating affairs and then discuss the seven motivational types of affairs and how they can help guide treatment.

General Treatment Recommendations

In this section, we outline some general recommendations not found in the existing EFT literature. In the following section, we discuss specific treatment suggestions based on the Woolley (2011) motivational categories and typology.

Initial Responses

When an affair is disclosed or discovered, it often results in significant emotional distress for the couple and those in their close circle that learn of the infidelity. It's important to reassure them that understanding and healing are possible (Zhao et al., 2024), and that they need to carefully manage disclosure to friends and family. It is valuable to strongly advise against sharing the affair on social media. If needed, the betrayed partner should seek support from a balanced, confidential source (Spring, 2020).

Avoiding Blame and Shame

People who have been unfaithful often attempt to mitigate their guilt and shame by blaming their primary partner, which exacerbates the emotional impact of their actions (May, 2023). While certain behaviors in a relationship may facilitate or hinder the likelihood of an affair, the responsibility for the affair lies with the individual who made the choice to engage in it (Fife et al., 2013; Shrout & Weigel, 2019). However, it is important to recognize that infidelity is often contrary to the betraying partners own values which can lead to shame. Shame frequently occurs when people make bad choices (Tangney et al., 2007). Shame is a disconnecting emotion that shifts the focus away from the injured partner's pain and toward the individual's sense of being fundamentally flawed. Addressing shame with betraying partners involves framing the actions as destructive while affirming that the individual is not inherently bad. The distress they feel indicates that their actions conflict with their deeper values, suggesting that their core self is aligned with positive moral standards, even though their behavior was bad or destructive.

Has the affair ended?

It is crucial for the therapist to determine if the affair has ended. This can be done by interviewing the betraying partner alone to understand the context of the affair, confirming if it has truly ended. If the affair has ended, the therapist should inquire about how it concluded, how the third party was informed, and whether there is still any communication with the third party. Any ongoing contact should be addressed and terminated, if at all possible, to support the healing process. If it is not immediately possible to end contact, efforts should be made to ensure that contact is limited, fully disclosed, and safe (Spring, 2020).

Disclosure

The full extent of the affair is frequently not disclosed before therapy, since betraying partners often fear their partner's reaction and feel shame about their actions (Drake & Caudill, 2019). However, complete and honest disclosure is generally essential for healing (Fife et al., 2013). Initial disclosure could occur with the therapist alone to help the betraying partner to prepare for a full disclosure in a couple session. The focus of disclosure should be on the healing of the betrayed partner rather than alleviating the betrayer's guilt or shame. To facilitate complete disclosure, it may help the betraying partner to write out the details of the affair(s) and review it in an individual session before verbal disclosure in the couple session. The written record should not be given to the betrayed partner and can usually be destroyed after full disclosure.

During disclosure, it is critical to manage emotional responses by allowing breaks and ensuring the betrayed partner's questions are directed toward healing rather than shaming (Fife et al., 2013). The pace should be set by the needs of the betrayed, not the betrayer. Full disclosure may require extended or multiple sessions to process effectively.

Obsession with Details

Healing for the betrayed partner often involves rewriting the history of their relationship. Focusing solely on details without addressing the attachment meanings and emotions can result in people becoming obsessed with the details (Fife et al., 2007) and can hinder the healing process (Fife et al., 2013). Shifting the focus to the emotional and attachment aspects of the details is essential. This involves connecting them to attachment-related meanings, validating and processing those emotions (Johnson, 2005).

Betrayed partners need to grieve the losses associated with the affair, such as the sense of stability, trust, safety, and feeling loved. Just as during all grieving processes, they need to feel, express, and organize their emotions,

be comforted, and develop new meanings around their losses. They also require breaks from grieving to focus on other activities and emotions. Exercise, socializing, and engaging in hobbies can help provide these necessary breaks (Glass & Staeheli, 2004; Snyder et al., 2008). Strategies to overcome obsessional thinking include turning to a safe person for comfort, shifting focus from thoughts to attachment emotions, writing about their thoughts and related emotions, setting times to focus on the pains of the betrayal and times for healthy distractions, and limiting questions about the infidelity to therapy sessions (Fife et al., 2013, Johnson, 2020).

Treatment Recommendations Based on Motivations

The motivations behind engaging in affairs are usually complex and multifaceted, and are influenced by a variety of psychological, contextual, and relational factors. However, understanding the basic motivations behind an affair is important both for ending ongoing affairs, preventing new affairs, and healing the injuries of affairs (Baucom et al., 2009).

Woolley (2011) proposed a typology that eventually included three broad motivational categories for engaging in affairs: relational, escape, and intrapsychic, which he further divided into seven types. Relationally motivated affairs were divided into *protest affairs*, *come and get me affairs*, and *burned-out affairs*. *Escape affairs* were not subdivided. Intrapsychically motivated affairs were divided into *hedge fund affairs*, *power player affairs*, and *compulsive affairs*.

Girard et al. (2018) found that all seven types were endorsed by people who had engaged in affairs, helping to validate the typology. They also found that the types were related to attachment styles, which is discussed under each type of affair. However, Girard et al. (2018) did not explore the details of how the typology can guide therapists, which is the purpose of this article.

Guidance for Healing Each Category and Type of Affair

Each of the recommendations below should be used within the framework of Emotionally Focused Couple Therapy (Johnson, 2020) and the attachment injury repair model (Johnson et al., 2001; Makinen & Johnson, 2006). The essence of the AIRM model involves several processes including validating the intense emotions of the injury, organizing and assembling them, and tying them to the attachment bond. This also means helping the unfaithful partner see their partner's pain and experience it as a reflection of how important they are, not as a reflection of their badness. It includes ensuring the injured partner experiences the unfaithful partner as understanding the pain and suffering of the injured partner at an emotional level, and as having deep remorse for their suffering. Lastly, it helps the couple reach to each other for comfort and connection to create healing bonding events. Throughout the process, the couple must develop a coherent narrative about what led to the injury and what will prevent it from happening again.

Using the Woolley (2011) typology to identify motivating factors early in the AIRM process can help stop affairs, make sense of affairs, and prevent future affairs. However, they typically are not given the labels to avoid stigmatization. Focusing on motivations is important either before or in the early part of the AIRM process. Additionally, most of the following recommendations focus on the person who had the affair, because understanding their motivations is key to stopping affairs, preventing future affairs, and making sense of the affairs. Given that the affair must be stopped before attachment injury repair can be done, seeking to understand the motivations for the affair early is important. Ultimately, both partners need to understand the motivations to help them develop a coherent narrative in the attachment injury repair model.

Healing Relationally Driven Affairs

One of the challenges of healing relationally driven affairs is that in addition to the damage from the affair, serious problems existed in the relationship before the affair. Both partners may have major pre-affair wounds, and both often also have wounds because of the affair (Timm & Hertlein, 2020). Consequently, it is easy for one or both members of the couple to become hopeless that things will change. It is important to watch for hopelessness and address it as it comes up (Johnson, 2008). When the therapist truly believes that a couple can get better, it often instills hope in the couple. It can also be helpful to be clear about healing the pre-affair distress in addition to the distress and problems stemming from the affair betrayal. Additionally, when a therapist explains the process of

healing, it can provide hope for couples. It is also important to recognize that there may be multiple “cycles” – a cycle before the affair and a cycle after the affair (Johnson, 2005, 2020). For example, sometimes partners who typically pursue may withdraw upon learning they have been betrayed. The therapist must work with the cycle that is alive at the time. However, it can be valuable to acknowledge the cycle that existed before the affair since this may have helped lead to the affair, and it may be easy to go back to the old cycle when the initial drama of the affair disclosure settles down.

Although the danger of unfaithful partners blaming faithful partners always exists (Fife et al., 2013), this can be particularly common when affairs are motivated by relationship problems. People who are primarily motivated by factors within the relationship are usually very hurt or upset by relational wounds before the infidelity and consequently may blame their partners or justify the affair based on the relationship, which can result in further damage.

1) *Healing Protest Affairs*. This type of affair is a reactive response to feeling hurt, rejected, or abandoned in the primary relationship. Participants may engage in such affairs as a form of protest or retaliation for the disconnection and hurt they feel in the primary relationship. People who have protest affairs are more likely to be anxiously attached (Girard et al., 2018); consequently, they may be more aware of their needs to connect and may still be motivated to repair and learn to connect in more constructive ways. However, their pain before the affair must be acknowledged and dealt with. Therapists working with these types of affairs need to balance treatment of the infidelity injuries with an acknowledgement and treatment of the injuries before the affair. Initially, the focus should be on managing the intense emotions in the present reactive cycle, to help calm the couple. Once the emotional distress is addressed, it is important to explore and deal with the previous cycle – the relational patterns and unmet attachment needs that contributed to the affair. It is critical that the relationship issues be acknowledged without blaming the betrayed partner (Vossler & Moller, 2014).

Because a protest affair is a destructive reaction to feeling hurt, rejected, or abandoned, it is essential that these individuals learn how to deal with relational problems within the relationship in functional ways. Like with all affairs, they need to learn to send clear signals regarding attachment longings, especially when they are afraid, feel hurt or abandoned. This is the heart and soul of the change process in EFT; consequently, standard EFT interventions and processes are typically very useful (Johnson, 2020).

2) *Healing Come and Get Me Affairs*. The motivation behind this type of an affair is typically to get the primary partner to pay attention to them by creating jealousy through involvement with another person. These types of affairs may not result in full sexual engagement and often occur in a way that the primary partner can learn about the affair. The hope of the unfaithful partner is that by engaging with a third person, their primary partner will get jealous and become more engaged in the relationship.

The person who has this type of affair is usually anxiously attached (Girard et al., 2018) and uses manipulative tactics to try to get their partner to connect. Because the motivation behind such affairs is to secure a stronger, more stable bond with the original partner, the person who engages in these types of affairs typically still wants to repair the relationship. However, they can fall into hopelessness because “even me having an affair didn’t bring my partner back.” A central part of treatment is to work on being able to directly ask for and receive comfort and connection from the primary partner rather than resorting to manipulation (Johnson, 2020). Understanding the betraying partner’s strategy and related emotions can help the couple understand that the infidelity was a destructive attempt to restore connection, which can help the betrayed partner not feel as rejected. Focusing on the desired outcome (safe connection) and understanding healthy and unhealthy ways of gaining that outcome is key.

3) *Healing Burned-out Affairs*. People who have burned-out affairs typically have lost hope that the relationship will work. They are often either ambivalent about ending the relationship or they would like to end it but have a hard time doing so directly. Consequently, they engage in an affair not only to seek comfort and validation but also to experiment with a new relationship to help them leave the old relationship. In treating this type of affair, one of the biggest challenges is getting the person who had the affair to commit to staying in the relationship and fully engaging in therapy. The therapist needs to address the pain of the burned-out partner that contributed to the unfaithful behavior, as well as the pain of the betrayed partner. Validating the betraying partner’s pain that led them to infidelity and acknowledging their effort in engaging in therapy to improve the relationship can be essential. The therapist should help the couple understand the negative cycle that led to the burn-out and how it can change to help foster hope for the relationship’s future (Johnson, 2020). It is important to identify hopelessness as a disconnecting emotion, work to understand what led to the hopelessness, lay out how EFT can bring about fundamental changes, and help them realistically come to believe that real change is possible through hard work and effort.

Healing Romantic Escape Affairs

When life pressures build up and a person does not turn to their partner for comfort and support, it can lead to escaping into a romantic affair (Pittman, 1990; Weiser et al., 2022). Although most affairs involve some type of escape, for this type of affair, escape is a primary motivation for the affair. Pittman (1990) noted that the excitement of secrecy and romance provides a powerful distraction from the stresses of life. Consequently, these affairs are often ongoing and involve the power of romance (Weiser et al., 2022).

Romantic Escape affairs typically involve both distress and relational distance. The distress is not necessarily related to the relationship, but rather to problems at work, financial problems, depression etc. Rather than turning to their primary partner for comfort, they go outside the relationship and escape to a world of romance, danger, and excitement. These types of affairs can sometimes go on for many years and can involve setting up a life with each partner. When things get stressful in one relationship, they escape to the other relationship and may go back and forth for years.

One of the biggest challenges with escape affairs can be getting them ended. The power and excitement of secrecy and lies must be stopped. Pittman (1990) advocated getting all three together in a session to end the power of secrecy. This should only be done by experienced therapists. Even without getting the three people together in a session, ending the secrecy and lies helps end the affair and should be a focus of therapy.

It is critical to help unfaithful partners learn to be aware of their emotional needs and deal with distress honestly and openly in healthy ways (Johnson, 2020). As they gain awareness of their emotions and learn to talk about them, they will be in a better position to take healthy steps to gain comfort. It is essential that they eventually learn to turn to their primary partner for comfort and connection rather than trying to escape distress. This will usually not work at first since the betrayed partner is wounded and usually very upset. However, when the betrayed partner's wounds have been processed, it can help them to understand that the partner's infidelity was a destructive way of dealing with stress. This can help the affair feel less personal and can also help betrayed partners see how important it is for the unfaithful partner to turn to them for comfort, as well as engaging in other healthy ways to deal with distress.

Healing Intrapsychically Driven Affairs

Most intrapsychic issues are rooted in past disconnections and traumas. Consequently, doing a careful history of and working to heal past traumas is essential. Individual and group therapy are often an important addition to couple work. However, it is important to remember that because the wounds arose in previous attachment relationships, having corrective emotional experiences with a current attachment figure is important to bring about deep and lasting healing. Creating enough safety with betrayed partners takes time and typically occurs later in the AIRM process.

1) *Healing Hedge Fund Affairs.* People who are hedging their bets by engaging in an affair typically believe others will not stay long term. They tend to have an anxious attachment style (Girard et al., 2018) and engage in affairs as a preventative safeguard against what they believe will be inevitable abandonment, maintaining a stance that relationships are destined to fail. It is common for them to have had multiple relationships that ended when they became involved with a new partner.

Helping them see their own pattern, recognize and process their attachment fears, and recognize and experientially correct their underlying working models around people not being there and their own unworthiness is important. This should be done not only through identifying their internal working models of attachment, but also through creating corrective emotional experiences with an engaged partner (Johnson, 2020). They need to experience repairing the couple relationship and turning to their partner for comfort with their attachment related fears. This can be powerful since once they see the damage of the affair, it can further activate the attachment fears that the other will not stay and activate the strategy to seek a new partner. When the attachment fears are activated and they turn to their present partner for comfort rather than to a third person, it can result in corrective emotional experiences that change the underlying working models of attachment (Johnson, 2020).

2) *Healing Power Player Affairs.* People who engage in these types of affairs typically view romantic relationships as fundamentally unsafe, and they seek to gain a sense of security through seeking power, which they feel through having affairs. Love is often disconnected from sex for these people. They may have characteristics associated with the "Dark Triad" – narcissism, psychopathy, and Machiavellianism (Algelt et al., 2022) which can lead to seeking power professionally and in other areas. Power player affairs often involve short, intense sexual encounters,

and may stem from deep gender-related fears and wounds (Pittman, 1990). Heterosexual men may see bedding women as a way of gaining reassurance that they are men. They often turn to affairs when they are stressed or feeling insecure. Heterosexual women may see these types of affairs as a way of gaining power over men while avoiding vulnerability (Pittman, 1990).

It can be hard to get these types of affairs stopped. It is important that the underlying desire for power and control as a strategy to deal with fears and insecurity be recognized and replaced with more functional strategies. Additionally, gender-related wounds must be processed, and the person needs to learn to find safety in being honest, open, and vulnerable. Treatment needs to involve exploring the attachment related emotions that come up just before they seek out an affair, how they feel during the affair, and then exploring how this may be related to gender associated beliefs, wounds and fears. Pittman (1990) recommends group therapy where the focus is on gender issues. The focus of therapy, regardless of modality, needs to be on reworking underlying working models of attachment through creating corrective emotional experiences with the primary partner. As with other types of affairs, it may take some time before the betrayed partner is ready to provide comfort.

3) *Healing Compulsive Affairs*. Affairs driven by compulsivity are characterized by disconnected sexual encounters such as one-night stands, seeing prostitutes, and compulsive pornography use. The emotional function of the affairs is typically to numb or distract from emotional pain. Often regarded as hypersexual behavior or sexual addiction (Grubbs et al., 2020), these affairs require addressing underlying compulsive/addiction issues along with developing secure attachment with the primary partner. Referring people to sexual addiction specialists and 12 step groups may be helpful (Carnes, 2015). Partners can also benefit from bibliotherapy focused specifically on partners of people with sexual addiction (e.g. Carnes, 2020).

People who engage in compulsive affairs tend to have limited emotional awareness (Reid et al., 2008). Consequently, an important focus of treatment involves helping the unfaithful partner expand their emotional awareness and develop ways of dealing with emotional distress that are not destructive. Asking the question “what percentage of time this week were you aware of your emotions” can be helpful. Keeping an emotional journal to check in and write down emotions, the context, and what they did with their emotions several times a day can also be useful (Johnson, 2022). The goal is to help betraying partners become aware of their process of emotion (Johnson, 2020), what triggers emotions, their bodily response, how they make sense of them, and what they do with them. The more awareness the person has, the more the therapist can help them develop new strategies to handle them such as openly processing them, writing them down, altering their circumstances, and most importantly, turning to their partner for comfort.

Conclusion

This article is the first to address how to use the Woolley’s (2011) affairs typology as part of the attachment injury repair process in Emotionally Focused Couples Therapy (Johnson, 2020). In Girard and colleagues’ (2018) study of 210 people who had affairs, each motivational type was endorsed and tied to attachment insecurity. However, there was no mention of how to use them in treatment. Additionally, motivations for affairs were not addressed in Johnson’s (2005) article on affairs. The present article helps fill these gaps by laying out how the Woolley (2011) motivational typology can be used to guide treatment.

Specifically, this paper laid out the importance of gaining an understanding of motivations for the infidelity and addressing them as a way of stopping infidelity, ensuring it does not happen again, and creating a coherent narrative as part of the AIRM process (Johnson et al., 2001). Motivations rooted in relational problems, romantic escape, and intrapsychic factors are reviewed along with specific recommendations for each subtype, which can guide clinicians in organizing the direction of treatment.

This article does not go into details about the change processes and techniques of EFT or the AIRM, which can be found in existing literature (Johnson, 2020; Makinen & Johnson, 2006). The article does focus on identifying the motivations behind the infidelity as being important early in the AIRM process of healing.

The recommendations in this article come from both clinical experience and research literature. However, there has been no outcome research on the use of this typology and the recommendations in this article. Consequently, using these recommendations must be done with caution. Empirically testing these recommendations is an important recommendation for future research. Additionally, although each of the motivations were endorsed in the Girard et al. (2018) study, there could be other motivating factors. Exploring this possibility could also be a focus for future research.

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Author contribution

Scott R. WOOLLEY: conceptualization, cowriting original draft, writing review and editing.

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Declaration of interest statement

The authors have no conflicts of interest to disclose.

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The Marriage and Family Therapy Practice Research Network: Current Findings and a Call for Collaboration

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Introduction: Mental health problems continue to rise throughout the world while access to care remains problematic due to low affordability and limited therapist availability. With the mental health crisis only getting worse, clinicians and researchers must work together to improve client outcomes. The Marriage and Family Therapy Practice Research Network (MFT-PRN) was established to improve client care and foster collaborative research in systemic therapy. This project balances research rigor and clinical flexibility, making it accessible and beneficial for practitioners, clients, and researchers.

Areas covered: This paper will address the above issues by discussing how the MFT-PRN brings researchers and clinicians together, through routine outcome monitoring (ROM) and providing assessments that track client progress across sessions, allowing clinicians to create better treatment plans. We will also discuss how the MFT-PRN facilitates researcher collaboration by sharing data collected across diverse settings.

Expert opinion: Professional experience and research findings suggest that using the MFT-PRN enhances therapy outcomes, reduces treatment length, and improves couple and family relationships. The MFT-PRN has facilitated research that leads to improved client care in areas such as therapeutic alliance, teletherapy efficacy, and the impact of adverse childhood experiences on anxiety.

Conclusion: By bringing practitioners and researchers together, the MFT-PRN contributes significantly to advancing marriage and family therapy.

Keywords: Marriage and Family Therapy, Practice Research Network, Routine Outcome Monitoring, research

Introduction

The need for efficacious psychotherapy is great, since in 2019, one in eight people experienced mental illness, and global mental illness rates have only increased due to the COVID-19 pandemic (World Health Organization, 2022). An additional indicator of the current crisis is the cost of mental health care around the world. Currently, global mental health costs are estimated at \$381.31 billion and predicted to grow to \$537.91 billion by the year 2030 (Duszynski-Goodman, 2024). Between 2019 and 2021, the percentage of United States adults who had received treatment for mental health in the previous year increased from 19.2% to 21.6% (Terlizzi & Schiller, 2022),

equaling 55.8 million people that received therapy between 2021 and 2022 (Vankar, 2024). In Europe, nearly a quarter of the population reported having at least one mental health illness (Simon et al., 2023; Statista Research Department, 2024). The trend of increasing problems also applies to relationship problems with global trends indicating that divorce rates in South Korea, Norway, and the United Kingdom have tripled since the 1970s (Ortiz-Ospina & Roser, 2020). This trend is not true across all countries, with divorce rates in many countries, including the United States, having declined since then (Wang, 2020). It is unknown whether this decline is due to lower marriage and higher cohabitation rates, or happier, more stable marriages (Ortiz-Ospina & Roser, 2020; Wang, 2020). Further, global statistics indicate that nearly one in three women has been physically and/or sexually abused (United Nations Women, 2023), and between 10–52% of men have experienced intimate partner violence within their marriages (Krug et al., 2002).

With mental health and relationship problems on the rise, many countries also report that mental health care has been harder to access. For example, according to a survey from 2022, 90% of United States adults believe there is a mental health crisis in the United States, yet a third of the respondents experienced barriers to accessing mental health services (Lopes et al., 2022). Accordingly, 80% of the respondents cited cost as the main barrier, and 60% reported stigma as the barrier that kept them from receiving care. Despite the high prevalence of mental illness and the rising demand for services, many people still struggle to find or access care. A study done in Europe found that over 25% of its respondents were not able to access mental health treatment during the COVID-19 pandemic (Statista Research Department, 2024). Another study using data from the 2017–2018 National Health Interview Survey deemed non-affordability as the biggest predictor of inaccessibility (Coombs et al., 2021) and another global study found that stigma, policy, lack of human resources, and poor distribution of services decrease the availability of mental health services (Wainberg et al., 2017).

This brief review demonstrates the increasing prevalence of mental health and relational difficulties. When these increases are viewed in the context of the heightened difficulty of finding good care, it makes a case for therapists to use all available resources to ensure quality care. It also points to the need for increased collaboration to solve the current problems. One way to foster collaboration is by using practice research networks (PRN) and routine outcome monitoring (ROM) to improve client care. A practice research network allows researchers and practitioners to come together to collect larger, more diverse data to better understand change processes. ROM used within a PRN allows therapists to track client progress, create more comprehensive treatment plans, and make corrections to treatment plans throughout the treatment.

Routine Outcome Monitoring (ROM)

ROM is the formalized process of routinely monitoring clients' progress toward outcomes. ROM adds an additional data point and helps clinicians track client data to serve as an addition to the therapist's intuition. While intuition is valuable, additional data is necessary because therapists have been found to be imperfect predictors of client outcomes, indicating that clients are progressing more than they actually are (Johnson et al., 2017). The use of continuous assessments helps clinicians have more accurate knowledge of how their clients are progressing, or not progressing, and aids in identifying barriers to successful treatment. Further, it has been found that continuous assessments help increase the success of couple therapy (Anker et al., 2009; Halford et al., 2012; Johnson et al., 2017).

For research, ROM is instrumental in providing data for researchers on an ongoing basis. Further, the ease of implementing ROM systems expands their use to clinics beyond university-based training and research laboratories that typically have small sample sizes and limited generalizability. Using ROM within a practice research network (PRN) addresses these limitations by providing a large and geographically diverse sample through collecting data from various clinical settings where therapy is practiced.

Many available systems facilitate implementing ROM within a PRN and a review of all these systems is beyond the scope of this paper. Instead, it will focus on one ROM system—The Marriage and Family Therapy Practice Research Network (MFT-PRN; Johnson, et al., 2017). Our article will provide a brief introduction to the MFT-PRN (for more information on the MFT-PRN see Johnson, et al. 2017, or www.mft-prn.net) and provide a summary of findings from MFT-PRN data. We hope that this review will highlight the collaboration that has occurred and the progress made toward improving client care.

The Marriage and Family Therapy Practice Research Network (MFT-PRN)

A practice research network (PRN) includes a group of practices/clinics that work together as practitioners and researchers to improve client outcomes (Johnson et al., 2017). PRNs provide an opportunity for both evidence-based practice and practice-based research to occur. PRNs began in the medical field and are now used in numerous disciplines. Before the MFT-PRN, the closest things that the field of Marriage and Family Therapy had to a PRN were the Systemic Therapy Inventory of Change (STIC; Pinsof et al., 2009), and the Systemic Practice Research Network (SYPRENE; Vitry et al., 2020). STIC is a system that helps track client feedback on clinical outcomes (Pinsof et al., 2009) and SYPRENE is an international research network for systemic therapists doing strategic therapy (Vitry et al., 2020). While STIC monitors clinical feedback, it is not a practice research network that provides shared data nor a network of researchers and practitioners collaborating across clinics, and SYPRENE is narrow in scope as it focuses on strategic therapy only. Accordingly, the MFT-PRN was created to enable researchers and clinicians to work together to improve client care and to have shared access to a large amount of clinical data for the systemic treatment of mental illness and relationship problems (Johnson et al., 2017).

The MFT-PRN is a web-based system that delivers routine assessments to clients in participating clinics that is fully funded by donors to the authors' institution—participating clinics bear no cost (Johnson et al., 2017). The MFT-PRN balances the needs of research (consistency) with the needs of clinics and therapists (flexibility) in developing policies, procedures, and the choice of some assessments. While research focuses on “Does this treatment work for the average client?” practice needs to focus on “Does the treatment work for the clients (individual, couple, or family) I am currently seeing?” The timing of assessments, and short every-session assessments are consistent across sites. While demographics are generally consistent across sites, appropriate cultural adaptations are incorporated. Flexibility is achieved by allowing clinics, therapists, and clients, to have a voice in what assessments are completed and having the MFT-PRN be flexible enough to work within a very wide range of clinic policies.

Procedures and Assessments

Currently, there are two main assessment categories: 1) assessments that all clients take and 2) assessments chosen by the clinic. Assessments that all clients take include demographics, and short assessments taken before every therapy session (ratings of presenting problem progress, a questionnaire of individual or relationship functioning, and a questionnaire on the therapy alliance). Assessments chosen by the clinic are from the MFT-PRN assessment menu. Questionnaires for the menu have been screened for acceptable reliability, validity, sensitivity to change, and clinical utility. All data are encrypted in transit and during storage, and data protection policies and procedures ensure client confidentiality.

Procedurally, before the first therapy session, clients fill out the demographics and clinic-chosen assessments—the demographic questions take approximately 20 minutes to complete and the length of time to complete the clinic-chosen assessments varies. Clinic-chosen assessments are administered every 4th, 8th, 12th, 16th, and multiples of 8 sessions thereafter. Furthermore, three key assessments: progress on presenting problems (Presenting Problem Progress Questionnaire), relationship functioning (Couple Relationship Scale or Family Relationship Scale), or individual functioning (Intersession Report), and therapy alliance (Individual, Couple, or Family Intersession Alliance Measures), are completed before each session—the every session assessment takes 2 minutes to complete. For more information on assessments available within the MFT-PRN, see <https://www.mft-prn.net/assessments>.

A link to questionnaires can be sent directly to clients via email or text message. The MFT-PRN also generates a QR code to scan and thus administer the questionnaires in person. Assessments are scored in real time and then displayed graphically for easy interpretation, helping clinicians visually track client progress and easily see when client progress deteriorates. Clinicians can also access the completed assessment to view client responses to individual questions. Where available, clinical cut-off scores are shown on the graphs.

Currently, MFT-PRN staff are working on including a screening questionnaire taken before the first session by clients that will determine what questionnaires clients complete. Additionally, therapists will have the ability to add theory-specific questionnaires, such as differentiation, and clinics will be able to add required questionnaires for all clients at their clinic.

To allow more therapists and clients to benefit from the MFT-PRN, the portal and questionnaires are available in English, Spanish, French, Hungarian, Portuguese, Turkish, Korean, Japanese, Chinese (traditional and simplified), and Mongolian. We are currently working on additional translations. (See www.mft-prn.net for an up-to-date list of available languages.) As is evident from the multiple available languages and the current endeavor to offer ad-

ditional languages, the MFT-PRN has gained the attention of the international community. We are interested in welcoming new partners from other countries and we have protocols in place to help facilitate the needed translations.

Table 1. Benefits and Costs of the MFT-PRN for Varying Clinical and Research Roles

	Benefits	Costs
Clients	Better clinical care through improving therapy outcomes for clients (Bickman et al., 2011; Shimokawa et al., 2010), doubling the amount of progress in couple cases (Anker et al., 2009; Reese et al., 2010), decreasing the number of sessions, and giving clients a voice in their therapy experience (Johnson et al., 2017).	Costs may include loss of time to complete assessments, the irrelevance of some of the questions, and frustration with the overall process, which may translate to a lower therapeutic alliance (Johnson et al., 2017).
Therapists	Measure client progress and intentionally modify treatment to enhance outcomes (Anker et al., 2009), provide a rationale for specific treatments, save time by gathering a lot of information before each session, and identify weaknesses to improve on and increase ethical practice (Johnson et al., 2017).	Push-back from clients on the time it takes to fill out the assessments, and opportunity cost arising from sending and checking assessments (Johnson et al., 2017).
Researchers	Data to study specific therapeutic processes and outcomes (Howard et al., 1996; Laurenceau et al., 2007; Pinsof & Wynne, 2000). Large and diverse samples for research (Johnson et al., 2017).	Opportunity costs as less focus may be directed at other projects, and research questions are limited to the information that the applied measures collect (el-Guebaly & Atkinson, 2004; Johnson et al., 2017).
Clinical Directors	Helping them track the effectiveness of their therapists and client progress, providing an opportunity to use data to secure funding, and to help identify areas for clinic training (Johnson et al., 2017).	Time and energy of implementing a new procedure, costs of technology to distribute and take the assessments, and potential push-back from clients or therapists on the time constraints of taking and reviewing the assessments (Johnson et al., 2017).

Benefits and Costs

When implementing any new procedures in a clinic, there is an adjustment period. To help in the decision-making process, see [Table 1](#) for a summary of the potential benefits and costs of implementing a ROM project such as the MFT-PRN.

The main benefits of the MFT-PRN are improved client care with clients making changes more quickly. Therapists can also gain a large amount of information about their clients before the first session, and then, with subsequent information, change treatment plans as necessary. Finally, the MFT-PRN has generated, to our knowledge, the largest database on couple and family therapy. Further, with multiple clinics using the MFT-PRN, collaboration on improving client care is increased. In addition to collaboration on client treatment, the MFT-PRN fosters research collaboration.

Researcher Accessibility to Archival Data

A benefit of PRNs to researchers is a large sample of relational and clinical data. Further, a large more diverse database for research benefits clinicians because clients seen by most therapists are different from participants in a randomized controlled trial. Thus, research on clients from treatment as usual settings will be more applicable to the daily practice of most therapists. To build additional research collaborations, clinics participating in the MFT-PRN desiring archival data for research can send a proposal of the requested research questions, project details, key references, a plan of analysis, and a letter of approval from the researcher's Institutional Review Board. This information is then reviewed and approved by the MFT-PRN executive committee, ensuring that duplicate studies are not created and connections between researchers can be encouraged. Finally, to further protect the identity of participants, MFT-PRN data are de-identified for all research.

The MFT-PRN has been helping to improve client care while building a large research database since 2017. Researchers are collaborating on publications that inform practice. As this is an important part of the MFT-PRN's mission, we are going to provide a summary of the completed research to highlight progress as well as encourage other researchers and clinicians to join the collaboration.

Summary of the MFT-PRN Research

To date, thirteen articles using MFT-PRN data have been published, fifty more articles are in progress, and many of these articles are done by researchers outside the authors' institution. This summary does not include a large number of presentations, dissertations, and theses using MFT-PRN data. Our goal is to provide a summary of the key topics and how these findings can improve client care. Key findings hail from the areas of questionnaire development, the therapy alliance, findings related to therapy outcomes, and the use of teletherapy.

Questionnaire Development

Due to some questionnaires being completed during every session, these must be reliable, valid, sensitive to change, and as short as possible. While many quality questionnaires exist, one that met all criteria was not available for some key variables that are important to clinicians and researchers.

Accordingly, a questionnaire to assess couple relationships was developed—the 10-item Couple Relationship Scale (CRS) was created by Anderson and colleagues (2021) to assess aspects of a couple's relationship routinely and quickly. This one-dimensional questionnaire includes items assessing emotional intimacy, commitment, trust, safety, cohesion, acceptance, conflict, physical intimacy, overall happiness, and personal well-being. The questionnaire has strong concurrent and construct validity, good reliability, a reliable change index, and a clinical cut-off. To be most useful, the CRS must be taken consistently, which requires client buy-in. To help increase client buy-in, the authors recommend 1) informing clients of the importance of routinely taking the CRS and other assessments, and 2) discussing the results of the CRS with clients in session, including the rate and direction of change. The authors also recommend that clinicians view the couple's scores before the first session and specifically note if their score is above or below the clinical cutoff, comparing partner scores to see how they each perceive the relationship, and looking at individual scores to identify problem areas and strengths within the relationship.

As with couple relationships, quick, reliable and valid questionnaires are needed to assess family relationships. To assess these, Miller et al. (2022) did some additional research on an existing questionnaire and established a reliable change index and a clinical cut-off score for The Systemic Clinical Outcome and Routine Evaluation version 15 (SCORE-15). The SCORE-15 was created by Stratton and colleagues (2010) to better track familial progress throughout therapy. While the SCORE-15 has three subscales, this research used the SCORE-15 as a one-dimensional scale of family functioning. Using SCORE-15 allows clinicians to track treatment progress, providing the opportunity to better individualize treatment for each family.

Finally, due to the importance of the therapy alliance to client outcomes, it was necessary to develop a short questionnaire to assess the alliance. Thus, the individual, couple, and family Intersession Alliance Measures (IAM) were created to better assess the therapeutic alliance across time (Anderson et al., 2024). Psychometric properties of the three versions were examined and all items loaded on one factor, had good internal consistency, test-retest reliability, concurrent validity, and demonstrated measurement invariance across sex. Further, the couple and family versions had good predictive validity for therapy outcomes. Consistently using the IAM allows clinicians to be more aware of how clients view the alliance between the therapist and client, and between each other, in relational cases. Doing so can help therapists better identify when a rupture has occurred and be intentional about fixing the respective rupture. Further, the length of this questionnaire (4 items) makes it ideal for use across time.

Therapeutic Alliance

The relationship between therapist and client has been associated with client outcomes in therapy (Friedlander et al., 2011), and the results from MFT-PRN research build on previous research to allow additional understanding. Maintaining a therapeutic alliance in relational cases is more complex than in individual cases because the alliance must be created and sustained between the therapist and multiple people simultaneously. Due to this complexity, the therapeutic alliance in couple cases not only influences individual outcomes, but couple outcomes as well.

Articles using MFT-PRN data on the alliance showed how couples' expectations of the therapy predict the therapeutic alliance (Orlowski et al., 2024), and how initial role and outcome expectations are related to the therapeutic alliance and couple relationship satisfaction (Orlowski et al., 2024). Additional results indicate that higher positive expectations in individual partners were predictive of better therapeutic alliances reported before the fourth therapy session (Orlowski et al., 2023; Orlowski et al., 2024), and that better therapeutic alliances reported at the third session were predictive of higher couple satisfaction at session four (Orlowski et al., 2024).

Further findings show that the therapeutic alliance was a moderator between depressive symptoms and couple relationship satisfaction, finding that when the therapeutic alliance was poor, higher depressive and lower couple relationship scores at intake were predictive of more adverse symptoms in both individuals and couples, in comparison to couples who reported fewer symptoms at intake (Wu et al., 2020a). Similarly, Wu et al. (2020b), found the occurrence of four couple groups, namely couples who both reported higher symptoms, female higher, male higher, and both lower. Among these groups, males and females in the “both higher” group indicated higher initial therapeutic alliance levels, while men in “male higher” and “female higher” also reported a higher initial therapy alliance. Finally, results show that if a disagreement existed between couples about whether the presenting problem was individual or relational, there was a greater discrepancy in the couple’s initial therapeutic alliance, which lessened over time as the therapy continued (Wu et al., 2020b).

Therapy Outcome

A growing number of studies exist that look at couple process and therapy outcomes. Xu and colleagues (2022) showed that difficulty in aspects of emotion regulation, such as a lack of emotional awareness, difficulty with impulse control, and limited emotion regulation strategies, were predictive of lower couple relationship satisfaction, and nonacceptance of negative emotions increased couple relationship satisfaction. Since nearly all couples experience emotion dysregulation, which was found to influence couple relationship satisfaction, clinicians must monitor emotion regulation among the couples they are seeing.

Additional research showed that client-rated participation and goal-progress predicted the clients’ personal functioning while therapist-rated session variables did not (Wu et al., 2023). As therapist perceptions of therapy sessions did not consistently predict client outcomes, clinicians must monitor client progress through consistent client feedback. Therapists can then use the feedback to guide and amend their treatment plan to better client care and outcomes. The authors suggested that for clinicians-in-training, comparing therapist perception and client feedback could be particularly useful in helping new therapists develop better clinical judgment and treatment plans (Wu et al., 2021).

Finally, research has shown that adverse childhood experiences (ACEs) impacted the rate of improvement for anxiety symptoms across therapy sessions (Banford Witting et al., 2024). The authors found that the number of ACEs reported did not significantly impact the rate of reduction in anxiety symptoms, but that people with more ACEs reported greater amounts of anxiety at the onset of therapy. If clinicians notice that clients present to therapy with high levels of anxiety, they should assess the number of ACEs the client has experienced. Similarly, clinicians should monitor client anxiety if they report higher levels of ACEs. Encouragingly, therapy was found to be equally advantageous for clients with both many or few ACEs.

Teletherapy

In response to the COVID-19 pandemic, teletherapy has become a more popular option for service delivery. Therefore, research is needed to best understand how to use this service delivery option. MFT-PRN research has explored how teletherapy impacted therapeutic outcomes. First, teletherapy services are just as effective as in-person therapy in enhancing client outcomes (Bradford et al., 2023). However, the therapeutic alliance did not develop as quickly through teletherapy, with in-person alliances developing twice as fast. Further, research found that couples who received therapy via telehealth reported higher couple satisfaction at intake than couples attending therapy in person, although their rate of improvement was slower (Bradford et al., 2024). The therapeutic alliance was then added as a mediator, revealing that couples in teletherapy reported higher therapeutic alliance scores than their in-person counterparts, although the rate of improvement in the alliance was slower in men who were receiving teletherapy.

This has several clinical implications. First, if clients are not able to come in person, therapists can offer teletherapy that is as effective as in-person therapy. However, clinicians should spend extra time establishing a strong therapeutic alliance since the alliance mediates therapy modality and couple satisfaction and takes twice as long to develop via teletherapy (Bradford et al., 2023; Bradford et al., 2024). Second, due to the added time and complexity of developing the alliance, and its impact on other therapy outcomes during teletherapy, treatment may take longer and require more intentionality and focus.

Conclusion

The Marriage and Family Therapy Practice Research Network (MFT-PRN) is a way systemic researchers and clinicians can collaborate to improve client outcomes. Benefits of the MFT-PRN include access to routine assessments, large and diverse sample sizes, monitored outcomes, contribution to the increase of evidence-based practice and practice-based research, and intentional and ethical practice. To date, collaboration has been successful in improving client outcomes with many clinics using the MFT-PRN. Research collaborations have also demonstrated results that can further improve client outcomes. Results include information about the therapeutic alliance, therapy process and outcomes, couple relationship satisfaction, teletherapy, and advances in measurement.

To date, we have collected data on over 14,000 clients. We are also in the process of making additional refinements to the MFT-PRN, such as the previously mentioned screening questionnaire, and transitioning to a more user-friendly interface. We are also working to add additional partners. While recruiting current collaborators, we have had the wonderful opportunity to meet and learn from therapists and clinic directors from around the world. It has been amazing to see what people are doing to help couples and families. Adding more partners will only increase the value of what can be learned via the MFT-PRN. We hope that continuing data collection and exploring the collected data will help further the field of Marriage and Family Therapy and bring clinicians and researchers together to better treat mental health problems and relationships.

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Declaration of interest statement

The authors have no conflicts of interest to disclose.

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Artificial Intelligence (AI) in the Family System: Possible Positive and Detrimental Effects on Parenting, Communication and Family Dynamics

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Introduction: This perspective article reflects on how innovative technologies, including artificial intelligence (AI) systems like smart voice agents and chatbots, may transform family dynamics and communication. Despite the extensive research on AI's impact in mental healthcare and education, its influence on family systems remains underexplored. This perspective article aims to draw attention to the possible positive and detrimental effects of using AI in families, highlighting the necessity of fostering AI literacy in this setting.

Areas covered: The article delves into integrating AI within family therapy models, focusing on how AI redefines family boundaries, roles, communication, rituals, and narrative creation. It explores AI's potential to enhance parent training programs and its impact on children's social and cognitive development.

Expert opinion: AI presents both opportunities and challenges for family systems. It can enhance communication, support role negotiation, and promote family cohesion, but it also raises ethical and privacy concerns. The balance between utilizing AI to support family values and avoiding the detrimental effects of over-reliance is crucial.

Conclusion: Integrating AI into family systems offers significant potential benefits, but it must be managed carefully to ensure it aligns with family values and strengthens family bonds. Fostering AI literacy within families is essential to navigate the complexities and harness the advantages of AI technologies.

Keywords: AI literacy, artificial intelligence, family communication, family dynamics, parenting

Introduction

In the present paper, artificial intelligence (AI) is referred to as intelligent systems based on enormously large datasets that are capable of analyzing their surroundings in order to fulfil specific tasks. These systems may appear in families' life in various forms, such as personalized online content recommendations (e.g., Netflix, YouTube) online purchase recommendations (e.g., Amazon) as well as smart assistants such as OpenAI's ChatGPT, Apple's Siri, Amazon's Alexa (Helm et al., 2020).

Besides having a strong academic interest in the possible psychological impact of AI, the authors of this paper approach the topic from different perspectives. The first author, both as a researcher and as a clinical psychologist and family therapist, strives to answer how modern technological solutions affect mental health and how they might aid in the healing process. Among the first author's professional areas of expertise, third-wave cognitive therapies and family therapy are particularly noteworthy. The second author is a psychologist working with Acceptance and Commitment Therapy (ACT) and an artificial intelligence application specialist, and her main area of scientific interest is application possibilities of AI in psychotherapy, as well as the scientific investigation of its possible effects on human relationships. The second author works on empirical studies focusing on AI such as investigating health professionals' attitudes of artificial intelligence, as well as studies reviewing existing literature on the application of AI in psychological treatment, diagnosis and prevention.

Conceptual Framework of the Problem

The term "family system" refers to a conceptual framework that views a family as an interconnected and interdependent group of individuals whose interactions shape each person's behaviors, beliefs, communication and health. Within a family system, each member has a specific role and changes in one part of the system can affect the whole family dynamic.

The family therapy models (e.g., Structural Family Therapy (Minuchin, 1974), Strategic Family Therapy (Haley, 1991), Solution-Focused Brief Therapy (De Shazer & Berg, 1997), and Narrative Family Therapy (Madigan, 2012) emphasize the importance of boundaries, roles, communication patterns, narrative and meaning-making in maintaining family functionality and well-being.

Technology – as we will discuss – can also modify parenting. Parenting is the multifaceted process of guiding and nurturing a child through every stage of their physical, emotional, social, and cognitive development. It involves more than just meeting basic needs, it also includes providing emotional support, setting boundaries and teaching values. Effective parenting fosters resilience, empathy, and independence (Smith, 2010).

Current technological advancements, such as generative AI and virtual agents have a broad impact on various aspects of people's lives, including the family sphere. Generative AI refers to a branch of artificial intelligence focused on creating new content – text, images, music or other forms – by identifying and reproducing patterns found in existing data sets (Feuerriegel et al., 2024). These models use deep learning techniques to generate outputs that appear novel and human-like. Virtual agents ("chatbots") interact through natural language, interpret requests, and perform tasks like retrieving information or controlling devices. Using machine learning, they continually refine their responses.

Digitalization and automatization have introduced new approaches to self-representation and social identities (Moga & Ruginis, 2023), the education for young children (Yang, 2022), and communication between family members (Mavrina, 2022). AI-powered smart devices might affect communication breakdown between family members (Beneteau et al., 2019), children's development (Alrusai & Beyari, 2022) as well as raising privacy concerns.

"Technophobia" and "techno-optimism" manifest prominently in the context of artificial intelligence. Technophobia is driven by fears of job displacement, ethical concerns, and potential loss of human control over autonomous systems (Khasahwneh, 2018). Conversely, techno-optimism is a belief that technological developments (in our case AI) will solve complex challenges in the field of healthcare, economics, and inequity (Königs, 2022).

Aims

There is research about the impact of AI in social contexts, such as in mental healthcare (Minerva & Giublini, 2023) or education (Chen et al., 2020); however, less attention falls on how it affects family systems. Thus, our perspective article aims to reflect on how AI-based technological advancements may impact family dynamics. In this article, the authors explore the potential benefits and pitfalls of AI systems concerning the dynamics and communication in the family system, highlighting research opportunities. We also try to find a balance between fears and optimism in this perspective article, expressing the strong need for fostering AI literacy within families.

To write this article, the authors used the literature review method. This allowed authors to integrate diverse theoretical and empirical sources, along with practical experiences and reflections. We gathered and examined literature (peer-reviewed journal articles, conference proceedings, and relevant books) from psychology and technology focusing on how AI influences family dynamics and communication patterns. We also included observations shared by clinicians and researchers to illustrate practical implications.

We hypothesise that applying artificial intelligence technologies in families is useful when it serves the fulfilment of family values and supports family connections. When its usage does not align with the values or when it weakens family bonds (e.g., with the “outsourcing” of parental duties), then this could become detrimental.

The Concept of Main Family Therapy Systems and AI

Developing AI could affect family boundaries, roles, rituals and communication in the family as well as the challenges of parenting. In the following subsections, we discuss the potential impact of AI on family boundaries, roles and rituals.

Family Boundaries and AI

Family boundaries are the invisible lines that define individual family members’ roles and responsibilities, distinguishing between subsystems within the family, e.g., parental, sibling (Scabini & Manzi, 2011).

The presence of AI in the family can reshape these boundaries. Moreover, it raises significant ethical and privacy concerns, since automated agents, like smart home assistants or AI-based security systems, can witness private activities in families, which may include sensitive matters such as sex or abuse (McStay, 2020). When an AI-based security system detects illegal acts, such as domestic abuse, questions about data usage arise. AI’s ability to automatically notify authorities has the potential to reduce domestic violence incidents that have so far remained hidden. Although the evidence that has been gathered by AI might be crucial in prosecuting offenders, child protection services must be prepared for a potential significant increase in reports. Ethical guidelines and official regulations must be established on whether and how the information might be used to protect individuals while respecting privacy (Wylde et al., 2023).

Besides, the presence of AI in the family raises questions about the flow of information among subgroups of the family: should the AI inform the parents about the child’s maladaptive behavior (e.g., drug use)? Or if the AI is “aware” of the infidelity of one spouse, should it inform the other partner?

Another question connected to boundaries is the “socialification” of the family as an effect of AI (Hiroshi, 2018). It is likely that, in the near future, a growing number of people will seek for intimate relationships with artificial agents (embodied as social robots or in other forms). This trend is referred to as “socialification” of familyship; that is, a phenomenon in which the virtual humans, as products or services offered by businesses, become partners/family members, and a change in which some parts of the intimate relationships within families are shared in society (Yamaguchi, 2020). Just as the socialification of nursing care reduced the burden of care on Japanese women and improved their quality of life (QoL) (Hiroshi, 2018), adopting virtual humans as a socialification of familyship is also likely to improve the QoL of people with difficulties worldwide.

Roles in the Family and the AI

Family therapy models emphasize the importance of well-defined roles for the healthy functioning of the family unit. AI can support the redefinition and reinforcement of these roles. For example, AI-based therapy apps can offer personalized guidance to parents and children, helping them understand and fulfil their roles more effectively. These apps can provide real-time feedback, reminders, and educational content, facilitating better role performance (e.g., Alkadhil, 2024). Additionally, AI can assist in “role negotiation” by analyzing family interactions and suggesting adjustments to roles that align with each member’s strengths and needs. This process is a frequent step in family therapy, which can be performed outside the context of therapy (Grosjean et al., 2024). Nonetheless, the potential risk of AI suggesting family roles rather than merely supporting them must be considered, as it may lead to a reduction in organic role evolution and personal agency.

The Effect of AI on the Communication Within the Family

Effective communication is a cornerstone of healthy family dynamics. AI has the potential to enhance communication within the family system through various means. Natural language processing (NLP) algorithms can be employed to analyze communication patterns and identify issues such as miscommunication or conflict triggers. AI-driven platforms can offer communication training, conflict resolution strategies, and even real-time mediation during disputes (Pereira, 2020). For example, AI can search the pattern of active-constructive communication (Roelle et al., 2015) and can support this type of response. AI can support non-verbal communication enhancements through tools that analyze body language and emotional expressions (Pereira, 2020), offering insights and feedback to family members on improving their interpersonal interactions. Of course, relying on AI for communication support must be balanced with the need for genuine human connection and empathy, which are essential components of effective communication.

Family Rituals and the AI

Family rituals are defined as a symbolic form of communication and patterned family interactions (Wolin & Bennett, 1984). Rituals contribute to the family's collective sense of itself (also known as the family identity, Wolin & Bennett, 1984). AI may promote family cohesion by suggesting and organizing family rituals and activities that foster unity. By analyzing family schedules and preferences, AI may recommend shared activities, holidays, and traditions that strengthen family bonds. Following the family's "life cycle", AI may suggest new rituals or traditions based on the family's interests and values, helping to create meaningful practices – for keeping them fresh and engaging (Johannessen, 2023).

Could AI help the Narrative and Meaning-Making Process in the Families?

Narrative therapy emphasizes the stories and meanings families create about their lives and relationships. AI can support this process by helping families identify and articulate their narratives (Megala et al., 2024). For narrative creation, AI can use information about the ancestors (stories or narratives based on family history), integrating names, places, and events unique to the family. In this way, the narrative-creation might become a more social, more deep and more engaging process (Wilson et al., 2025).

Parental Training and Technology

AI and NLP could transform the provision of parenting support, skill development, and in turn, lead to behaviour change (Petsolari et al., 2024). Although parental training is widely recognised as an effective and evidence-based intervention for parents to become equipped with parental skills and techniques (Morris et al., 2020), it has some limitations. In-person parental training programs require engagement from parents (Dumas et al., 2007), which can be challenging. In addition to that, these programs face challenges when it comes to parental retention. Besides, a great number of parents – who actually make it to the sessions – report difficulties in implementing the learnt methods into practice (Mockford & Barlow, 2004). Moreover, the effectiveness of parental training programs depends on parents consistently applying the skills they have acquired in the appropriate settings and with the intended goals in mind (Petsolari et al., 2024). AI-based technologies may possess the ability to enhance the effectiveness of parental trainings in several ways. First, AI-based parental trainings are delivered through smart gadgets (instead of in-person), which might increase scalability and reach (Entenberg et al., 2021). It also allows parents to ask for immediate help in stressful family situations. In addition, this feature might contribute to helping bridge the gap between parents who would attend parental trainings and parents who actually enrolled into the trainings, since it increases the availability.

Intelligent technologies may offer support, advice and guidance for parents in various ways; however, these technologies may also lead to potential pitfalls. First, privacy concerns and security risks need to be addressed since these devices are vulnerable to hacking and other cybersecurity threats, resulting in sensitive information of the family becoming accessible or even being misused (Salah et al., 2024). Second, parental over-reliance of these technologies may result in misinformed decisions, since the responses generated by AI systems may not always be accurate; there is a chance of their information being biased (Shroff, 2022).

Augmented Parenting: Potential Positive and Detrimental Impacts on Children's Development

Certain AI systems, such as smart speakers like Amazon's Alexa, Google Assistant, and Apple's Siri can be considered as social actors and play a mediating role in constructing family relationships (Wang et al., 2023). Millions of households have adopted and integrated these "invisible" technologies, embedded in the background of their everyday lives (Garg & Sengupta, 2020). They might help families to manage their day-to-day activities by setting reminders, playing music, providing weather updates, and answering questions. These technological systems hold the capability to carry out tasks instead of family members (Beneteau et al., 2020). They might help with traditionally parental tasks such as reading bedtime stories or assisting school-age children with homework. According to Beneteau et al. (2020) this type of smart speaker use behaviour is called *augmented parenting*.

When an AI-based technology may become present in a child's life to such a significant extent that it takes over the role of a parent, questions arise about its impact on the child's psychological and cognitive development. The excessive use of smart agents may impact children's social and cognitive development. Overuse of smart agents potentially leads to reduced interpersonal interactions between parents and their children. Since personal interactions between parents and their children are essential for the children's development of social skills, problem-solving skills, cognition and empathy (Lanjekar et al., 2022), excessive use of smart agents might have disadvantageous effects. As Garg and Sengupta (2020) identified, children primarily use these devices to engage in conversations through small talk and to express emotions, and they attribute a human-like identity to devices, trying to understand them as people. Young children (5–7 years old) tend to develop emotional attachment to these devices (Garg & Sengupta, 2020). Since smart agents offer quick and simple answers, children who frequently use them might have reduced opportunities to develop critical thinking (Zhai et al., 2024) and they might also have a shorter attention span. Over-reliance on smart agents might impact children's language skills as well. Even though smart agents may assist in language learning and are capable of NLP (Huang et al., 2022), using them excessively may limit children's exposure to nuanced and rich human language interaction, affecting their vocabulary and comprehensive skills. Similarly, conversational skills development requires meaningful two-way conversations. Since parent-infant interaction is a key factor in language development (Topping et al., 2018), children who interact with smart agents more than with humans, might not develop strong conversational skills. While AI-based technologies may offer various benefits for families, it is essential to ensure that technologies complement, rather than replace, parent-child interaction in order to support children's well-rounded development.

In addition, a growing body of work has explored how tracking children has implications within the broader family ecosystem (Lupton, 2021; Wang et al., 2017). Previous studies identified positive effects of implementing personal informatics tools to track children's data. They highlighted that it not only improves parents' understanding of their child's patterns but also reduces the need for frequent physical check-ups by facilitating the transfer of baby-related information, such as sleep patterns, movements, signs of distress, heart rate or breathing, to mobile applications (Lupton, 2020). Conversely, Wang et al. (2017) also identified that using baby monitoring or child habits monitoring may have detrimental effects on parents' mental health as it can increase their anxiety. Moreover, we suggest that reverse causality can be present, too, meaning that increased anxiety might result in more child monitoring. Balancing the downsides and benefits of technology use, while also practicing traditional parenting methods, is crucial for the child's development as well as the parents' mental well-being.

Conclusion

In this perspective article, the authors drew attention to the possible beneficial and detrimental effect of integrating AI into family systems. AI may enhance communication between family members, support role negotiation, and promote family cohesion. However, it also raises ethical and privacy concerns. In addition, it must be managed carefully to ensure it aligns with family values and strengthens family bonds. The rapid advancement of AI has made the development of AI literacy inevitable (Pinski & Benlian, 2024), that is, to increase human proficiency in different subject areas of AI that enable the purposeful, efficient, and ethical usage of AI technologies.

As Anggriani et al. (2024) point out, an AI literacy gap might exist between generations in the family. Parents may need to learn new digital skills to help their children with their education. They must also model positive adaptation, demonstrating openness to learning and change (Ahmed, 2020). Ideally, in a parent-child partnership process, AI literacy is increasing (Druga et al., 2022). By considering these potential impacts, families can navigate

the integration of AI in ways that enhance communication and strengthen their relationships while being mindful of the possible downsides.

Looking ahead, the complex relationship between AI and family dynamics highlights several questions for further research. Longitudinal studies are needed to explore how ongoing exposure to AI influences developmental milestones in children and whether optimal “dosages” or use patterns exist that support rather than hinder growth. Qualitative and mixed-method research could offer insights into how families renegotiate roles, boundaries and communication patterns when living with AI-driven agents. Such studies may shed light on the potential of AI to enhance or undermine family well-being.

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Author contribution

Máté Bene SZONDY: conceptualization, design, investigation, interpretation, writing original draft, writing review and editing.

Ágnes MAGYARY: conceptualization, design, investigation, interpretation, writing original draft, writing review and editing.

Declaration of interest statement

The authors have no conflicts of interest to disclose.

Declaration on using artificial intelligence in research and manuscript preparation

The authors declare that all AI-assisted processes were controlled and checked by the authors themselves.

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RESEARCH ARTICLE

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Coparenting Relationship Scale (CRS): Validation and Psychometric Properties of the Hungarian Version

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Introduction: This study aims to investigate the validity and psychometric properties of the Hungarian version of the Coparenting Relationship Scale (CRS-HU), a measurement designed to assess different dimensions of coparenting. Only a few validation studies can be found, even though CRS is a widely used measurement.

Methods: Currently, no assessment instruments exist in Hungarian that measure coparenting relationships and practices; therefore, we adapted CRS and designed a validation study to investigate mothers' coparenting characteristics ($N = 381$). We checked the construct validity using confirmatory factor analysis (CFA), then to assess convergent and discriminant validity, we examined correlations between the coparenting questionnaire factors and other similar constructs. We also examined the relationship between CRS-HU and different background variables using Kruskal-Wallis and Mann-Whitney tests.

Results: Our main results showed that the internal consistency in the Hungarian version of CRS and its subscales is good or excellent (Cronbach's $\alpha = .75-.89$). The seven-factor structure had a poor model fit in CFA, however, the brief version of the CRS-HU (RMSEA = .057; CFI = .962) and six subscales separately (RMSEA = .031-.066; CFI = .978-.999) demonstrated a good model fit.

Conclusions: The brief version of Hungarian CRS and the different subscales are valid and feasible measures for assessing coparenting and its dimensions. Thus, CRS can be effectively used at last in our culture, as well.

Keywords: coparenting, measurement, validation, Coparenting Relationship Scale (CRS), Confirmatory Factor Analysis (CFA)

Introduction

Coparenting focuses on interactions and relationships between parents, more specifically on the functioning of the parent subsystem. Feinberg (2003, p. 96) defined coparenting as "a conceptual term that refers to the ways that parents and/or parental figures relate to each other in the role of parent". Coparenting is a multidimensional construct that describes the system of parental relationship dynamics related to the upbringing of children; thus,

it is advantageous to use a tool that can measure the complexity of several dimensions/subconstructs at the same time (Beckmeyer et al., 2014; Finzi-Dottan & Cohen, 2014; McHale, 1995).

The study of coparenting across various family structures is primarily grounded in a systems perspective, which helps to understand the formation and maintenance of coparenting relationships. Family Systems Theory (Goldenberg et al., 2017; Minuchin, 1974; Von Bertalanffy, 1968) has become a central systemic framework in both research and practical applications. According to this paradigm, the family is viewed as both a relationship system and an emotional system, where members influence and are influenced by one another through communication across individual, dyadic, triadic, systemic, and intergenerational dimensions. Within this framework, the importance of a stable coparenting subsystem is emphasized as a distinct element that functions in parallel with other subsystems, regardless of whether the adult relationship is intact or has transitioned (Cox & Paley, 2003).

In recent years, researchers have developed and utilized various self-reported questionnaires and scales for coparenting, each emphasizing different aspects within the coparenting theme. Here are some examples, without claiming to be exhaustive: Parenting Alliance Measure (PAM) (Camisasca et al., 2014; Konold & Abidin, 2001; Lamela et al., 2013), Partner Parental Support Questionnaire (PPSQ) (Gillis & Roskam, 2019, 2020), Coparenting Questionnaire (CQ) (Barzel & Reid, 2011; Margolin et al., 2001; Pedro & Ribeiro, 2015); Feeding Coparenting Scale (FCS) (Sherrard & Tan, 2022; Tan et al., 2019), Coparenting Across Family Structures (CO-PAFS) (Archer-Kuhn et al., 2023; Pruett et al., 2021; Saini et al., 2019), Coparenting Inventory for Parents and Adolescents (CI-PA) (Láng, 2018; Teubert & Pinquart, 2011; Zimmermann et al., 2022).

Based on Feinberg's (2003) conceptual framework of the coparenting relationship, the CRS measure included four overlapping domains: childrearing agreement, coparental support/undermining, division of labor, and joint management of the family dynamics. Most of the instrument's initial 47 items derive from previous coparenting questionnaires, but some new items were also created. After psychometric analyses, 35 items remained in the scale (Feinberg et al., 2012). The authors organized items into seven subscales connected to the four theoretical domains: 1) agreement (Coparenting Agreement, six items); 2) support/undermining (Coparenting Support, four items; Coparenting Undermining, six items; Endorse Partner Parenting, seven items); 3) joint family management (Exposure to Conflict, five items) and division of labor (Division of Labor, two items). In addition, a subscale was created to measure enhancing intimacy (Coparenting Closeness, five items). The authors also developed a brief 14-item instrument of coparenting (Brief version of Coparenting Relationship Scale; B-CRS) using two items from each of the seven subscales.

In the original study (Feinberg et al., 2012), researchers validated the instrument via a longitudinal survey of a sample including 169 co-resident heterosexual parents who were expecting their first child. The internal consistency of the whole CRS questionnaire was excellent (Cronbach's alphas ranged from .91 to .94 across gender and data collection time points). The seven coparenting subscales ($\alpha = .61-.90$) and the 14-item B-CRS ($\alpha = .81-.89$) had generally high internal consistencies with a few exceptions (Agreement, Endorse Partner's Parenting in some waves among mothers and/or fathers). Correlations between the full and the brief versions of CRS were very high ($r_{\text{mothers}} = .97$; $r_{\text{fathers}} = .94$), and the subscale scores were also moderately to strongly correlated ($r = .54-.85$) with the total CRS score, except for the Division of Labor subscale for fathers ($r = .37$). Longitudinal confirmatory factor analysis by structural equation modeling was used to check the factor structure and temporal stability. The fit indices of the model proved to be acceptable (RMSEA = .06; CFI = .93). The results indicate that coparenting scores remained stable across time ($\beta_{\text{Wave2-Wave3}} = .74$; $\beta_{\text{Wave3-Wave4}} = .71$).

Although CRS is a widely used instrument in non-English speaking countries (Camisasca et al., 2019; Garcia-Huidobro et al., 2019; Lamela et al., 2016; Mikolajczak et al., 2018; Roskam et al., 2018), only a few validation studies can be found (Antiwati & Purnomo, 2023; Carvalho et al., 2018; Dumitriu et al., 2022; Favez et al., 2021; Ju et al., 2023; Lamela & Jongenelen, 2018; Lee et al., 2021) in the literature. These validation studies showed that the internal consistencies of the full ($\alpha_{\text{Portuguese}} = .74$; $\alpha_{\text{French}} = .85$) and the brief versions of CRS ($\alpha_{\text{Swedish}} = .85-.86$; $\alpha_{\text{French}} = .70$; $\alpha_{\text{Indonesian}} = .88$) were generally high (Antawati & Purnomo, 2023; Favez et al., 2021; Feinberg et al., 2020; Lamela & Jongenelen, 2018). Although in the Brazilian adaptation of the CRS, the average scores of the full and the brief versions were not calculated, four subscales had good internal consistencies in the Brazilian sample (Exposure to Conflict, Coparenting Support, Coparenting Undermining, Endorse Partner's Parenting). Despite some problems with the remaining three subscales (Coparenting Agreement, Coparenting Closeness, Division of Labor), CRS is still used in Brazil (Carvalho et al., 2018). Lamela and Jongenelen (2018) adapted and validated the CRS among Portuguese mothers. The model fit of the confirmatory factor analysis was satisfactory, with acceptable convergent and divergent validity, and good internal consistencies in the subscales, so the psychometric quality of the Portuguese version proved to be adequate. The French adaptation of the CRS

in a sample of Swiss fathers and mothers was valid, the original seven-factor structure could properly explain the variance of the data collected in the French-speaking part of Switzerland (Favez et al., 2021). Lee et al. (2021) tested the reliability and validity of the brief CRS among Swedish fathers. All but one subscale (Division of Labor) were strongly correlated with the overall B-CRS score, so the Swedish Brief Coparenting Relationship Scale consists of only 12 instead of 14 items. In the Romanian adaptation of the questionnaire, 6 factors and 28 items were retained during the factor analysis. All six factors were found to have good internal consistency. The sample consisted of Romanian parents, the majority of whom were married, but divorced parents also appeared (Dumitriu et al., 2022). Ju et al. (2023) finalized the CRS-C, the Chinese version, with 6 factors and 27 items. Cohabiting couples were also included in the study. The Cronbach's alpha for the six factors ranged between 0.69 and 0.93. Table 1 contains the internal reliability (alpha) scores in the different versions of CRS, by gender and the different validation studies.

This article aims to present the Hungarian adaptation and validation of the Coparenting Relationship Scale (CRS) (Feinberg et al., 2012) interpreting the questionnaire's psychometric characteristics in the context of previous validation studies.

Table 1. Internal Reliability of CRS in Previous Studies

Scale (number of items)	Original CRS (Feinberg et al., 2012)*	The Brazilian version of CRS (Carvalho et al., 2018)	The Portuguese version of CRS (Lamela et al., 2018)	The French version of CRS (Favez et al., 2021)	The Swedish version of B-CRS (Lee et al., 2020)	The Romanian version of CRS (Dumitriu et al., 2022)	The Indonesian version of CRS (Antawati et al., 2023)	The Chinese version of CRS (Ju et al., 2023)
CRS Total (35)	$\alpha = .91-.94$	-	$\alpha = .74$	$\alpha = .85$	-	-	-	-
CRS Brief (14)	$\alpha = .81-.89$	-	-	$\alpha = .70$		-	-	-
CRS Brief (12)					$\alpha = .85-.86$	-	-	
CRS Brief (13)							$\alpha = .88$	
Coparenting Agreement (4)	$\alpha = .66-.74$	$\alpha = .68$	$\alpha = .70$	$\alpha = .82$		$\alpha = .87$		$\alpha = .75$
Coparenting Closeness (5)	$\alpha = .75-.83$	$\alpha = .46$	$\alpha = .84$	$\alpha = .80$		$\alpha = .87$		$\alpha = .69$
Exposure to Conflict (5)	$\alpha = .81-.90$	$\alpha = .81$	$\alpha = .81$	$\alpha = .90$		$\alpha = .95$		$\alpha = .93$
Coparenting Support (6)	$\alpha = .86-.89$	$\alpha = .83$	$\alpha = .94$	$\alpha = .93$		$\alpha = .95$		$\alpha = .89$
Coparenting Undermining (6)	$\alpha = .80-.85$	$\alpha = .72$	$\alpha = .79$	$\alpha = .86$		$\alpha = .89$		$\alpha = .81$
Endorse Partner's Parenting (7)	$\alpha = .61-.88$	$\alpha = .78$	$\alpha = .77$	$\alpha = .90$		$\alpha = .92$		$\alpha = .75$
Division of Labor (2)	$r = .33-.59$	$\alpha = .16$	-	$\alpha = .50$	-	-		-

* Feinberg's original results were based on longitudinal research, while the other studies were cross-sectional.

Methods

Participants

The analytical sample consisted of 381 women (aged 24–49 years, $M = 36.1$, $SD = 5.1$), who raised an average of two children ($SD = 1.1$), with the youngest being under six years old ($M = 2.3$, $SD = 1.8$). We summarized socio-demographic data in Table 2. Married (88.2%) and high-educated (82.1%) women were overrepresented in the sample.

Table 2. Description of the Sample ($N = 381$)

	Value	
	<i>n</i>	%
Education		
Secondary school	68	17.8
Higher education	292	76.6
Postgraduate (Ph.D., DLA)	21	5.5
Type of partnership		
Marriage	335	87.9
Cohabitation	46	12.1
Children in the household		
1 child	141	37.0
2 children	130	34.1
3 or more children	110	28.9
Age of the youngest child	2.3 (<i>M</i>)	1.8 (<i>SD</i>)
Age of the oldest child	7.3 (<i>M</i>)	4.9 (<i>SD</i>)

Procedure

Two independent professionals translated the CRS and other coparenting instruments into Hungarian; after comparing these versions for inconsistencies, the final versions were accepted by consensus. Then a third professional back-translated these approved Hungarian text into English, also blindly and independently. The back-translations were compared with the original measures and checked for inconsistencies. After slight changes, the translators accepted the final Hungarian version by consensus (Danis et al., 2019; The Hungarian translation is available here: https://semmelweis.hu/mental/files/2025/02/Feinberg_Coparenting_Relationship_Scale_HU-1.pdf). The research was approved by the Research Ethics Committee of Semmelweis University, Budapest, Hungary (license number: RKEB 143/219).

We collected the sample using the online LimeSurvey tool, and the questionnaire was made available between 21 August and 10 September 2019. The survey was disseminated via snowball sampling method through various mailing lists and social media platforms. This approach allowed us to reach a broad audience quickly, but it also introduced certain biases due to the nature of non-probability sampling. Specifically, the sample predominantly consisted of women, with men comprising less than 10% of the respondents. This gender imbalance in participation is an important finding in itself. It suggests that the applied sampling method and dissemination channels did not effectively engage male participants, even though the dyadic nature of coparenting emphasizes the importance of including both parents' perspectives. While the present study focuses on the psychometric validation of the CRS-HU, subsequent research targeting the broader topic of coparenting dynamics should explicitly aim to involve both mothers and fathers.

We opted for Multiple Imputation (MI) to handle missing data due to its advantages in ensuring unbiased estimates and maintaining the integrity of the dataset for the analyses performed. Specifically, we applied MI because the use of a bootstrap procedure in the confirmatory factor analysis (CFA) necessitated a complete dataset, as the method cannot process missing data. Instead of simpler approaches, such as mean imputation, we chose the more sophisticated MI method to preserve the variability and relationships within the data, avoiding potential biases introduced by less nuanced methods.

From the initial sample of 557 participants who completed the survey, 193 provided only partial responses. Participants who answered fewer than 20 of the 35 CRS items ($n = 124$) were excluded from the analysis. In the

resulting reduced dataset, the proportion of missing data for the CRS items was exceptionally low (0.53%).

To ensure the robustness of the imputations, we conducted sensitivity analyses comparing key statistics (means and standard deviations) of the CRS items before and after imputation. For most items, the means and standard deviations were identical up to two decimal places, and no significant differences were observed for any item. This consistency supports the validity of the MI approach in this context.

The MI procedure was conducted using SPSS 25.0, generating a complete dataset suitable for all subsequent analyses while maintaining the original dataset's quality and accuracy.

In psychometric and validation studies, sample homogenization occurs as a common practice to ensure that the results accurately reflect the properties of the measurement tool rather than the influence of external or confounding variables. By reducing variability in key demographic characteristics (e.g., education level), we aimed to control for potential biases that might arise from heterogeneity in the participants' ability to comprehend and respond to the questionnaire items. To homogenize our sample, some exclusion criteria were applied: divorced/separated participants ($n = 16$), men ($n = 25$), and respondents with a low level of education ($n = 11$) were excluded.

Measures

The *Coparenting Relationship Scale (CRS)* is a self-report instrument of coparenting constructed by Feinberg et al. (2012) according to Feinberg's theoretical concept (2003). The scale is comprised of 35 items divided into seven subscales: Coparenting Agreement (four items); Coparenting Closeness (five items); Exposure to Conflict (five items); Coparenting Support (six items); Coparenting Undermining (six items); Endorse Partner Parenting (seven items); Division of Labor (two items). We assessed the items using a 7-point Likert type scale that ranges from "not true of us or never" (0) to "very true of us or very often" (6) depending on the questions asked. The scale also has a brief version with 14 items (B-CRS). The internal consistency (Cronbach's α) of the original instrument, the brief version, and the different subscales in the previous research were appropriate or excellent (see details in Table 1).

The *Daily Coparenting Scale (D-Cop)* is a short 10-item measure developed and introduced by McDaniel and colleagues (2017) that can be administered daily (e.g., seven consecutive days) for measuring perceptions of coparenting quality (e.g., "I felt like part of a real parenting team."; "We had different ideas about parenting."; "We trusted one another's parenting."). The instrument uses a seven-point Likert scale, with each item scoring between 1 (Strongly Disagree) and 7 (Strongly Agree). The instrument, originally developed for daily testing, was used in the Hungarian validation study and in several Hungarian studies to ask about general perception ("Please tick the answer that best describes how you feel about the way you and your partner have interacted as parents in the last two weeks"). The scale showed good internal consistency in the original study ($\alpha = .88$ and $.87$ for mothers and fathers, respectively) and also in the present D-COP-HU dataset ($\alpha = .89$).

The *Experiences with Coparenting Scale (ECS)* is a short instrument constructed and introduced by Beckmeyer et al. (2017), specifically assessing divorced or separated parents' satisfaction with their coparental relationship. The ECS consists of 11 pairs of bipolar adjectives (e.g., rigid-flexible; conflictual-peaceful). Each pair can be rated using a 7-point semantic differential scale. ECS had high internal reliability ($\alpha = .95$) in the original (Beckmeyer et al., 2017), and in this study with ECS-HU, as well ($\alpha = .94$).

Data Analyses

Confirmatory factor analysis (CFA) was conducted using Amos 21.0 with maximum likelihood estimations. The data obtained from 381 respondents did not satisfy the requirement of multivariate normality, therefore we used the AMOS non-parametric bootstrap option for further analyses (Walker & Smith, 2016). The Chi-square Test is a reasonable measure of fit with smaller samples (75–200 cases), but for models with more cases, the test is significant most of the time (Kenny, 2012). For this reason, we used alternative measures of fit. Three goodness-of-fit statistics were examined: χ^2/df ratio, the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). According to Hu & Bentler (1999), a χ^2/df ratio below 3 and an RMSEA below .05 indicate a good fit, CFI above .95 indicates a great fit, while RMSEA between .05 and .10, CFI between .90 and .95 mean a moderate fit. We tested different models: 1) general, 2) first ordered, 3) second ordered models of CRS-HU, 4) individual subscales separately, and 5) a general model of B-CRS-HU. We tried to improve the fit of the models in two ways: 1) adding a reversed item method factor, and 2) correlating the error terms based on

the analysis of the modification indices. Following the CFA, internal consistencies of CRS-HU, of B-CRS-HU, and each subscale were examined separately, and correlations were estimated between CRS and other coparenting measures to examine convergent and discriminant validities. Because of the non-normal distributions of CRS subscales, we calculated Spearman correlations.

Results

Construct Validity – Confirmatory Factor Analyses (CFAs)

To confirm the theoretical structure of the construct, we tested five different models in CFA. The fit indices of these models are shown in Table 3. In neither case did the reversed-item method factor improve the fit of the models, so we did not apply it to the models presented below.

Table 3. Model Fit of Different Models

	χ^2/df ratio	RMSEA	CFI	No. of iteration
Model 1	4.211	.092	.750	10
Model 2	2.328	.059	.898	13
Model 3	2.534	.064	.883	10
Model 4a	1.864	.048	.996	7
Model 4b	1.883	.048	.992	8
Model 4c	2.537	.064	.983	7
Model 4d	1.361	.031	.999	8
Model 4e	2.643	.066	.993	10
Model 4f	2.34	.059	.978	8
Model 5	2.214	.057	.962	11

Note. Model 1 – General model of CRS-HU; Model 2 – Second ordered model of CRS-HU; Model 3 – First ordered model of CRS-HU; Model 4 – individual subscales separately; Model 5 – General model of B-CRS-HU.

Model 1: First, a CFA was performed including the 35 items of CRS-HU in a model with one general factor. The model fit was poor, and the addition of residual covariances did not effectively change the fit parameters.

Model 2: We also tested the seven-factor theoretical structure based on the original instrument with a second-order factor of general coparenting. After adding residual covariances, the model fit was moderate, with factor loadings between .30 and .92. The direction of the relationship between the latent variables of the subscales and the general latent variable of coparenting supported the theoretical model: coparenting undermining (-.815); exposure to conflict (-.626); coparenting agreement (.800); coparenting closeness (.952); coparenting support (.952); endorse partner's parenting (.811); and division of labor (.663).

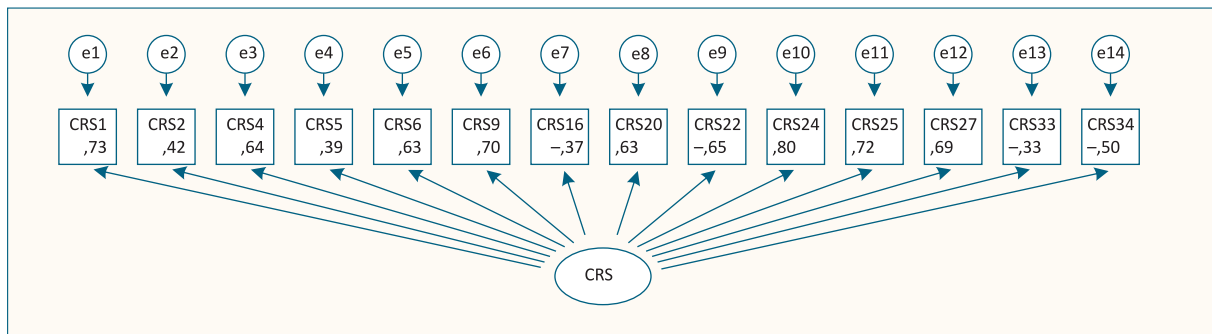
Model 3: We removed the second-order factor of general coparenting from the model and correlated the latent variables of the subscales. The model fit was moderate after adding residual covariances.

Model 4: The factors were examined separately because in previous research we came across the separate use of each subscale (Feinberg et al., 2020; Lamela et al., 2016; Lamela et al., 2020). We did not examine the Division of Labor subscale separately because of the low number of items. Each of the six subscales demonstrated a good or excellent model fit.

Model 5: The brief version of CRS-HU (14 items) had a good fit in the general model (which is parallel to Model 1 without using subscales), with factor loadings between .33 and .80 (See Figure 1).

In further analyses, we focused on Model 1 and Model 5, as well as on the separately defined subscales. Although the fit indices for Model 1 were not satisfactory, we considered it important to include this model to ensure comparability with previous studies. In contrast, Models 2 and 3, which exhibited a poor fit, were excluded from further examination.

Figure 1.



Note. In the figure, the factor loadings are shown in the squares. Items 16, 22, 33, and 34 are not listed as reverse items in the original article, but their content clearly indicates they are. For further details, see the Discussion section.

Internal Consistency

The internal consistencies of the CRS-HU (35 items), the B-CRS-HU (14 items), and six subscales were assessed by Cronbach's alphas and McDonald's omegas. The Division of Labor was examined with Spearman correlation because it contains only two items. Internal consistencies were "good" or "excellent" with Cronbach's alphas and McDonald's omegas ranging from .75 to .89 (Table 4).

Table 4. Descriptive Statistics and Cronbach's α of CRS and CRS-HU ($N = 381$)

	CRS Hungarian version ($N = 381$)				CRS original study (Mother; Wave 2; $N = 156$) (Feinberg et al., 2012)		
	Cronbach's α	McDonald's omega	M	SD	Cronbach's α	M	SD
Full version (35)	.82	.85	4.85	.84	.94	4.89	.83
Brief version (14)	.87	.88	4.87	.85	.88	4.91	.84
Coparenting Agreement (4)	.77	.78	4.96	1.03	.66	4.90	.99
Coparenting Support (6)	.89	.88	4.49	1.38	.88	4.63	1.33
Coparenting Closeness (5)	.78	.78	4.61	1.18	.83	4.78	1.16
Exposure to Conflict (5)	.87	.87	1.07	.89	.89	.89	.94
Coparenting/Undermining (6)	.75	.75	.53	.78	.83	.59	.77
Endorse Partner's Parenting (7)	.85	.86	4.87	1.02	.88	4.83	1.12
Division of Labor (2)*	$r_s(381) = .52^{**}$		4.26	1.58	$r(148) = .44$	4.09	1.57

Note. * Because of the low number of items, correlation was calculated instead of Cronbach alpha.

** r_s : Spearman correlation.

Convergent and Discriminant Validity

Correlations between the CRS-HU subscales and constructs similar to the CRS were examined to assess convergent and discriminant validity. Table 5 shows that Spearman correlations between the independent scales (D-COP-HU and ECS-HU) as well as the CRS-HU and its subscales ranged between .46 and .81. Between the CRS-HU's full and brief versions, we found very strong correlation ($r_s(381) = .97, p < .01$). The D-Cop-HU measure showed a higher association with CRS-HU ($r_s(381) = .81, p < .01$), than ECS-HU, although in the latter, it was also quite strong ($r_s(381) = .68, p < .01$).

Table 5. Spearman Correlations Between CRS-HU and Other Coparenting Measures ($N = 381$)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Full CRS-HU											
2. Brief CRS-HU	.97**										
3. Coparenting Agreement	.70**	.66**									
4. Coparenting Support	.85**	.83**	.56**								
5. Coparenting Closeness	.76**	.76**	.45**	.60**							
6. Exposure to Conflict	-.63**	-.57**	-.44**	-.45**	-.44**						
7. Coparenting Undermining	-.71**	-.65**	-.55**	-.58**	-.46**	.47**					
8. Endorse Partner's Parenting	.77**	.75**	.46**	.58**	.49**	-.34**	-.47**				
9. Division of Labor	.63**	.67**	.37**	.40**	.40**	-.29**	-.41**	-.60**			
10. D-COP-HU	.81**	.79**	.66**	.62**	.63**	-.56**	-.61**	.59**	.63**		
11. ECS-HU	.68**	.66**	.56**	.54**	.57**	-.48**	-.50**	.52**	.46**	.66**	1

Note. ** $p < .01$.

Table 6. Associations Between CRS and Sociodemographic Background Variables

	<i>M (SD)</i>	Sig. of Kruskal-Wallis/ Mann-Whitney test	Effect size (η^2/r)
Age		.664	.002
Under 30 years	4.84 (.75)		
31–40 years	4.87 (.85)		
Over 40 years	4.81 (.88)		
Education		.019	-.12
Secondary education	4.64 (1.02)		
Higher education	4.90 (.84)		
Type of partnership		.061	-.05
Marriage	4.88 (.80)		
Cohabitation	4.68 (1.05)		
Age of the oldest child		.190	.014
Under 6 years	4.73 (.82)		
7–12 years	4.83 (.82)		
Over 13 years	4.94 (.88)		
Age of the youngest child		.035	.018
0–1 years	4.99 (.72)		
2–3 years	4.73 (.96)		
4–6 years	4.78 (.81)		

CRS-HU and Socioeconomic Background Variables

Kruskal-Wallis and Mann-Whitney U tests were used to determine whether differences in the CRS score existed between various groups of participants (Table 6).

There were no significant differences in subgroups of parents' age, education, type of partnership and age of oldest child. We found a significant effect for the age groups of the children, $\chi^2(2) = 6.694, p = .035$. Subsequent pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. These post-hoc analyses revealed statistically significant differences in CRS-HU scores for mothers with the youngest children's age group ($M = 3.4; SD = .46$; mean rank = 208.15) compared to mothers

with 2–3-year-old ($M = 3.31$; $SD = .61$; mean rank = 178.93) ($p = .028$) and 4–6-year-old ($M = 3.31$; $SD = .52$; mean rank = 177.92) ($p = .031$) children. Mothers with higher education had a higher CRS-HU score ($Mdn = 3.48$) than those with secondary education ($Mdn = 3.31$), ($U(N_{\text{secondary}}=68, N_{\text{higher}}=313) = 8715.5$, $z = -2.338$, $p = .019$).

Discussion

This study's results indicate that the Hungarian version of the CRS (CRS-HU) is a reliable and valid instrument for the measurement of coparenting in a Hungarian-speaking context. Our data and CFA results suggest that the brief version (B-CRS-HU) and the six separate subscales are suitable for use; however, the full CRS-HU scale as a single factor showed a low fit and should be treated with caution despite its good internal consistency.

Positive correlations between the Hungarian versions of CRS, D-COP, and ECS indicate convergent (congruent) validity, which is consistent with previous results (McDaniel et al., 2017). A methodological and practical issue concerns the way the scale scores are calculated. The original (Feinberg et al., 2012) and several other studies (Camisasca et al., 2019; Lamela et al., 2020) used the mean scores to evaluate the CRS scale and subscales. We found only one exception among previous studies (Abbass-Dick et al., 2015), where an aggregated score of all items (ranging from 0 to 210) was calculated, with higher scores indicating higher levels of positive coparenting. When the instrument is used for screening or clinical monitoring rather than for research purposes, the aggregation method can be easier and more interpretable than calculating an average score.

In the present study, the internal consistency of each subscale was excellent or good ($\alpha = .75-.89$), while in previous studies, some subscales showed a lower reliability. In the original study (Feinberg et al., 2012), in the Brazilian (Carvalho et al., 2018), and the Portuguese (Lamela & Jongenelen, 2018) versions, the coparenting agreement subscale had the lowest internal consistency; nonetheless, several studies use this subscale even on its own (Roskam et al., 2018; Teti et al., 2015). Among the subscales, Coparenting Closeness and Division of Labor became subjects of conceptual and methodological criticism. Compared to the other subscales, the Division of Labor subscale consists of only two items, which suggests a kind of methodological "separation". While for other subscales, we can measure scale reliability by Cronbach's alpha, here we can only use a correlation coefficient. We did not analyze Division of Labor as a separate subscale (Model4); the factor loadings of the other models seem to work in a similar way to the items of the other subscales. Nevertheless, we believe that using a Division of Labor subscale should be strongly considered when examining families at different life stages: we can observe a completely different division of labor in newlywed couples, parents with newborns and older children, or divorced couples. As another criticism, several studies (Ferraro et al., 2018; Lamela et al., 2016) have suggested that the Coparenting Closeness subscale refers to relationship quality rather than to coparenting; therefore, the use of the subscale can be inadequate for divorced parents.

In studies using CRS, we come across many variations of it: full and brief versions, and separate subscales. This diversity shows that CRS and its separate subscales can be used to study coparenting or some of its aspects, which the results of our research also confirmed.

Items 16, 22, 33, 34 are not reversed in the original article, but their content clearly indicates that they actually are. ("*My partner tries to show that she or he is better than me at caring for our child.*" (16); "*My partner undermines my parenting.*" (22); "*Do you argue about your relationship or marital issues unrelated to your child, in the child's presence?*" (33); "*Does one or both of you say cruel or hurtful things to each other in front of the child?*" (34)). In Figure 1, we have intentionally presented the reverse of the original to highlight this omission. Based on the content of the items, they were negatively loaded in the model.

Although many studies have been conducted on coparenting using the CRS, few data exist on correlations with sociodemographic variables. Mikolajczak et al. (2018) pointed out that sociodemographic factors play a much smaller role in parental burnout than factors related to parenting and family functioning. Consistent with the results of previous studies, we found no association between sociodemographic background variables and CRS, except for the age of the youngest child.

In conclusion, although our work proves to us the full CRS-HU's good internal consistency, we recommend some caution because the factor structure does not fit properly into our Hungarian data. The brief version and the individual subscales can be used with greater confidence.

Strengths and Limitations

This research is significant for several reasons. First, so far, no established method has been established yet for measuring this construct in Hungary, which has limited the ability to connect with the international research discourse. With this study, we address this gap, enabling Hungarian researchers to align with global standards and contribute to international discussions. The instrument we have developed provides a solid foundation not only for academic research but also for clinical applications in the Hungarian context.

We offer the tool in several versions to meet diverse research and professional needs: a full-scale version, a shortened version, and options focusing on specific subscales. This flexibility ensures that the instrument can be adapted to a variety of research purposes and practical applications, enhancing its utility in both academic and applied settings.

On the other hand, several limitations of the study should also be noted. First, our sample is specific in terms of gender and education: only women participated, and women with higher education were overrepresented. A further testing of the instrument on a representative sample or other specific target groups would be essential. Since the study of coparenting dynamics inherently requires the perspectives of both partners, future research should include men to provide a more balanced and comprehensive understanding of coparenting.

Additionally, we utilized convenience sampling with a snowball method. Testing the instrument on a representative sample would allow for establishing Hungarian scale standards, which would benefit both clinical work and research. Finally, due to the study's cross-sectional design, we did not measure coparenting dynamics over time, nor did we assess the temporal stability of the questionnaire through a test-retest structure. Future longitudinal research is needed to address these limitations.

Conclusion, Implications and Future Directions

This study represents a significant milestone in coparenting research through validating the Hungarian version of the Coparenting Relationship Scale (CRS-HU). The results confirm the reliability and validity of the CRS-HU and its brief version (B-CRS-HU) as tools for assessing coparenting dynamics in Hungarian-speaking populations. The individual subscales also provide valuable flexibility for targeted investigations of specific coparenting dimensions.

The CRS-HU offers opportunities for Hungarian researchers and practitioners to align with international standards and contribute to global discourse on coparenting. Its practical applications extend to clinical interventions, where it can be used to assess and improve coparenting relationships in diverse family contexts. The availability of multiple versions enhances its adaptability across various research and applied settings.

Future research should prioritize testing the CRS-HU with male participants to gain a more balanced and comprehensive understanding of coparenting dynamics. The inclusion of fathers is particularly critical given the dyadic nature of coparenting and thus, the necessity of capturing both parents' perspectives. Longitudinal studies are also essential to examine the instrument's temporal stability and better understand the developmental trajectories of coparenting relationships over time.

Additionally, further validation studies involving representative samples of diverse family structures — such as blended families, separated parents, and non-traditional households — would broaden the instrument's applicability. Establishing Hungarian normative data would also enhance the utility of the CRS-HU in both research and clinical contexts. Integrating the CRS-HU with other measures of family functioning could yield deeper insights into the systemic interconnections within families and their impact on child outcomes.

Finally, as few international validation studies of the CRS exist, our work also contributes to the broader effort to enable cross-cultural comparisons and to examine the cultural validity of the construct and the instrument. By doing so, we aim to inspire further research and validation analyses in other cultures and countries, advancing the global understanding of coparenting dynamics.

In conclusion, the CRS-HU provides a solid foundation for advancing coparenting research and practice in Hungary. Testing the instrument with a more diverse range of participants, particularly men, will be an essential step in ensuring its comprehensive applicability and relevance in capturing the dynamics of coparenting relationships.

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Author contribution

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Declaration of interest statement

The authors have no conflicts of interest to disclose.

Ethical statement

This manuscript is the authors’ original work.

All participants engaged in the research voluntarily and anonymously.


Their data are stored in coded materials and databases without personal data.

The studies involving human participants were reviewed and approved by the Research Ethics Committee of Semmelweis University, Budapest, Hungary (license number: RKEB 143/219).

Data availability statement

Datasets presented in this article are available in a publicly accessible repository: coparenting_pilot_final.sav https://osf.io/2ynux/?view_only=2f86501fdbff490fbaf328894f38d60d

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RESEARCH ARTICLE

The Role of Majority Status in Shaping Self-Esteem: A Comparative Study of Muslim and Christian College Students in Indonesia

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Introduction: Self-esteem is an adaptive trait that boosts well-being. The relationship between religiosity and self-esteem is complex, with mixed results from empirical studies. Culture and dimensions of religiousness may influence this relationship.

Aim: The main purpose of this study is to understand the connection between religiousness and self-esteem in two different conditions: as a majority and as a minority.

Methods: This study's participants are college students who identify as Muslim or Christian. They are from two regions in Indonesia: Jabodetabek (Java Island), where Muslims are the majority; and East Nusa Tenggara and North Sulawesi (outside of Java), where Muslims are in the minority. Most of the respondents were between 18 and 25 years old. The survey was conducted online.

Results: No significant differences emerged in religiousness and self-esteem between Muslims and Christians in both Java and regions outside of Java. However, students outside Java Island exhibited higher religiousness and self-esteem, irrespective of their religious affiliation.

Conclusion: This study indicated that religiosity is a social value, with some exceptions.

Keywords: religiousness, self-esteem, Muslims, Christians, Indonesia

Introduction

Although some researchers argue against the idea that self-esteem benefits well-being, most studies have confirmed that it is an adaptive trait that boosts well-being (Orth & Robins, 2022). Considering that self-esteem is essential for health and well-being, researchers have examined the factors influencing it. One such factor is religiosity.

The relationship between religiosity and self-esteem is complex. Empirical studies have yielded mixed results. Some studies have shown that religion benefits self-esteem, while others have found no correlation (Abu-Raiya et al., 2021; Lai & Wong-Ip, 2023). These inconclusive results may be attributed to the complexity of religiosity. Religiosity has several dimensions, each of which may have a different relationship with self-esteem

(Saroglou, 2011). Culture can also influence the relationship between religion and self-esteem (Entringer et al., 2023). Sedikides and Gebauer (2021) mentioned that the relationship between religion and culture is more robust in religious countries. Therefore, research on the relationship between religiosity and self-esteem should use multidimensional religious assessments and consider the cultural context.

Most studies have been conducted primarily in White Christian populations (Błazek & Besta, 2012; Entringer et al., 2023; Papazisis et al., 2014). Abu-Raiya et al. (2021) studied Israeli people – primarily Jews and Muslims. Erken (2023) conducted a study of Muslims in England. This study extends the research on religion and self-esteem by conducting research in Indonesia on Muslims and Christians in two areas: where they constitute the majority and where they form a minority. Indonesia, the world's fourth most populated nation, is home to a diverse cultural milieu with over 270 million individuals hailing from 1340 ethnic groups and practicing six state-recognized religions; 56% live on Java Island. The majority of Indonesians (87%) are Muslims, while Christians make up 7% of the population, according to the Central Statistics Agency of the Republic of Indonesia (BPS-Statistics Indonesia, 2023). However, there are some areas, mainly outside Java, where Christians are the majority and Muslims are the minority.

We will also assess religiousness using four dimensions – believing, bonding, behaving, and belonging – to examine the relationship between each dimension and self-esteem. Thus, it enhances the understanding of the role of culture and the dimensions of religiousness in the relationship between religion and self-esteem.

Self-esteem

Self-esteem pertains to an individual's overall assessment and emotional stance, which can be either positive or negative regarding oneself and one's thoughts and emotions (Rosenberg, 1979). People with high and low self-esteem may respond similarly to supportive conditions but differently to unsupportive situations (Park & Park, 2019). For example, social relationships and academic achievement are the two most important skills college students need to master, and students with high and low self-esteem may cope differently.

Individuals with high self-esteem typically exhibit a greater capacity for constructive conflict management, emotional openness, and trust in others (Baumeister et al., 2003).

Their interactions are often characterized by increased physical affection, attentive listening, supportive behavior, and effective conflict resolution, all of which contribute to developing more profound and fulfilling social relationships. A meta-analysis of longitudinal studies further reinforced this connection, demonstrating a reciprocal relationship between self-esteem and the quality of social relationships over time (Harris & Orth, 2020).

The same was true for the contribution of self-esteem to school achievement. Most studies indicate that students with high self-esteem tend to excel in academic and professional fields and are better equipped to manage stress and form close and meaningful relationships (Orth & Robins, 2022). It is commonly believed that self-esteem and academic performance possess a linear and reciprocal relationship. That is, improving self-esteem can lead to enhanced academic achievement; conversely, academic success can boost self-esteem (Acosta-Gonzaga, 2023).

Religiosity

Religiousness is a concept designed to assess one's level of engagement in religion; it is intricate and has various aspects. Consequently, an adequate measure of religiousness should encompass multiple dimensions to grasp religion's intricacies (Hood et al., 2018; Koenig, 2018).

Saroglou (2011) proposed the Four Basic Dimensions of Religiousness (4-BDRS), a universal measure of religiousness that includes four aspects to assess religiousness: belief, bonding, behaving, and belonging. Believing is about having faith in something beyond the natural world; bonding is about feeling connected to the sacred through rituals; behaving is about following moral rules; and belonging is about being part of a religious group. We previously tested the 4-BDRS among Indonesian Muslim and Christian college students and found that it was a reliable measure for both groups; however, differences appeared in the importance of each aspect and how they influenced other psychological outcomes (Aditya et al., 2021). Previous studies in Indonesia have shown that Muslims score higher on behaving, whereas Christians score higher on belonging (Aditya et al., 2018, 2021). According to Saroglou et al. (2020), all aspects of the 4-BDRS were related to higher life satisfaction. We also found that, among Indonesian Muslim and Christian college students, total religiousness contributed to life satisfaction. The higher the religiousness, the higher the life satisfaction for both groups. However, the dimensions of religiousness that contribute to life satisfaction vary according to religion. For Christians, belief and

belonging are significantly related to life satisfaction, whereas for Muslims, only belonging is significantly related (Aditya et al., 2018). These results indicate that the relationship between religion and self-esteem varies between Indonesian Muslims and Christians.

Religiosity and Self-esteem

In theory, Entringer et al. (2023) state that at least three possible explanations exist for the observed connection between religiosity and self-esteem. First, according to the perspective that views *religiosity as a personal relationship (RAPR)* with a higher power, having strong religious faith enhances self-esteem by establishing a close bond with a deity (Ellison & Levin, 1998; Hayward & Krause, 2014). Second, from the perspective of *religiosity as a resource (RAR)*, religiosity can boost self-esteem by providing access to significant social resources, particularly among older adults (Ellison & Levin, 1998; Hayward & Krause, 2014). Third, from the perspective of *religiosity as a social value (RASV)*, self-esteem is positively linked to religiosity because religious individuals perceive themselves as valued members of religious communities. However, secular societies may weaken this association (Gebauer et al., 2012, 2017).

Empirical studies on the correlation between religion and self-esteem varied depending on which aspect of religion was assessed: religiousness, importance of religion in the country, and majority or minority status. (Abu-Raiya, et al., 2021; Entringer et al., 2023; Gebauer, 2017) The relationship between religiousness and self-esteem may vary depending on the correct perspective. For example, if the RAPR is correct, the belief and bonding dimensions of religiosity may have a significant relationship with self-esteem among both Muslims and Christians. Behavior may have a significant relationship with self-esteem only among Muslims.

Believing is a dimension of religiousness that can provide meaning in life because it addresses the existence and purpose of life (Saroglou et al., 2020). Having a clear purpose in life can make someone more confident in their decisions, boosting their self-esteem (Du et al., 2017). However, previous studies among Muslim and Christian college students in Indonesia have indicated that they are not mature enough; therefore, the Believing dimension does not correlate with life satisfaction (Aditya et al., 2022). Therefore, it is unlikely that Believing correlates with self-esteem.

Bonding is a dimension of religiousness that describes emotional and aesthetic experiences. According to Entringer's theory (Entringer et al., 2023), bonding is positively correlated with self-esteem. However, bonding may not correlate with self-esteem for the same reasons mentioned regarding the belief dimension.

Behaving represents the moral dimension of religiousness (Saroglou et al., 2020). Behavior is an essential aspect of Muslim religiosity. A previous study found that Muslim behavior enhances the positive image of God and hinders its negative image (Aditya et al., 2022). However, for Christians, behaving only enhances the positive image of God but does not contribute to hindering the negative image of God (Aditya et al., 2022). This study suggests that behavior may contribute to positive self-esteem among Muslims only.

If the RAR or RASV is correct, then belonging may have a significant relationship with self-esteem. Belonging is a dimension of religiousness that denotes attachment to a religious/cultural heritage that provides social support and a sense of community. Previous studies on the relationship between belonging and life satisfaction among Muslim and Christian college students consistently found a positive correlation between belonging and life satisfaction (Aditya et al., 2021, 2022). A sense of unity, having a shared perspective, and identifying with a group can cultivate balanced, collective self-worth intertwined with individual self-worth. Cultural surroundings profoundly influence people's self-assessment (Markus & Kitayama, 1991). Therefore, the majority group may have a significant advantage in belonging. However, this does not imply that minority groups may not benefit from belonging. Previous studies on college students in the greater Jakarta area, where Muslims are the majority and Christians are the minority, found that belonging was significantly correlated with life satisfaction for both Muslims and Christians (Aditya et al., 2021). Belonging benefited both groups for several reasons. The majority feel they are valued community members (RASV), while the minority receives support from their group (RAR).

Majority and minority statuses may influence the relationship between religiosity and self-esteem, as found in a previous study. Studying Muslim Immigrants in the US (Ghaffari & Çiftçi, 2010) found that perceived discrimination as a minority plays an essential role in moderating the effect of religiosity on self-esteem. A high degree of perceived discrimination decreases self-esteem among highly religious individuals. However, a low level of perceived discrimination can increase self-esteem with increasing religiosity because the experience of success through an obstacle may strengthen self-esteem.

Purpose of the Study

This study aims to build upon previous research in this field by examining Muslim and Christian college students in Indonesia under two conditions: when they are the majority and when they are the minority. We used the Four Basic Dimensions of Religiousness Scale (4-BDRS), which assesses religion's cognitive, affective, social, and moral aspects. Therefore, we can see the correlation between religiousness and self-esteem in Indonesia (a religious country) concerning majority and minority groups and how each dimension of religiousness contributes to self-esteem.

We predicted a positive correlation between religiosity and self-esteem among Christians and Muslims. We also expected differences in self-esteem between Muslim and Christian respondent groups when they were in the majority and minority conditions, as well as differences in the dimensions of religiosity that significantly predict self-esteem.

Methods

Participants and Data Collections

Data was collected from college students living in Jabodetabek (Java Island), East Nusa Tenggara, and North Sulawesi using the SurveyMonkey platform. A question about religion was included in the questionnaire as a screening method; only those who identified as Muslim or Christian were analyzed in this study. In Jabodetabek, Muslims are the majority and Christians are the minority. However, in East Nusa Tenggara and North Sulawesi, Muslims are the minority, and Christians are the majority. This study was approved by the Center for Research and Community Development of the Universitas Pelita Harapan, no. 001/LPPM-UPH/I/2024. We got 1149 Muslim and Christian respondents who completed the survey, of whom 363 were excluded because they did not pass the attention test. Therefore, 786 respondents were used for the calculation: 536 from Java (306 Muslims and 230 Christians) and 250 from outside Java (79 Muslims and 171 Christians). The respondents' other characteristics are presented in [Table 1](#) below.

Table 1. Characteristics of the respondents

Sample Characteristics		n	%	Mean (SD)	Minimum	Maximum	
Age	Java Island			20.85 (5.43)	17	64	
	Outside Java Island			20.00 (1.91)	17	30	
Gender	Java Island	Male	114	21.3			
		Female	422	78.7			
	Outside Java Island	Male	64	25.6			
		Female	186	74.4			
Religion	Java Island	Islam	306	57.1			
		Christian	230	42.9			
	Outside Java Island	Islam	79	31.6			
		Christian	171	68.4			
Academic study groups	Java Island	Humanities & Social Sciences	406	75.7			
		Natural & Applied Sciences	79	14.7			
		Teacher & Education Study	51	9.5			
	Outside Java Island	Humanities & Social Sciences	115	46.0			
		Natural & Applied Sciences	54	21.6			
		Teacher & Education Study	81	32.4			

Measures

The Four Dimensions of Religiousness (4-BDRS)

The Four Dimensions of Religiousness (4-BDRS) (Aditya et al., 2021; Saroglou, 2011) were used to assess religiousness. The 4-BDRS consists of 12 statements, with three for each of the four dimensions: believing, bonding, behaving, and belonging. Participants rated each question on a 7-point Likert-type scale. Examples of the statements include: “I feel attached to religion because it helps me to have a purpose in my life” (believing), “I like religious ceremonies” (bonding), “I am attached to religion for the values and ethics it endorses” (behaving), and “In religion, I enjoy belonging to a group/community” (belonging). The tool’s internal reliability was established using Cronbach’s alpha scores for each dimension in each group, and ranged between .47-.82 (see listed in Table 2).

The Rosenberg Self-Esteem Scale (RSES)

The Rosenberg Self-Esteem Scale (RSES) was used to assess self-esteem (Rosenberg, 1979). The RSES has ten questions on a 4-point Likert scale (e.g., “I take a positive attitude toward myself”). Using Cronbach’s alpha, the internal reliability measured ranged between .75-.87 (see in Table 2).

Table 2. Cronbach’s alpha of all dimensions for all groups

Dimensions	Java Island			Outside Java Island			Total Respondent
	Muslims	Christians	Total	Muslims	Christians	Total	
Believing	.76	.67	.72	.66	.66	.66	.70
Bonding	.74	.80	.77	.47	.56	.54	.68
Behaving	.82	.80	.81	.75	.58	.63	.78
Belonging	.82	.78	.80	.82	.76	.80	.82
Self-esteem	.85	.87	.86	.80	.75	.77	.84

Table 2 shows all dimensions of the 4-BDRS. Self-esteem has good reliability for all respondents both from Java Island and outside Java Island, except for the Bonding of Muslims outside Java Island, which has a Cronbach’s alpha of .47. We still used this scale since its reliability for all respondents was acceptable. However, the subscale’s results should be interpreted with caution because of the low reliability in one subgroup.

Statistical Analysis

Several analyses were conducted to test our hypotheses. First, we conducted a descriptive analysis and a correlation test between self-esteem and religiosity. As we had four groups (Muslims in Java, Christians in Java, Muslims outside Java, and Christians outside Java) and five variables (believing, bonding, behavior, belonging, and self-esteem), a two-way ANOVA test was performed to compare the effect of religion and location on each variable in this study. Before conducting a statistical analysis, we ran the normality and homogeneity of variance in each group as shown in Table 3. Because some groups did not meet normality, we then conducted a statistical analysis via the bootstrapping method with the resampling of 5000.

Table 3. Normality and Homogeneity of Variance

		Normality		Homogeneity of Variance	
		Skewness	Kurtosis	Levene Statistic	Sig.
Believing	Muslim in Java	-0.89	0.18	0.54	.654
	Muslim outside Java	-1.76	3.48		
	Christian in Java	-0.90	0.43		
	Christian outside Java	-2.43	7.81		
Bonding	Muslim in Java	-0.50	-0.48	2.39	.067
	Muslim outside Java	-1.02	0.16		
	Christian in Java	-0.74	-0.06		
	Christian outside Java	-1.45	1.98		
Behaving	Muslim in Java	-1.27	1.74	6.68	< .001
	Muslim outside Java	-2.05	3.65		
	Christian in Java	-1.23	2.04		
	Christian outside Java	-2.05	4.45		
Belonging	Muslim in Java	-1.22	-0.73	2.36	.070
	Muslim outside Java	-0.97	0.56		
	Christian in Java	-0.62	-0.02		
	Christian outside Java	-1.54	2.50		
Self Esteem	Muslim in Java	-0.05	0.14	3.38	.018
	Muslim outside Java	0.40	0.66		
	Christian in Java	-0.21	0.35		
	Christian outside Java	-0.35	1.05		

Finally, we performed a multiple regression analysis to determine the contribution of each dimension of religiousness (Believing, Bonding, Behaving, and Belonging) to self-esteem for each group (Muslims in Java, Christians in Java, Muslims outside Java, and Christians outside Java).

Results

Table 4 shows the means, standard deviations, and Spearman correlations for all the main variables regarding both Muslim and Christian participants in all areas. In general, the analysis results showed positive correlations between the dimensions of religion in Muslim and Christian both in Java and outside Java. The results of the analysis also show a positive correlation between self-esteem and the dimensions of religion, namely Behaving and Belonging, in Muslim and Christian participants both in Java and outside Java. However, Believing and Bonding only have a positive correlation with Muslim and Christian participants in Java.

The results of the two-way ANOVA test demonstrate that no interaction presented between religion (Muslim and Christian) and location (Java and outside Java) ($F(1,782) = 0.22, p = .642, \eta^2 = .001$) The results of the main effect test showed no difference in self-esteem based on religion ($F(1,782) = 0.59, p = .444, \eta^2 = .001$) However, there was a difference in self-esteem based on location ($F(1,782) = 10.39, p = .001, \eta^2 = .013$). The self-esteem of respondents outside Java ($M = 28.41, SD = 0.30$) was higher than for respondents from Java ($M = 27.26, SD = 0.19$).

Two-way ANOVA results also indicated no interaction between religion and location in any dimension of religion: Believing, Bonding, Behaving, and Belonging (see Table 5). The main effect based on religious differences (Muslim and Christian) showed no difference in Believing, Bonding, and Behaving. However, there was difference in Belonging scores based on religion: the Belonging mean score of the Christians ($M = 17.19, SD = 3.85$) was higher than those of Muslims ($M = 15.71, SD = 3.93$). The main effect based on location differences (Java and outside Java) proved that a difference existed in Believing, Bonding, Behaving, and Belonging. For all dimensions of religion, the respondents from outside Java scored higher than the respondents from Java.

Table 4. Means, standard deviation, and Spearman correlations for Muslim and Christian participants in Java Island (1) and outside Java Island (2).

		Mean	SD	Range	1	2	3	4	5
Believing	Muslim 1	5.96	0.96	1–7					
	Christian 1	5.87	1.03	1–7					
	Muslim 2	6.32	0.94	1–7					
	Christian 2	6.29	1.10	1–7					
Bonding	Muslim 1	5.66	1.03	1–7	.53**				
	Christian 1	5.69	1.09	1–7	.58**				
	Muslim 2	6.15	0.93	1–7	.49**				
	Christian 2	5.99	1.10	1–7	.41**				
Behaving	Muslim 1	6.14	0.91	1–7	.65**	.59**			
	Christian 1	5.98	1.03	1–7	.57**	.61**			
	Muslim 2	6.54	0.77	1–7	.49**	.59**			
	Christian 2	6.50	0.79	1–7	.55**	.42**			
Belonging	Muslim 1	4.90	1.26	1–7	.52**	.65**	.55**		
	Christian 1	5.29	1.27	1–7	.48**	.65**	.56**		
	Muslim 2	5.57	1.38	1–7	.33**	.51**	.53**		
	Christian 2	6.16	1.12	1–7	.49**	.45**	.69**		
Self-esteem	Muslim 1	27.04	4.44	10–40	.19**	.17**	.25**	.20**	
	Christian 1	27.48	4.86	10–40	.23**	.25**	.21**	.31**	
	Muslim 2	28.35	4.10	10–40	.10	.07	.26**	.36**	
	Christian 2	28.46	3.83	10–40	-.01	.12	.22**	.29**	

** The correlation was significant at the level of .01

Table 5. Result of the Two-way ANOVA

Dependent Variable	Effect	F	p	Eta squared
Self Esteem	Religion	0.59	.444	.001
	Location	10.39	.001	.013
	Religion*Location	0.22	.642	.001
Believing	Religion	0.56	.455	.001
	Location	22.80	.001	.028
	Religion*Location	0.15	.703	.001
Bonding	Religion	0.53	.469	.001
	Location	20.50	.001	.026
	Religion*Location	1.24	.266	.002
Behaving	Religion	1.89	.170	.002
	Location	39.58	.001	.048
	Religion*Location	0.66	.418	.001
Belonging	Religion	24.03	.001	.030
	Location	58.32	.001	.069
	Religion*Location	0.99	.319	.001

To determine which dimension of the 4-BDRS contributed to self-esteem, we performed a multiple regression analysis in which all dimensions served as independent variables and self-esteem as the dependent variable. Before performing the regression test, we conducted a collinearity diagnostic which produced Variance Inflation Factor (VIF) values between 1.346–2.181. A VIF value less than 10 indicates that there is no collinearity problem (Dormann et al., 2013). The results of the collinearity diagnostics confirm that the data was suitable for multiple regression analysis. Table 6 presents the results of the multiple regression with self-esteem as dependent variable.

Table 6. Multiple regression results for Self-Esteem as a dependent variable

	Java Island				Outside Java Island			
	Muslims ($F = 6.61, p < .001$ $R^2 = .08$)		Christians ($F = 7.23, p < .001$ $R^2 = .11$)		Muslims ($F = 3.78, p = .008$ $R^2 = .17$)		Christians ($F = 5.94, p < .001$ $R^2 = .13$)	
	β	p	β	p	β	p	β	p
Believing	-.048	.535	-.025	.772	-.013	.918	-.243**	.008
Bonding	.000	.999	.072	.462	-.230	.110	.025	.770
Behaving	.205*	.014	.007	.939	.194	.183	.122	.256
Belonging	.153*	.045	.294**	.001	.379**	.005	.316**	.003

β = Standardized Coefficients

** β was significant at the level of .01

* β was significant at the level of .05

Table 6 shows that the dimensions of religiousness that significantly contributed to self-esteem differed for Muslim and Christian students and students living in and outside Java. For Muslim students on Java Island, Behaving and Belonging have significant positive contributions to self-esteem, while for Muslims outside of Java Island, it was Belonging. Belonging provides a significant positive contribution to self-esteem for both Christians living on Java Island and outside of Java Island. However, Believing significantly negatively contributes to the self-esteem of Christians living outside of Java Island.

Discussion

The results showed that religiousness contributed positively to self-esteem. Religious college students, whether Muslims or Christians, tend to have higher self-esteem than less religious students. This result is consistent with those of the previous studies (Abdel-Khalek, 2011; Papazisis et al., 2014). Indonesia is among the most religious countries worldwide (Evans et al., 2023). Therefore, religious people fit into the culture, thus enhancing their self-esteem (Gebauer et al., 2012, 2017).

However, the results of the analysis showed that college students who belonged to a religious majority group (Muslims on Java Island and Christians outside Java Island) did not have a higher self-esteem compared to the religious minority group (Christians on Java Island and Muslims outside Java Island). This result contradicts most previous studies finding that people from minority groups have a lower self-esteem (Benner et al., 2018; Gebauer et al., 2017; Iqbal et al., 2013). The situation of the majority and minority religious groups in Indonesia may differ from the results of previous studies (Entringer et al., 2023; Every & Perry, 2014; Iqbal et al., 2013). Indonesia is one of the world's most religious countries, and 96% of the population said religion is important (Evans et al., 2023). Despite Muslims making up 87% of the population and Christians comprising almost 7% of the population, Indonesia is not a Muslim country. Still, it is based on Pancasila, which guarantees freedom of religion. Muslims on Java Island, as the majority group, have many advantages, such as the ease of accessing religious facilities and practicing specific religious preferences (e.g., *halal* food and cosmetics).

However, unlike many minority groups outside Indonesia, who usually have lower social and economic status compared to the majority group, Christians on Java have the same or even better economic status compared to Muslims. No statistical data support this claim, but Listiono's (2020) study supports it. Listiono (2020) studied the relationship between religion and economics in Indonesia and found that only Protestants and Hindus were significantly correlated with economic growth. This indicates that Christians do not have a lower economic status than Muslims. The advantages of economic status may buffer the effect of minority status on self-esteem, as people with higher economic status usually have a better self-esteem (Twenge & Campbell, 2002).

Evans et al. (2023) found that most young Christian adults in Indonesia were churchgoers. They may not understand their religion well, but they regularly attend church. This habit may have enabled them to have friends of the same religion and to receive social support. The results of this and previous studies have consistently found that Christian college students have a higher score on Belonging than Muslim college students (Aditya et al., 2022). Previous studies have also found that Belonging is a dimension of religiousness that con-

sistently and significantly contributes to the well-being of Christian college students in Indonesia (Aditya et al., 2022). Harris and Orth (2020) found that good social relationships boost self-esteem. Therefore, Christian college students' sense of Belonging may support their self-esteem. This is consistent with the results of the multiple regression, which found that Belonging was the only dimension of religiousness that significantly correlated with self-esteem for Christian college students both from Java and outside Java.

For Muslim minorities outside Java, several concepts can explain why their self-esteem remains high. The first reason is that Muslim communities have a strong bond with each other, especially since Indonesia has a collectivist culture. Bonding here equals group autonomy that can protect individuals from the harmful effects of discrimination, which fosters positive self-esteem (Greene & Way, 2005; Munas, 2023). The regression analysis results also prove that the Belonging dimension contributes to positive self-esteem for Muslim minorities.

Work ethics related to success can lead to good self-esteem regardless of social attributes, is another argument. The strong work ethic among minorities is attributed to their resilience in coping with stress responses (Kamen et al., 2017). Lacking the privileges enjoyed by the majority, they must develop better mechanisms to handle stress. Additionally, according to the Minority myth model, minorities are expected to uphold high standards of work ethics to meet societal expectations (Yoo et al., 2010). Furthermore, networking among minorities with shared marginalized identities can enhance professional success (Wu et al., 2022).

There were differences in the dimensions of religiousness that significantly correlated with self-esteem for both Muslims and Christians when they belonged to the majority or minority. For Muslims in a majority position, Behaving is significantly correlated with self-esteem. However, Belonging is a significant dimension when individuals hold a minority position. Behaving is one of the primary ways to develop positive feelings toward God (Pieper et al., 2018); and is also a form of worship (Abu-Raiya et al., 2013; Nasution, 2013). When they are in a majority position, Behaving in a religious/moral way may make them feel like good members of society, which can boost their self-esteem (RAPR). However, when they are in a minority position, Belonging is the primary dimension that boosts their self-esteem through the social support they receive from their religious communities (RAR) (Warsah et al., 2019).

This confirms that minority religious communities nurture Belonging as a coping process to obtain social support that boosts self-esteem. However, in majority positions, another religious dimension may be more important for predicting self-esteem. For Muslim students, this was the Behaving dimension.

The results of the multiple regression for Christians outside Java Island found that Believing has a negative correlation with self-esteem. This result is surprising because the Believing dimension is related to meaning in life. People who score high on Believing tend to have a better meaning in life, which can increase their self-esteem. On the other hand, Believing is related to orthodoxy and fundamentalism (Saroglou et al., 2020). People with high Believing may become disappointed when they see that other Christians or their leaders do not live according to their standards. This disappointment may lead to religious and spiritual struggles and lower self-esteem (Grubbs et al., 2016). Perhaps a focus on fundamentalistic Believing (dogmatism) can also be a source of stress. The exact reason for this discrepancy can be explored in a future study.

Another finding of this study is that the self-esteem of both Muslims and Christians outside Java was higher than for those in Java. This is surprising because the people on Java Island are more urbanized. Most previous studies have found that people in urban areas tend to have higher self-esteem than those in rural areas (Yu et al., 2022). A lower socioeconomic status and the lack of resources caused lower self-esteem in rural areas than in urban settings, as well as developing educational gaps.

However, Indonesia's rural areas exhibit different characteristics. Mayuzumi (2023) found that during the COVID-19 crisis, rural people's well-being was higher in rural areas than urban cities. How can the higher self-esteem and well-being in rural communities be explained? A study by Martínez Maldonado et al. (2008) revealed that the consumption of tobacco and alcohol is substantially higher in urban areas than in rural areas. Moreover, tobacco and alcohol consumption were negatively correlated with self-esteem. However, this point only applies to Christians but not to Muslims, who are not allowed to consume alcohol. For Muslims living in more rural areas outside Java, the research by Regev & Nuttman-Shwartz (2016) may explain that rural communities have been shown to cope better with traumatic situations than urban communities. In addition, another study found that depression impacts the quality of life among urban residents but not among rural residents (Chen et al., 2022). These findings seem to indicate that urban life may expose someone to more complex challenges putting pressure on self-esteem than a simpler rural life, and should be studied in future research.

Strengths and Limitations

One of the main strengths of this study was the respondents' characteristics. Our respondents are Muslim and Christian students from two regions in Indonesia, where one region has a Muslim majority and the other has a Christian majority. This research shows the complexity of the relationship between religion and self-esteem. It is not always the case that the majority religion has a higher self-esteem. Various other factors influence this. Unfortunately, in our research, we did not collect more complex demographic data, so our discussion is also limited. Future research can improve this by collecting more comprehensive socio-economic data.

This study also suggests that minority religious status and rural environment are not necessarily detrimental for self-esteem. Nurturing communities of religious peers and traditional religious values in the rural areas might become valuable resources and support systems for healthy self-esteem. On the other hand, complex urban populations could also develop and benefit from supportive communities and virtuous religious values for their self-esteem and well-being.

The respondents in this study were college students and mostly women. Future studies would benefit from a more balanced sample to facilitate sex-specific analyses and should include adult participants who are more mature, to determine if any differences exist.

Conclusion, Implications, and Future Directions

This study found that college students, whether Muslims or Christians, a majority or minority, may benefit from religion to boost their self-esteem. However, Christians in areas where they are the majority need to be careful in understanding their religion, as a high level of Believing (cognitive) dimension has been found to be correlated with lower self-esteem. College counselors or chaplains need to help them gain a more mature understanding of their religion to avoid religious and spiritual struggles that can lessen their self-esteem.

Muslim respondents among the majority of Christians in this study were limited, which might have reduced the validity of the study. Future studies should identify ways to recruit more respondents.

In the Christian-majority group, Believing was the only dimension of religiosity that negatively predicted self-esteem. Future studies need to examine this area more deeply to find answers, for example, by exploring other variables such as the Commitment-Reflectivity Circumplex to assess the respondents' religious orientation, religious attachment, denomination, and socioeconomic status.

The results of this study support the perspective of religiosity-as-social values (RASV) (Gebauer et al., 2012, 2017). As Indonesia is one of the most religious countries in the world, where religiosity holds a significant value. Hence, religious individuals feel good about themselves, which in turn increases their self-esteem. However, unlike in other countries, religious minorities in Indonesia also receive the benefit of religiosity, even though some differences exist in how the dimension of religiosity contributes to their self-esteem.

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Author contribution

Yonathan ADITYA: conceptualization, design, methodology, funding acquisition, investigation, project administration, data management, formal analyses, interpretation, supervision, writing original draft, writing review and editing.

Ihan MARTOYO: funding acquisition, investigation, interpretation, writing review and editing.

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Dana Riksa BUANA: formal analyses, interpretation, writing review and editing.

Declaration of interest statement

The authors have no conflicts of interest to disclose.

Ethical statement


This manuscript is the authors' original work.

All participants engaged in the research voluntarily and anonymously. Their data are stored in coded materials and databases without personal data. The studies involving human participants were reviewed and approved by Center for Research and Community Development of the Universitas Pelita Harapan, 001/LPPM-UPH/I/2024.

Data availability statement

Datasets of this study are available at here: <https://osf.io/u6yxe/> (with an OSF or ORCID account).

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RESEARCH ARTICLE

The Relationship between Lutheran Pastors' Well-Being and Depression and the Professional Support Available to Them: A Quantitative Study in the Hungarian Lutheran Church

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Introduction: Several studies confirm the unfavorable physical and mental health status of church pastors. These findings have often been linked to the level of social support they receive.

Aims: The purpose of this study is to provide insights into the relationship between the mental health of Hungarian Lutheran pastors and the availability of professional support. We examined which form of support shows the strongest association with their well-being and depression.

Methods: The quantitative research was conducted in 2022 in the Hungarian Lutheran Church. 54.0% of pastors ($N = 148$) completed the survey. Mental health status was measured using the WHO-5 Well-Being Index (WBI-5) and the 9-item Beck Depression Inventory (BDI). Three kinds of professional support were measured in the questionnaire: supervision, spiritual direction, and peer group support.

Results: The results clearly indicate a significant association between increasing levels of support utilized by pastors and improved well-being [$\chi^2(3, N = 139) = 28.75, p < .001$]. In the binary logistic regression analysis, the odds of being classified in the non-normal category of the BDI decreased by approximately 60.0% if pastors had a supervisor or spiritual director [$\chi^2(3, N = 132) = 15.33, p = .002$, Nagelkerke $R^2 = 15.1\%$].

Conclusions: Our results suggest that professional support has a stronger association with pastors' mental health status than any socio-demographic characteristics. The authors conclude that it is important to establish professional support systems for clergy to strengthen their ministry within the Hungarian Lutheran Church.

Keywords: clergy, professional support, well-being, depression, Lutheran

Introduction

There are several current challenges facing church pastors that put them at risk of poor health. These include changes in societal norms, difficulties related to an aging population, the prevalence of social media and online activities (Kapus et al., 2021), urbanization, and increasing mobility (Dyson, 2011). These challenges also affect the developed world, including Hungarian society, exerting pressure on families, churches, and small communities. Church pastors find themselves at the intersection of these domains, grappling with these issues both in their communities and personal lives. In facing these challenges, they are often left on their own, without support,

which can lead to isolation. However, professional support can help them cope more effectively and improve their mental state (Eagle et al., 2018). Therefore, this article addresses the relationship between the well-being and the depression of pastors and three forms of professional support.

The Well-Being of Pastors

Well-being is a multi-level concept and a subject of ongoing professional debate (La Placa et al., 2013). In the case of pastors, it can be formulated through the following dimensions: happiness, a capacity for higher level of resilience, flourishing, or positive self-sacrifice linked to one's calling (Adams & Bloom, 2017). All these dimensions are closely linked to physical and emotional health.

Numerous studies indicate that pastors are a risk group regarding health issues. They tend to have poorer physical health (e.g., obesity and related diseases) and mental health indicators than the general population, although they often self-report better health than what measured data indicate (Proeschold-Bell & LeGrand, 2010; Weems & Arnold, 2009). The challenges of being a pastor caused a high level of stress with multiple underlying factors (Chan & Chen, 2019). External factors such as the conditions of service (Brewster, 2012), years spent in ministry (Járay & Siba, 2024), family stressors (Hill & Raimondi, 2003), internal factors such as role ambiguity (Faucett et al., 2012), and coping strategies (Mazzarella, 2010) contribute to the poor outcomes.

A growing body of research is focusing on both positive and destructive coping strategies that increase or decrease resilience (Doolittle, 2007). On the one hand, destructive coping strategies are present, such as sexual addictions (Ahmad et al., 2015) and emotional eating (Manister & Gigliotti, 2016). On the other hand, intrapersonal spiritual coping strategies, such as prayer or meditation, are primary resources that clergy rely on to deal with stress (Turton & Francis, 2007).

The Context and Characteristics of Social Support and Social Networks of Pastors

Social support plays a key role in maintaining health. Several studies confirm that individuals with severe illnesses who receive higher levels of peer support have a 50.0% higher likelihood of survival in old age (Heffner et al., 2011) as well as a significantly lower risk of various cardiovascular diseases (Tay et al., 2012). Conversely, a lack of peer support and isolation have been associated with negative health outcomes, including obesity, hypertension, diabetes, anxiety, and depression (Bland et al., 1991; DeJoy et al., 2008).

There is also a correlation between social support, mental health, and clinical indicators such as depression (Harandi et al., 2017; Sacco & Yanover, 2006). It has long been confirmed that social support from one's family, church congregation, or the wider community has a positive influence in the lives of pastors (McMinn et al., 2005). However, social isolation is one of the most significant stressors for pastors in their ministry (Stuart-White et al., 2018). The lack of social connection and support, as well as feelings of loneliness and isolation, are strongly linked with pastors' motivation to leave the profession (Hoge & Wenger, 2005).

A systematic review found that there is a stronger interaction between social support and depression among pastors than in the general population (Edwards et al., 2020). While the relationships between received support and mental health outcomes are relatively weak, the correlation with perceived social support is notably strong (Lakey & Cronin, 2008). Research shows that among pastors, perceived social support is a greater determinant of mental health than the quantity and quality of support actually received (Eagle, 2018).

Pastors tend to experience the joy and power of personal relationships in their supportive roles. However, they also experience less reciprocity in support, which can be of great importance (Buunk et al., 1993). Frequent relocations due to ministry, distance from one's place of origin, and the responsibility of managing multiple communities can lead to the weakening - or, in extreme cases, the complete dissolution - of personal social networks and important existing relationships. As a result, when pastors seek interpersonal support, it is more likely to be from their spouses or family members rather than from other external sources of support (Hill & McWey, 2004).

In Central and Eastern Europe, seeking support from family has historical roots, since under communism, even trusting fellow congregants could be risky. This is one reason why the immediate family has traditionally become one of the most important sources of support in the challenges of the pastoral vocation. However, this can be challenging, as clergy families also suffer from the same effects (Hill & Raimondi, 2003), which can further increase stress and erode the support they provide to each other. This can lead to social distance between clergy families, other families, or communities (Morris & Blanton, 1994). All these factors can easily lead to the isolation of clergy (Muskett & Village, 2016). Thus, the need for additional external help to support the vocation is both justified and meaningful.

Professional Help in Ministry

Researchers have explored many aspects of burnout and professional support, including its relationship with psychological well-being and service satisfaction (Morrow et al., 2021). The vast majority of these studies show a connection between higher levels of psychological well-being, lower levels of stress, and the receipt of professional support (Francis et al., 2013). Professional support has been shown to be one of the most effective resources for maintaining psychological well-being. Chaplains recognize the need for professional support and mentoring (Brown-Bennett, 2017), however, there are several factors that can make accessing this support difficult (Pietkiewicz & Bachryj, 2016). These include feelings of shame, lack of trust, and fear of organizational retaliation. A pastor who lacks these forms of support, whether due to external or internal reasons, is more likely to experience poorer mental health (Doolittle, 2007). Fortunately, there are several forms of professional support that pastors have developed for themselves. Here, we focus on the two most common: peer support group and one-on-one support (e.g., mentoring, supervising, and spiritual direction).

Peer support groups

Peer support groups among clergy represent one of the most prominent forms of support. These can be moderately supportive for pastors, yet weakly beneficial in lowering psychological distress (Miles & Proeschold-Bell, 2013). However, a supportive peer group can reduce both the feelings and effects of isolation (Staley, 2012). Investigations by Marler et al. (2013) determined the qualities of a 'good' peer group. In their study of 31 different pastoral peer groups, they found that sharing personal concerns, enjoying fellowship, receiving feedback on ministry, and praying for one another were the most supportive key practices. Support groups for pastors provide a unique opportunity to express themselves, be heard, feel understood, and receive feedback without being judged by others (Marler et al., 2013). Oswald (2005) highlights five important benefits a peer group can offer: holding, protection, confrontation, authentication, and perspective. A friend who is not a pastor may struggle to grasp the complexity of pastoral challenges due to differing life experiences. Even a pastor's spouse is often unable to provide complex understanding and support due to her own involvement in the ministry and church community. Pastors benefit from the fraternity they find in one another and outside their ministry and family contexts.

One-on-one support: Mentors, supervisors, spiritual directors

Another form of meaningful professional support for clergy is one-to-one relational support from those who help pastors with their individual issues (e.g., professional and personal issues or their relationship with God). This type of support can be effective in areas such as clergy mentoring (Brannagan, 1998) and burnout (Doolittle, 2008). At the same time, Baugess (2002) notes that it is methodologically difficult to establish clear connections between good mental health status and one-on-one professional support, as pastors often turn to personal, professional help after experiencing burnout. Nonetheless, having a mentor seems to improve mental health functioning compared relying solely on family support. Those with a partner and a mentor have higher Ego-Resiliency scores than those who have a partner but no mentor (Clarke et al., 2022). A supportive supervisory relationship also increases pastors' subjective sense of well-being (Gubi et al., 2023). In some studies, professional supervision was shown to correlate with greater job satisfaction and better overall well-being (Proeschold-Bell et al., 2015). In Protestant traditions, spiritual direction has been a less widespread form of support for clergy (Whitlock, 2002). However, research shows a strong correlation between spiritual dryness and poor well-being (Büssing et al., 2013). Spiritual programs, retreats, and resources have become increasingly popular as ways of supporting pastors. Moreover, their beneficial effects are often quickly felt (Ellison et al., 2009).

Aims

As there has been no comprehensive research to date on the well-being and health status of Lutheran pastors, not only in Hungary but also in the whole Central European region, the focus of our research was to provide an overall picture of the Hungarian Lutheran clergy, including measures of their physical health, mental health status, social support, and how these factors relate to their sociodemographic characteristics and church careers. The article focuses on the association between professional support (from a supervisor, spiritual director, or peer support group) and mental health status, as measured by well-being and depression.

The Hungarian Lutheran church is one of the smallest historical Christian denominations in Hungary. It has a

total membership of 176,503, approximately 1.8% of the Hungarian population. Although this distribution reflects the religious history of the country, Lutherans are overrepresented in certain settlements and regions, which are often geographically distant from one another.

In the Hungarian Lutheran church, there is no centrally organized system of personal nor professional support for pastors. Most pastors must seek professional help on their own. Although professional support can take several different forms, our research focuses on the three most common among Lutheran pastors: the availability of supervisor support, a spiritual director, and a peer support group.

We hypothesized that all three forms of professional support would be positively related to well-being and negatively related to depression. This article seeks to answer the following two research questions:

1. What is the status of well-being and the level of depression among Hungarian Lutheran clergy?
2. What types of professional support are associated with well-being and depression?

The purpose of this investigation was to understand the significance of these forms of professional support and to serve as a basis for future interventions aimed at developing a more effective support system for clergy in the Hungarian Lutheran Church.

Methods

Participants

There were 284 Hungarian Lutheran pastors actively serving in ministry at the time of data collection in 2022. We excluded retired pastors and theology students in seminary; only those currently employed by the Church as pastors, regardless of their area of ministry, were included in the study. A total of 148 pastors completed the survey, which corresponds to a 52.0% completion rate within the entire Hungarian target population. This is considered a high response rate for clergy surveys. Since answers were optional for individual questions, not all socio-demographic items were answered by every participant. Some respondents viewed this as a way to ensure anonymity. Regarding age, the sample was divided into five broad categories, reflecting both spent time in ministry and life stage. In creating the categories, we consulted Lutheran pastors and professionals working with them. The socio-demographic characteristics of the sample are presented in Table 1.

Table 1. Socio-demographic characteristics of the sample

Characteristic	45.7 (Mdn = 46, SD = 9.39, Min = 26, Max = 66)			
Age average				
Age groups	N	%	CI (95%) lower	CI (95%) upper
24–33	18	12.2	7.64	18.14
34–40	28	18.9	13.25	25.82
41–49	48	32.4	25.33	40.28
50–55	30	20.3	14.38	27.39
56+	24	16.2	11.02	22.83
Sex	N	%	CI (95%) lower	CI (95%) upper
Males	84	56.8	48.75	51.27
Females	64	43.2	35.55	64.49
Marital status	N	%	CI (95%) lower	CI (95%) upper
single	9	6.2	3.12	10.77
married	121	81.8	75.03	87.31
divorced	18	12.1	7.60	18.18
Number of children	N	%	CI (95%) lower	CI (95%) upper
no child	17	11.5	7.19	14.73
one child	21	14.2	9.29	20.51
two children	34	23.0	16.81	30.17
three children	44	29.7	22.81	37.39
four or more children	32	21.6	15.56	28.82

Table 1. continued

(continued on the next page)

Characteristic				
Age average	45.7 (Mdn = 46, SD = 9.39, Min = 26, Max = 66)			
Settlement type of the ministry	N	%	CI (95%) lower	CI (95%) upper
village	44	29.9	23.05	37.70
small town	41	27.9	21.08	35.54
big city	30	20.4	14.52	27.51
capital	32	21.8	15.70	28.87
Type of church ministry (more choice was allowed)	N	%	CI (95%) lower	CI (95%) upper
parochial pastor	104	70.3	62.69	77.28
associate pastor	8	5.4	2.57	9.91
assigned pastor	10	6.8	3.56	11.72
institutional chaplain	26	17.6	12.08	24.34
other position	30	20.3	14.42	27.27

Procedure

The data collection took place between May 11, 2022 and June 8, 2022 using an online data collection method. All active Hungarian Lutheran clergy at the time of research ($N = 284$) were invited via e-mail to participate in an anonymous survey and received at least three reminder messages. The letters of invitation were sent to the clergy by representatives of the dioceses concerned. Limesurvey software was used to carry out the data collection. The data were saved only after participants agreed to submit their answers. Participants were required to confirm their consent by ticking a check box' in a consent form, indicating their agreement to take part in the study prior to completing the questions. The average completion time was 45 minutes. Participants were informed of the ethical reference number and reminded that participation was voluntary. Ethical approval was obtained from the Hungarian Scientific and Research Ethics Committee, ETT TUKEB Reference Number: BM/11885-3/2023/EKU.

Measures

The questionnaire administered to Hungarian Lutheran pastors consisted of five sections: basic demographic data, information about their work and career, physical health, mental health, and social support. In choosing the survey instruments, we aimed to use questionnaires that have been used in large, representative Hungarian sample to enable comparison with our results. In our analysis, we used similar variables and categories to those used in the Hungarostudy 2021 (KINCS, 2022). For both age and mental health measures, previous analyses conducted with continuous variables yielded similar results.

WHO-5 Well-Being Index (WBI-5; Staehr, 1998; Susánszky et al., 2006)

The WHO-5 Well-Being Index is used to measure subjective psychological well-being as an indicator of mental health and has demonstrated high clinimetric validity (Topp et al., 2015). The measure is used both as a continuous and as a categorical variable. For the sake of comparability with the nationally representative Hungarian sample, we used it as a dichotomous variable in our analyses. In addition, the aim of the research was to provide church leaders with an understanding of the number and characteristics of individuals at risk, based on clinical classifications. The Hungarian version of the WHO-5 Well-Being Index (Cronbach's alpha = .85) contains the same questions as the original version, but the responses are scored on a 0 to 3 scale (0 = at no time; 3 = all the time). The validated Hungarian WHO-5 index is interpreted in the range of 0–15. On the standardized Hungarian scale for the nationally representative sample, the cut-off point between the top and bottom 50% is between 7 and 8. We used the same cut-off point in our analysis: the score range for the bottom 50% (i.e., the risk category) is 0–7, while the range for the top 50% (i.e., the normal level category) is 8–15. The instrument also demonstrated reliability (Cronbach's alpha = .77) in our sample.

The 9-item Beck Depression Inventory (BDI-H; Kopp et al., 1997; Rózsa et al., 2001)

The Beck Depression Inventory was also used as an indicator of mental health in the Hungarian sample. The nine-item shortened version, previously piloted in Hungary, was used in the present study (Rózsa et al., 2001). Each item has four response options (1 = absolutely typical; 2 = typical; 3 = hardly typical; 4 = not at all typical). In the Hungarian validation study, the items demonstrate good internal consistency (Cronbach's alpha = .83). This scale was also analysed as a categorical variable for the reasons mentioned above. The items were reversed according to international standards. There are four categories based on the BDI scores: 0–9 points indicate 'no depressive symptoms', which is considered a 'normal' status; 10–18 points indicate 'mild' symptoms; 19–25 indicate 'moderate'; and scores above 25 points indicate 'severe' depressive symptoms (Kopp et al., 1997). During the analysis, we only examined the difference between two broader categories: 'normal' (0–9 points) and 'at risk for some level of depression' (values above 9 points). In our sample, the Cronbach's alpha coefficient was .75.

Professional Support

The average clergy who are not trained in this area often uses a variety of terms to refer to their professional supporters, such as mentor, supervisor, pastoral care, or spiritual father. The question aimed to clarify the nature of support. In the section related to their professional status, we asked three questions and their sub-questions: 'Do you have a person who supports you with regular advice related to your ministry?' (supervisor); 'Do you have a spiritual director, someone you can talk to about your personal relationship to God?' (spiritual director); and 'Do you participate in any pastors' group that meets regularly and are designed to support your personal vocation and ministry?' (peer support group). If they responded 'no', they were asked whether they would like to have such a person? If they responded 'yes', a follow-up question asked how many times did they had met over the past year. The following response options included once, 1–2 times, 3–5 times, monthly, several times a month, and 'we haven't met in the past year'. Only support relationships that involved at least once during the previous year were taken into account.

Statistical Analysis

We calculated descriptive statistics, including means, ratios, and confidence intervals. In our analysis, we used crosstabulation with chi-square statistics to compare pastors with and without professional support in terms of depression and well-being. Thirdly, we performed multivariate analyses with binary logistic regression models (i.e., chi-square and odds ratio) to examine the relationship between the professional support and the likelihood of being in the WHO-5 Well-Being risk category or the Beck Depression Inventory 'risk for some level of depression category' category. The analysis was conducted using IBM SPSS Statistics 28.0.1.0.

Results

Some of the mental health indicators measured in our sample were compared with the results of the Hungarostudy 2021, a large, nationally representative survey conducted Hungary (KINCS, 2022). Since one of our co-authors was involved in the analysis of that study, we had the opportunity to use a sample featuring similar age and education level data from the Hungarostudy population for the purposes of comparison.

Mental Health Condition

The Hungarian Lutheran clergy in our sample showed relatively poor mental health indicators compared to the nationally representative Hungarostudy 2021 sample (KINCS, 2022; Table 2.). 29.5% of the Lutheran pastors fell into the WHO-5 Well-Being risk category, whereas only 14.4% of the general Hungarian population in the Hungarostudy sample were in the same category [$\chi^2 (1, N = 139) = 27.72, p < .001$]. A similar difference was observed for depression. 35.3% of pastors were classified in the 'risk for some level of depression' category in the BDI-H scale. In comparison, only 25.0% of the Hungarostudy sample indicated some level of depression [$\chi^2 (1, N = 139) = 7.79, p = .005$]. At the same time, fewer pastors were classified in the severe depression category (1.4%) compared to the sample representing the Hungarian population as a whole (11.0%) [$\chi^2 (1, N = 139) = 12.98, p < .001$] (KINCS, 2022).

Table 2. Well-being (WBI-5) and depression (BDI-H) characteristics of the Hungarian Lutheran Pastors

Characteristic				
WBI-5 (<i>N</i> = 139)	8.6 (<i>Mdn</i> = 9.0, <i>SD</i> = 2.55, <i>Min</i> = 2, <i>Max</i> = 15)			
WHO categories	<i>N</i>	%	CI (95%) lower	CI (95%) upper
normal	98	70.5	62.62	78.39
risk	41	29.5	21.56	37.42
BDI-H (<i>N</i> = 139)	8.7 (<i>Mdn</i> = 6.6, <i>SD</i> = 9.39, <i>Min</i> = 0, <i>Max</i> = 29)			
Beck depression categories	<i>N</i>	%	CI (95%) lower	CI (95%) upper
normal	90	64.7	56.81	72.73
mild	30	21.6	15.08	28.10
moderate	17	12.3	7.24	18.02
severe	2	1.4	0.00	3.60

None of the sociodemographic variables showed significant differences regarding 'risk' status on the WBI-5 scale. This includes gender [$\chi^2(1, N = 142) = .87, p = .351$], settlement type [$\chi^2(1, N = 142) = .71, p = .400$], and age group [$\chi^2(4, N = 142) = 4.22, p = .377$].

In the case of depression, the only significant difference among these variables was related to settlement type. While the difference is not significant based on the cross tabulation analysis by all settlement type [$\chi^2(3, N = 143) = 5.94, p = .114$], adjusted residual analysis justified merging the groups of pastors based on settlement type. The proportion of pastors serving in the capital was significantly lower in the depressed categories (17.2%, *N* = 45) compared to the merged category of pastors serving in other locations [39.5%, *N* = 45, ($\chi^2(1, N = 143) = 5.03, p = .025$].

Professional Support and Mental Health

Professional support appears particularly important in light of the above results which, as expected, indicate mental health risks among the clergy. First, we examined whether there is an association between the three types of professional support (supervision, peer support group, spiritual direction) and mental health status (subjective psychological well-being and depression). Based on the availability of various kinds of professional support, we created four groups: (0) those who reported no professional support at all, (1) those who reported only a single type of professional support, (2) those who reported at least two types of professional support in their lives, and (3) those who reported having all three types of professional support (Table 3).

Table 3. Frequencies of professional support

Pastors who received professional support in the last year	<i>N</i>	%	CI (95%) lower	CI (95%) upper
have a supervisor	75	54.7	46.04	63.48
have a spiritual director	44	32.1	24.08	40.91
part of peer support group of pastors	80	54.8	46.57	62.33
Number of professional support types reported	<i>N</i>	%	CI (95%) lower	CI (95%) upper
0	26	17.6	12.11	24.29
1	63	42.6	34.75	50.65
2	36	24.3	18.02	31.75
3	23	15.5	10.44	22.04

Figure 1. The percentage of pastors in the well-being risk category by the number of support types reported among the Hungarian Lutheran clergy

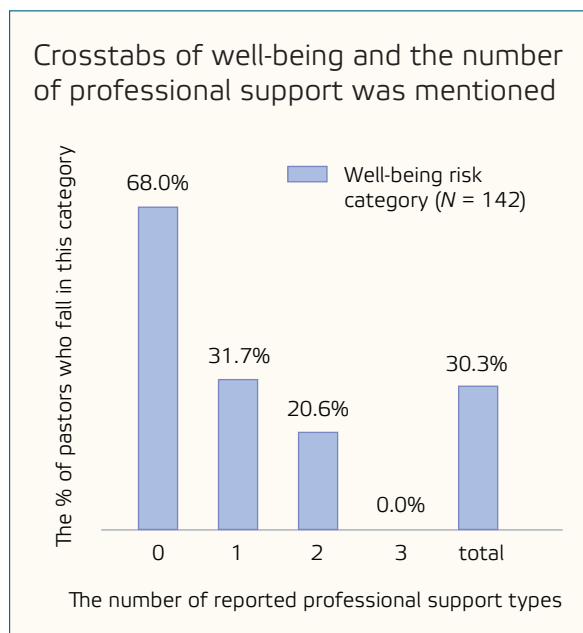
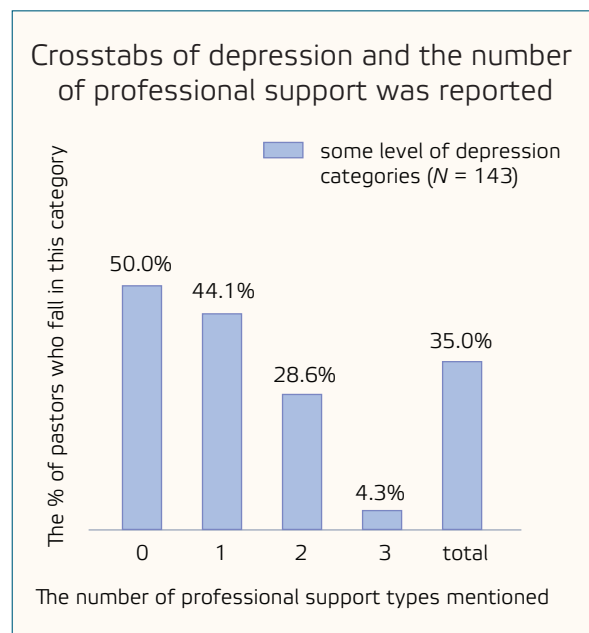


Figure 2. The percentage of pastors being in some level of depression category by the number of support types reported among the Hungarian Lutheran clergy



There is a positive association between the number of support types and pastors' well-being. The more types of support pastors use, the better their mental health conditions [$\chi^2(3, N = 142) = 28.40, p < .001$] (Figure 1).

The relationship between the availability of professional support and pastors' depression levels were also analyzed. Pastors who reported a greater number of support types were less likely to fall into the depressed categories (Figure 2). The results here were statistically significant, $\chi^2(3, N = 143) = 14.85, p = .002$. This indicates that, in our sample, the availability of professional support has a positive association with mental health.

WBI-5 and different types of professional support

Binary logistic regression models were used to investigate whether there is a relationship between being in the risk group according to the WHO-5 Well-Being Index and the three types of professional support: supervision, spiritual direction, and peer support groups. The analysis was conducted by examining the effects of each factor separately and then together. Individually, each of the support factors were significant in the models (*Tables in Appendix*): Model 1: Supervisor [$\chi^2(1, N = 137) = 18.79, p < .001$, Nagelkerke $R^2 = 18.2\%$, $OR = 0.18$]; Model 2: Spiritual director [$\chi^2(1, N = 137) = 7.77, p = .005$, Nagelkerke $R^2 = 7.7\%$, $OR = 0.30$]; Model 3: Peer support group [$\chi^2(1, N = 140) = 10.96, p < .001$, Nagelkerke $R^2 = 10.6\%$, $OR = 0.29$]; in the case of the combined model [$\chi^2(3, N = 131) = 35.21, p < .001$, Nagelkerke $R^2 = 33.1\%$, $OR = 0.62$], when controlling for the presence of other forms of support, the effect of the spiritual director was no longer significant.

The analysis yielded an odds ratio (OR) of 0.18 for having a supervisor, with a 95% confidence interval (CI) of [0.08, 0.41], $p < .001$, when not controlling for other forms of support (Model 1), and an odds ratio (OR) of 0.14 for having a supervisor, with a 95% confidence interval (CI) of [0.54, 0.36], $p < .001$, when controlling for the other support types (Combined model). This indicates that pastors with a supervisor are five times less likely to fall into the well-being risk group, even when the effects of having a spiritual director and peer support group are accounted for in the model. This suggests that the effect of having a supervisor is somewhat independent from the effects of spiritual directors and peer support.

Similarly, the analysis yielded an odds ratio (OR) of 0.30 for having a spiritual director, with a 95% confidence interval (CI) of [0.12, 0.74], $p < .01$, when not controlling for other forms of support (Model 2), and an odds ratio (OR) of 0.62 for having a spiritual director, with a 95% confidence interval (CI) of [0.22, 1.80], $p = .380$, when controlling for the presence of other support forms (Combined model). This indicates pastors with a spiritual director are 70% less likely to fall into the well-being risk group when considered individually. However,

this relationship is no longer statistically significant when the effects of supervisors and peer support groups are accounted for in the model.

In the case of peer support group, the analysis yielded an odds ratio (*OR*) of 0.29 for being a member of such a group, with a 95% confidence interval (*CI*) of [0.14, 0.61], $p < .001$, when not controlling for other support forms (Model 3), and an odds ratio (*OR*) of 0.19 for participating in such a group, with a 95% confidence interval (*CI*) of [0.08, 0.48], $p < .001$ when controlling for other support forms (Combined model). This indicates that pastors who are members of peer support groups are approximately 70% less likely to fall into the well-being risk group; this effect is even more pronounced when considered alongside the presence of spiritual directors and supervisors.

BDI-H and different types of professional support

The Beck Depression Inventory measures different characteristics of mental health (specifically, depressed mood). Compared to well-being, the three types of professional support have different links with depression level.

Binary logistic regression models were also used to investigate whether there is a relationship between non-normal levels of depression evaluated by the Beck Depression Inventory and the three different types of professional support. In the case of depression, results differed slightly compared to well-being. The procedure followed was identical to that used in investigating the relationship between the WHO-5 Well-Being Index and the three different kinds of professional support. The effects of each factor were examined together and then separately (See tables in [Appendix](#)).

The combined model was statistically significant [χ^2 (3, $N = 132$) = 15.33, $p = .002$, Nagelkerke $R^2 = 15.1\%$]. Model 1: Supervision [χ^2 (1, $N = 138$) = 7.86, $p = .006$, Nagelkerke $R^2 = 7.6\%$, $OR = 0.36$]; Model 2: Spiritual direction [χ^2 (1, $N = 138$) = 9.80, $p = .002$, Nagelkerke $R^2 = 9.4\%$, $OR = 0.27$]; Model 3: Peer support group [χ^2 (1, $N = 141$) = 3.06, $p < .09$, Nagelkerke $R^2 = 2.9\%$, $OR = 0.54$]. In our sample, participation in a peer support group had no significant effect on depression. However, the other two support forms proved significant in both in the combined model and individually.

The binary logistic analysis for the depression levels measured by the BDI yielded an odds ratio (*OR*) of 0.36 for having a supervisor, with a 95% confidence interval (*CI*) of [0.18, 0.74], $p = .006$, when not controlling for the other support types (Model 1); the analysis yielded an odds ratio (*OR*) of 0.44 for having a supervisor, with a 95% confidence interval (*CI*) of [0.20, 0.95], $p = .037$ when controlling for the other support forms (Combined model). This indicates that pastors with a supervisor showed a one in three chance of falling into the BDI's non-normal depression category, even accounting for the presence of spiritual directors and peer support groups in the model.

Regarding the presence of a spiritual director, the analysis yielded an odds ratio (*OR*) of 0.27 for having a spiritual director, with a 95% confidence interval (*CI*) of [0.12, 0.65], $p = .004$, when not controlling for other support types (Model 2), and an odds ratio (*OR*) of 0.39 for having a spiritual director, with a 95% confidence interval (*CI*) of [0.16, 0.99], $p = .050$, when controlling for the presence of other support forms (Combined model). This indicates that not having a spiritual director increases the risk of falling into the BDI's non-normal depression category approximately fourfold, even when the presence of supervisors and peer support groups are taken into account in the model.

Lastly, the effect of a peer support groups was not detected in any of the binary logistic regression models for BDI depression levels. None of the parameters reached significance, neither for the combined model [$OR = 0.52$ with a 95% confidence interval (*CI*) of [0.24, 1.12], $p = .090$] nor separately [Model 3: $OR = 0.54$ with a 95% confidence interval (*CI*) of [0.27, 1.08], $p = .080$]. This may be due to the low sample size and the fact that only a small group of pastors reported very poor mental health.

Discussion

Our results confirmed previous research indicating that clergy have worse mental health indicators than the general population (Proeschold-Bell & LeGrand, 2010). Overall, this study of the Hungarian Lutheran clergy found that a significant proportion reported mental health issues. 29.5% of them fell into the risk category of the WBI-5 Well-Being Index, and 35.3% reported non-normal level of depression according to the Beck Depression Inventory. Only one association was found among the sociodemographic factors: pastors serving in the capital showed greater

protection in terms of mental health. The main reason for this may be that they are able to serve in larger communities, which may increase satisfaction with their ministry. This in turn may have a strong impact on their mental health (Shehan et al., 2007). Another possible explanation may be that pastors living in larger settlements have greater access to support networks and experience lower levels of isolation (Francis et al., 2015), highlighting that social support is closely linked to mental health.

Professional Support and Well-Being

This study aimed to understand how professional support, as a special form of social support, is linked to mental health. Mental health was operationalized using two internationally well-established and locally widely used indicators: the WHO-5 Well-Being Index and the 9-item Beck Depression Inventory. In our results, it is clear that these types of support have existing links to mental health. The results suggest that the more sources of professional support pastors have, the higher their reported well-being. However, there are differences between the effect sizes. In our sample, having a personal supervisor showed the strongest link with better well-being. The availability of peer group support was also positively linked with well-being. While in a separate model the presence of a spiritual director has a statistically significant positive association with the WBI-5, its effect was no longer detectable in the combined model. One possible explanation is that in the Lutheran context, spiritual direction is not a well-known, widespread form of support. Despite the focus of this support being clearly described in the relevant questionnaire item, some respondents may have confused it with supervision, referring to the same person with whom they discuss both professional and faith issues.

Professional Support and Depression

Similar results are only partially observed for associations with depression. The analysis showed that pastors who reported having a supervisor or spiritual director were less likely to suffer from some level of depression. However, the same association with peer group support could not be statistically confirmed. With regard to support groups, there may be several reasons for this result. Firstly, certain levels of depression can impair social function. Although a pastor may continue to participate in a collegial group, they may no longer perceive its supportive nature. Another reason may be that often these groups function as preventive resources; when a pastor faces more severe struggles, the peer group may no longer provide sufficient support. Often, these pastors withdraw from the group. It is also clear that the two 'one-to-one' support types, supervision and spiritual direction, show a weaker association with depression compared to well-being. This may be due to the fact that more serious psychological issues require more specialized help and, where appropriate, therapy. In such cases, supervisors or spiritual directors may not be able to provide adequate care, and the pastor should be referred to a professional mental health specialist.

Overall, similarly to the results of previous research (Baugess, 2002; Brannagan, 1998; Miles, 2013), our results suggest that both professional and peer support may have significant roles in prevention and in supporting pastors in their struggles. Sufficient and varied support can help clergy to carry out their ministry in ways that preserve their well-being and mental health.

Strengths and Limitations

One of this study's main strengths is that it represents the first comprehensive study on the general condition and mental health of pastors in the Hungarian Lutheran Church, clearly demonstrating the association between mental health indices and the availability of various support types.

Although we aimed to gather data from the entire population of Hungarian Lutheran pastors, building trust took time, and not all invited persons filled in the survey. As a result, the final database may differ from the characteristics of the overall population due to potential response bias. A further limitation stems from the fact that the church administration was unable to provide us with characteristics of the total population. In the absence of such data, it was not possible to assess the resulting differences, nor was it possible to apply statistical weighting to the data.

Although the fact that approximately half of all pastors filled in the questionnaire represents a relatively high percentage within the church, the sample is too small for more complex statistical analyses, which could have

yielded further significant results (Bujang et al., 2018). Furthermore, it would have been beneficial to measure mental health with a broader range of instruments, but the time available for the questionnaire set limits to such endeavors.

In the analysis, we worked with several variables that could be analysed both as continuous and categorical. However, in several cases, the lack of a normal distribution limited the applicability of certain types of analysis.

Conclusion, Implications, and Future Directions

The aim of this research was to gain an overview of the current situation of Hungarian Lutheran clergy, serving as a foundation for the development of effective interventions, as church pastors are affected by multiple factors that pose health risks. The analyses presented offer insights into the relationship between the availability of professional support and the mental health status of Hungarian Lutheran pastors, indicating which forms of support show the strongest associations with well-being and depression. The results underscore the below-average mental health status of the clergy and its connection to the extent of available professional support. These findings may serve as a compelling argument for institutional changes and the expansion of such services in the Lutheran Church. For pastors, organizing their own professional support may serve as a practical step toward improving their well-being. This survey was the first milestone in an ongoing assessment process, with the direct goal of providing resources needed for the clergy to flourish both in their personal and professional lives and reduce attrition from the vocation.

Church leadership has already launched a number of support programs in response to the results of this survey. We also plan to initiate a longitudinal study to measure the long-term effectiveness of such interventions. Additionally, we seek to replicate this research among pastors of other denominations. Drawing from the Lutheran experience, new questionnaires have been developed and research continues on a larger sample in the Hungarian Reformed Church.

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Author contribution

Márton JÁRAY: conceptualization, design, investigation, project administration, data management, formal analyses, interpretation, writing original draft.

Gergely TÓTH: conceptualization, design, investigation, project administration, data management, interpretation, supervision, writing original draft.

David J. VAN DYKE: methodology, formal analyses, writing review and editing.

Fruzsina ALBERT: conceptualization, design, interpretation, supervision, writing original draft.

Declaration of interest statement

The authors have no conflicts of interest to disclose.

Ethical statement

This manuscript is the authors' original work.

All participants engaged in the research voluntarily and anonymously.

Their data are stored in coded materials and databases without personal data.

The studies involving human participants were reviewed and approved by Hungarian Scientific and Research Ethics Committee, ETT TUKEB, reference number: BM/11885-3/2023/EKU.

Data availability statement

To ensure anonymity and confidentiality, the Council of Bishops granted permission for the research on the condition that the database be managed by the researchers alone.

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Appendix

Binary logistic regression models parameters

Combined model – WBI-5 and professional supports [$\chi^2 (3, N = 131) = 35.21, p < .001$, Nagelkerke $R^2 = 33.1\%$]

Combined model (WBI-5 'risk' group)

	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>	95% CI for <i>Exp(B)</i>	
							Lower	Upper
Are you part of a group of pastors, wich meets regularly for supporting the members? (Reference: take part in a peer support group)	-1.65	0.47	12.43	1	.000	0.19	0.08	0.48
Do you have a spiritual director who meets you regularly, and support you in your personal relationship to God? (Reference: have a spiritual director)	-0.47	0.54	0.77	1	.381	0.62	0.22	1.80
Do you have a person, who supports you with regular advice connecting to your ministry? (Reference: have a suprvisor)	-1.96	0.48	16.40	1	.000	0.14	0.05	0.36
Constant	1.08	0.41	7.01	1	.008	2.94		

Model 1 – WBI-5 and having a supervisor [$\chi^2 (1, N = 137) = 18.79, p < .001$, Nagelkerke $R^2 = 18.2\%$]

Model 1. Supervisor (WBI-5 'risk' group)

	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>	95% CI for <i>Exp(B)</i>	
							Lower	Upper
Do you have a person, who supports you with regular advice connecting to your ministry? (Reference: have a supervisor)	-1.7	0.41	16.82	1	.000	0.18	0.08	0.41
Constant	-0.07	0.25	0.06	1	.800	0.94		

Model 2 – WBI-5 and having a spiritual director [$\chi^2 (1, N = 137) = 7.77, p = .005$, Nagelkerke $R^2 = 7.7\%$]

Model 2. Spiritual director (WBI-5 'risk' group)

	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>	95% CI for <i>Exp(B)</i>	
							Lower	Upper
Do you have a spiritual director who meets you regularly, and support you in your personal relationship to God? (Reference: have a spiritual director)	-1.21	0.46	6.752	1	.009	0.30	0.12	0.74
Constant	1.08	0.41	7.01	1	.031	2.94		

Model 3 – WBI-5 and having a peer support group [$\chi^2 (1, N = 140) = 10.96, p < .001$, Nagelkerke $R^2 = 10.6\%$]

Model 3. Peer support group (WBI-5 'risk' group)

	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>	95% CI for <i>Exp(B)</i>	
							Lower	Upper
Are you part of a group of pastors, wich meets regularly for supporting the members? (Reference: take part in a peer support group)	-1.24	0.38	10.43	1	.001	0.29	0.14	0.61
Constant	-0.19	0.26	0.58	1	.447	0.82		

Combined model – BDI-H and professional supports [$\chi^2 (3, N = 132) = 15.33, p = .002$, Nagelkerke $R^2 = 15.1\%$]

Combined model (BDI-H – non-normal level of depression)

	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>	95% CI for <i>Exp(B)</i>	
							Lower	Upper
Are you part of a group of pastors, wich meets regularly for supporting the members? (Reference: take part in a peer support group)	-0.65	0.39	2.81	1	.094	0.52	0.24	1.12
Do you have a spiritual director who meets you regularly, and support you in your personal relationship to God? (Reference: have a spiritual director)	-0.93	0.47	3.95	1	.047	0.39	0.16	0.99
Do you have a person, who supports you with regular advice connecting to your ministry? (Reference: have a suprvisor)	-0.82	0.40	4.35	1	.037	0.44	0.20	0.95
Constant	0.43	0.34	1.57	1	.210	1.54		

Model 1 - BDI-H and having a supervisor [$\chi^2 (1, N = 138) = 7.86, p = .006$, Nagelkerke $R^2 = 7.6\%$]

Model 1. Supervisor (BDI-H – non-normal level of depression)

	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>	95% CI for <i>Exp(B)</i>	
							Lower	Upper
Do you have a person, who supports you with regular advice connecting to your ministry? (Reference: have a suprvisor)	-1.02	0.37	7.64	1	.006	0.36	0.18	0.74
Constant	-0.10	0.26	0.15	1	.701	0.91		

Model 2 - BDI-H and having a spiritual director [$\chi^2 (1, N = 138) = 9.80, p = .002$, Nagelkerke $R^2 = 9.4\%$]

Model 2. Spiritual director (BDI-H – non-normal level of depression)

	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>	95% CI for <i>Exp(B)</i>	
							Lower	Upper
Do you have a spiritual director who meets you regularly, and support you in your personal relationship to God? (Reference: have a spiritual director)	-1.29	0.44	8.56	1	.003	0.27	0.12	0.65
Constant	-0.24	0.21	1.29	1	.255	0.79		

Model 3 - BDI-H and having a peer support group [$\chi^2 (1, N = 141) = 3.06, p = .090$, Nagelkerke $R^2 = 2.9\%$]

Model 3. Peer support group (BDI-H – non-normal level of depression)

	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>	95% CI for <i>Exp(B)</i>	
							Lower	Upper
Are you part of a group of pastors, wich meets regularly for supporting the members? (Reference: take part in a peer support group)	-0.62	0.36	3.03	1	.082	0.54	0.27	1.08
Constant	-0.28	0.25	1.24	1	.266	0.76		

RESEARCH ARTICLE

Necessary Condition Analysis on the Relationship between Fear of Missing Out, Social Networking Addiction, and Psychological Well-Being

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Introduction: With the growth of technology and increasing accessibility to various platforms, concerns surrounding the impact of technology on individuals' well-being are also on the rise. Researchers are making significant efforts to understand this constantly evolving phenomenon.

Aims: The current study aims to investigate the interrelationships between fear of missing out (FoMO), social networking addiction (SNA), and psychological well-being (PWB), as well as the relation between SNA scores and sociodemographic variables.

Methods: This study employs a recently developed data analysis approach called Necessary Condition Analysis (NCA) to observe essential conditions within SNA, PWB, and FoMO. The study's main objective is to determine whether low/high levels of FoMO and SNA correspond to high/low levels of PWB. To address this objective, a convenience sample of 449 participants aged 17–40 years was selected. Statistical analyses were conducted using the NCA package to investigate the relationships between these variables. A chi-square test was also performed to assess the associations between sociodemographic variables and probable SNA cases based on the established cut-off scores.

Results: The results indicated that high levels of FoMO are necessary for high levels of SNA (Effect Size (d) = .15 and $p < .001$), and high levels of PWB were found to be necessary for low levels of FoMO ($d = .23$ and $p < .001$) and SNA ($d = .16$ and $p = .01$) and vice versa. It was also observed associations between the demographic variables of gender, marital status, and residence, and SNA.

Conclusions: This research contributes to the current discussions concerning the influence of social media on personal well-being and the field of media psychology. The findings obtained can help in guiding the development of interventions and strategies aimed at promoting psychological welfare within digitally interconnected communities.

Keywords: psychological well-being, fear of missing out, social networking addiction, necessary condition analysis, early adults

Introduction

In an era characterized by the prevalent influence of digital technologies, the landscape of global connectivity is rapidly evolving, shaping how individuals interact with information and each other. According to the International Telecommunication Union (ITU, 2023), an estimated 67% of the world's population, equivalent to 5.4 billion people, are now connected to the internet, reflecting a fundamental shift in how societies access and exchange information. However, this connectivity is not uniform across regions, with substantial variation observed. While European countries, the Commonwealth of Independent States (CIS), and the Americas approach near-universal internet usage, with penetration rates between 87% and 91%, Africa's average is just 37%, and the Asia-Pacific region stands at 66%. This digital divide underscores the importance of understanding global factors influencing internet usage, emphasizing sociodemographic dimensions in this evolving digital landscape.

In the digital world, social media platforms play a crucial role in shaping online interactions. A survey reports that there are approximately 5.24 billion social media users globally (We Are Social & Meltwater, 2025), highlighting the significance of these platforms in facilitating communication and disseminating information. Notably, major platforms such as Facebook, YouTube, and Instagram command sizable user bases, reflecting their central role in the digital ecosystem (We Are Social & Meltwater, 2025). Furthermore, individuals worldwide spend an average of 141 minutes per day on social media, emphasizing the substantial time investment in these platforms (We Are Social & Meltwater, 2025). Recent statistics published by KANTAR and Internet and Mobile Association of India (IAMAI) (KANTAR & IAMAI, 2024) show growing internet connectivity in India. Despite 42% of the Indian population not yet being connected to the internet, there are 886 million internet users in India, 95% of whom use the internet daily and spend an average of 91 minutes on it.

There is a growing body of literature on the psychological aspects of social networking sites (Nekkanti & Datti, 2024). Review studies suggest that it is not just the amount of time spent online but the quality and context of online engagement that influence psychological outcomes. While moderate use for connection and support can promote well-being, excessive or addictive use – especially when involving social comparison or negative interactions – is more strongly linked to depression, anxiety, and lower life satisfaction (Seabrook et al., 2016). In contrast, positive experiences such as social support and meaningful communication tend to protect against these issues. However, no universal threshold for “problematic” usage exists, as impacts vary by individual and context (Shin et al., 2022). Research also indicates that problematic digital interactions can lead to cognitive distortions (Agnihotri & Datti, 2023), which may be further intensified by individual vulnerabilities such as personality traits and mood-related issues (Lévesque et al., 2018).

Existing studies have explored the relationship between psychological well-being (PWB) and fear of missing out (FoMO) among social media users (Bacaksız et al., 2023; Blackwell et al., 2017; Hayran & Anik, 2021; Hylkilä et al., 2023; Reer et al., 2019; Sheinov & Tarelkin, 2022; Stead & Bibby, 2017) but have focused less on the relationship between PWB, FoMO, and sociodemographic variables (Roberts & David, 2020; Savitri, 2019). Similarly, while several researchers have investigated the association between psychosocial and demographic factors—such as gender, age, socioeconomic status, domicile, and mental health indicators (e.g., depression, anxiety, and stress levels)—and social networking site addiction, their findings have been inconsistent and often inconclusive (Haripriya et al., 2024; Jahagirdar et al., 2024; Patel et al.).

Given these statistics and the existing literature, it is evident that greater academic attention is needed to understand individuals' engagement levels, motivations, and the impacts of their social networking platform usage. Employing Uses and Gratifications theory, the current study aims to investigate the influence of FoMO-linked social networking addiction (SNA) on PWB. The current research, in addition to studying these variables together, also explores how SNA scores vary across sociodemographic variables in the Indian context.

Theoretical Framework

This study draws upon two complementary theoretical lenses, Uses and Gratifications Theory (UGT) and Compensatory Internet Use Theory (CIUT), to examine how individuals' psychological needs and digital behaviors relate to FoMO, SNA, and PWB.

UGT, proposed by Katz et al. (1973), posits that individuals actively engage with media to fulfill specific psychological and social needs. These needs include information seeking, social interaction, entertainment, and identity expression. Within this framework, social networking platforms serve as a medium for meeting these needs. However, UGT alone does not explain why some users develop maladaptive or excessive patterns of social media use. Therefore, this study also integrates Karddefelt-Winther's (2014) CIUT, which suggests that individu-

als may turn to the internet-including social networking platforms-not only to gratify typical needs but also to compensate for negative emotions, psychosocial stressors, or unmet real-life needs. This compensatory use may temporarily alleviate distress but can also lead to problematic patterns, including addiction.

FoMO – “a pervasive apprehension that others might be having rewarding experiences from which one is absent” (Przybylski et al., 2013, pp. 1841) – serves as a key factor in both the UGT and CIUT frameworks, shaping individuals’ motivations and behaviors on social networking sites (SNSs). From a UGT perspective, FoMO acts as a motivator, driving individuals’ to engage with SNSs in pursuit of social enhancement, escapism, and interpersonal connectivity (Bhatiasevi, 2024; Ifinedo, 2016). Within the CIUT framework, FoMO emerges as a psychological response to unmet needs, particularly when basic psychological needs are not being fulfilled in offline life. This unmet need leads to compulsive SNS engagement as individuals attempt to alleviate the discomfort associated with FoMO by immersing themselves in digital spaces. Research has shown that increased FoMO correlates with higher SNS use, highlighting its role in the development of SNA and a potential decline in PWB (Przybylski et al., 2013). In this sense, FoMO can be seen as a necessary condition for both SNA and its associated negative effects on well-being, demonstrating its role in driving compulsive digital behavior.

Social Networking Addiction is conceptualized here not merely as high usage but as a pattern characterized by salience, tolerance, mood modification, conflict, and withdrawal (Andreassen, 2015). CIUT helps explain SNA as a maladaptive coping mechanism, in which online engagement temporarily regulates negative emotional states but ultimately exacerbates distress (Kardefelt-Winther, 2014; Soraci et al., 2025). In contrast, UGT explains how frequent SNS use begins as a goal-oriented behavior aimed at fulfilling specific needs (Ku et al., 2013). By combining these perspectives, the study captures both the motivational underpinnings and the psychological vulnerabilities associated with problematic SNS engagement, allowing for a more comprehensive understanding of how FoMO, SNA, and PWB relate to one another.

Psychological Well-Being refers to positive psychological functioning, including self-acceptance, purpose in life, and autonomy (Ryff & Keyes, 1995). From the UGT perspective, social media can enhance PWB when individuals engage with it for meaningful gratifications such as emotional connection, entertainment, and personal integration (Mittal & Rani, 2024). Research has shown that meaningful use of social media is associated with greater life satisfaction and lower levels of depression and loneliness, particularly among younger and older adults (Bhatiasevi, 2024). However, when use becomes compulsive (as suggested by CIUT), especially under the influence of FoMO, it may undermine well-being.

Research by Hattingh et al. (2022) found that FoMO is positively associated with compulsive use, communication overload, and online subjective well-being (OSWB). This suggests that individuals experiencing FoMO may initially perceive greater online satisfaction. However, from a CIUT perspective, this elevated OSWB might only offer temporary relief, compensating for offline emotional deficits. This highlights the complex relationship between FoMO, SNA, and PWB, underscoring the need to explore how these factors function as necessary conditions for one another.

Drawing from UGT and CIUT, the current study proposes that individuals actively engage with social media to fulfill specific psychological needs, as outlined in UGT. However, in line with CIUT, such engagement can also become a maladaptive coping strategy, particularly when driven by offline emotional deficits or psychological stressors. This may lead to compulsive patterns of use, conceptualized here as SNA, which in turn may impact PWB. Moreover, FoMO may function as a psychological mechanism that exacerbates this process, mediating the relationship between psychological health and problematic social media use (Soraci et al., 2025). Although existing literature has examined the relationship between these three variables (Arya et al., 2021; Savitri, 2019; Sudheer & Saligram, 2023), this study adds nuance by adopting both UGT and CIUT, focusing specifically on social networking addiction, exploring its links with sociodemographic factors, and employing a newly developed statistical method, Necessary Condition Analysis, to test the relation between SNA, PWB, and FoMO. Based on these considerations, the current study proposes the following research objectives:

1. To examine the relationship between sociodemographic variables and SNA scores.
2. To examine the relationship between FoMO and SNA.
3. To examine the relationship between FoMO and PWB.
4. To examine the relationship between SNA and PWB.

Hypotheses

Based on the research objectives, the following one-tailed hypotheses were developed:

H1: Among the demographic variables, males, individuals living in rural areas, and those from smaller families will exhibit higher SNA scores compared to females, individuals from urban areas, and those from larger families.

H2: Among social variables, single individuals, those without children, students, and those pursuing lower degrees will exhibit higher SNA scores compared to their counterparts.

To explore whether certain psychological variables must be present (or absent) for particular outcomes to occur, the following hypotheses were formulated based on necessary condition analysis. These hypotheses examine the necessity relationships among FoMO, SNA, and PWB.

H3(a): A high level of FoMO is necessary for a high level of SNA.

H3(b): A low level of FoMO is necessary for a low level of SNA.

H4(a): A low level of FoMO is necessary for a high level of PWB.

H4(b): A high level of FoMO is necessary for a low level of PWB.

H5(a): A low level of SNA is necessary for a high level of PWB.

H5(b): A high level of SNA is necessary for a low level of PWB.

Methodology

The study employed a cross-sectional survey research design to examine the relationships between FoMO, SNA and PWB among early adults in Andhra Pradesh, India.

Participants and Data Collection

G*Power software was utilized to calculate the minimum sample size required for the study (Faul et al., 2007). Based on an effect size (f^2) of 0.5, an alpha level of 0.05, a power of 0.95, and an allocation ratio of 0.75 for a one-tailed means statistical test, a sample size of 180 was estimated. However, the final sample, drawn through convenient sampling, comprised 449 early adults residing in Andhra Pradesh, India. Data were collected via a Google Form, which was distributed between June and December 2023 through social media and communication platforms, including public WhatsApp groups, Facebook, and LinkedIn. To expand the sample, participants were encouraged to further disseminate the form within their networks. The initial section of the form included eligibility screening questions related to age, residence, and consent. Only individuals who met these criteria were allowed to fill out the complete questionnaire, ensuring that all participants were eligible for the study.

Sample Characteristics

The study sample comprised 449 participants from diverse demographic and socioeconomic backgrounds. The participants ranged in age from 17 to 40 years, with a mean age of 27.3 years ($SD = 8.5$). Table 1 presents the demographic characteristics of the study sample. The gender ratio was unbalanced, with men making up nearly two-thirds of the sample. In terms of marital status, around one-third of the participants were married, while the remaining two-thirds were single. With respect to parental status, approximately one-quarter of the participants had children, while three-quarters did not. Roughly two-thirds of the participants lived in households with four or fewer members, while one-third lived in larger households. More than four-fifths of the sample resided in urban areas, while less than one-fifth lived in rural areas. Regarding occupation, students accounted for half of the participants, followed by a little more than one-third who were employed. The remainder were either self-employed or homemakers. In terms of education, nearly two-thirds held an undergraduate degree, almost one-third had completed postgraduate studies, and only a small fraction had earned doctoral or other qualifications.

Table 1. Descriptive characteristics of the sample

Variable		Frequency	Percentage
Sex	Female	170	37.9
	Male	279	62.1
Marital Status	Single	313	69.7
	Married	136	30.3
Parental Status	No children	341	75.9
	One child	50	11.1
	Two and more children	58	12.9
Family Size	Less than or equal to four members	308	68.6
	More than four members	141	31.4
Residence	Rural	81	18.0
	Urban	368	82.0
Occupation	Student	226	50.3
	Employed	163	36.3
	Self-employed	36	8.0
	Homemaker	24	5.3
Education	Under Graduation	284	63.3
	Post Graduation	135	30.1
	PhD	18	4.0
	Other	12	2.7

Measures

Social Networking Addiction Scale

This 21-item scale was developed by M.G. Shahnawaz and Usama Rehman in 2020, with total scale score ranging from 21 to 147. Lower scores indicate a lack of SNA, while higher scores indicate potential SNA (Shahnawaz & Rehman, 2020). As recommended by the original authors of the scale, a cut-off score of 84 was used, with scores above this threshold indicating probable addiction. The scale assesses SNA across six dimensions: Salience, Mood modification, Tolerance, Withdrawal, Conflict, and Relapse. Items were measured on a 7-point Likert scale, with possible responses ranging from *Strongly Disagree* to *Strongly Agree*. For this scale, global values were used for both analysis and the calculation of overall scale reliability. The scale demonstrated high internal consistency in the current sample, with a Cronbach's alpha of .92 for the overall score and sub-scale alphas ranging from .75 to .90.

Fear of Missing Out (FoMO) Scale

The FoMO scale was developed by Andrew K. Przybylski and colleagues in 2013 (Przybylski et al., 2013). This 10-item scale measures the motivational, emotional, and behavioral aspects of FoMO using a five-point Likert scale (1 = *Not at all true of me*, 2 = *Slightly true of me*, 3 = *Moderately true of me*, 4 = *Very true of me*, and 5 = *Extremely true of me*), and contains items such as "I fear others have more rewarding experiences than me". For this scale, global values were used for both analysis and the calculation of overall scale reliability. The scale demonstrated high internal consistency in the current sample, with a Cronbach's alpha of .87 for the global score.

Psychological Well-being (PWB) Scale

The PWB scale was developed by Carol Ryff in 1989 (Mehrotra et al., 2013; Ryff, 1989). The scale comprises 42 items rated on a 7-point scale (1 = *strongly agree*; 7 = *strongly disagree*) and assesses six dimensions of well-being: Autonomy, Environmental Mastery, Personal Growth, Positive Relations with Others, Purpose in Life, and Self-acceptance. Global scores were used for both analysis and the calculation of overall scale reliability. The scale demonstrated high internal consistency in the current sample, with a Cronbach's alpha of .91 for the global score and sub-scales ranging from .58 to .69.

Data Analysis

A chi-square analysis was performed to examine the relationship between sociodemographic variables and SNA cut-off scores. Necessary Condition Analysis, an analytical approach proposed by Dul (2016), was used to determine the essential conditions for FoMO, SNA, and PWB. The analysis was carried out using the NCA software package for R (version 4.0.2; Dul, 2024), aligning with the methodology outlined in Jan Dul's comprehensive book on NCA (Dul, 2021). NCA assists in identifying factors that are necessary but not sufficient for an outcome, except when the situation is formulated "in kind" and analyzed using "effect-aggregation" argument (Dul, 2021).

In conducting the NCA, the total scores obtained for each scale were considered instead of sub-scale scores. NCA has two techniques, which determine the ceiling line, which distinguishes areas with observations from those without. CE-FDH uses a step function with an irregular boundary; the independent and dependent variables are discrete and have a limited number of levels. On the other hand, CR-FDH fits a straight line through the endpoints of the CE-FDH line, with variables that are continuous or discrete at many levels (Dul, 2016, 2021). By default, the NCA software applies both CE-FDH and CR-FDH techniques to construct the ceiling line and calculate the effect size. However, alternative ceiling techniques can also be chosen by specifying them using the *ceilings* argument.

Furthermore, the ceiling line is not accurate if a few data points fall within what should ideally be an empty space. "The ceiling-accuracy (*c*-accuracy) is the percentage of cases on or below the ceiling line" (Dul, 2021, Chapter 1, Analyse the data section, para. 2). The CE-FDH line is always 100% accurate by definition, whereas the CR-FDH line may not be. A low *c*-accuracy suggests that the ceiling line might not accurately represent the boundary, in which case another ceiling line may be more suitable. The effect size (*d*) is calculated by dividing the ceiling zone (*C*) and the scope (*S*), where *S* refers to the full range of possible data points, determined by the minimum and maximum values of both variables. This effect size ranges from 0 to 1 and is estimated based on the sampled data. Dul (2016) categorizes effect sizes based on the following guidelines: effect sizes between 0 and .1 are considered "small", those between .1 and .3 "medium", between .3 and .5 "large", and those equal to or greater than .5 are deemed "very large".

NCA allows researchers to test whether the presence or absence of one variable is necessary for the presence or absence of another using the *corner* argument (Dul, 2021). To test whether a high level of Variable 1 is necessary for a high level of Variable 2 [i.e., to test H3(a)], the argument *corner* = 1 is used (empty upper left). To test whether a low level of Variable 1 is necessary for a low level of Variable 2 [i.e., to test H3(b)], the *corner* = 4 (empty lower right) argument is applied. Testing whether a low value of Variable 1 is necessary for a high value of Variable 2 [i.e., to test H4(a)/H5(a)] requires a *corner* = 2 (empty upper right) argument. Finally, to test if a high value of Variable 1 is necessary for a low value of Variable 2 [i.e., to test H4(b)/H5(b)], we use the *corner* = 3 (empty lower left) argument.

Results

The results of the chi-square analysis on sociodemographic variables and SNA cut-off scores are presented in Table 2. A significant association was observed between sex and SNA scores, with 22.4% of females and 35.1% of males indicating high SNA scores. This finding supports H1 and its directional prediction that males would report higher levels of problematic social networking use. Similarly, residence was significantly associated with SNA, with 43.2% of individuals living in rural areas reporting high SNA scores compared to only 27.4% of those in urban areas, further supporting H1. Although parental status and occupation both initially showed associations with SNA, these associations did not remain significant after applying the Bonferroni correction, suggesting that these two associations may be attributed to chance.

Regarding social variables, marital status showed a significant association with SNA: 35.1% of single individuals were classified as high on SNA, compared to 19.1% of married individuals. This finding aligns with the directional prediction in H2. However, the effect sizes for the significant variables were small (ranging from .13 to .16), indicating that the associations were weak. Therefore, hypothesis H1 is partially supported for demographic variables such as sex and residence, and H2 is partially supported for social variables such as marital status.

As the next step, the data was further analyzed using the NCA package. The scatterplot obtained after using the "plots" argument is presented in Figure 1. It indicates two default ceiling lines, namely CR-FDH (hereafter referred to as CR) and CE-FDH (hereafter referred to as CE), along with the Ordinary Least Squares (OLS) regression line. For the CR line, some data points fall within the ceiling zone, indicating 98.4% accuracy (Table 3). Since the variables are continuous, the CR line is used to further explore the data, and CE is not explored in depth to maintain clarity.

Table 2. Chi-square results of demographic variables with SNA cut-off scores

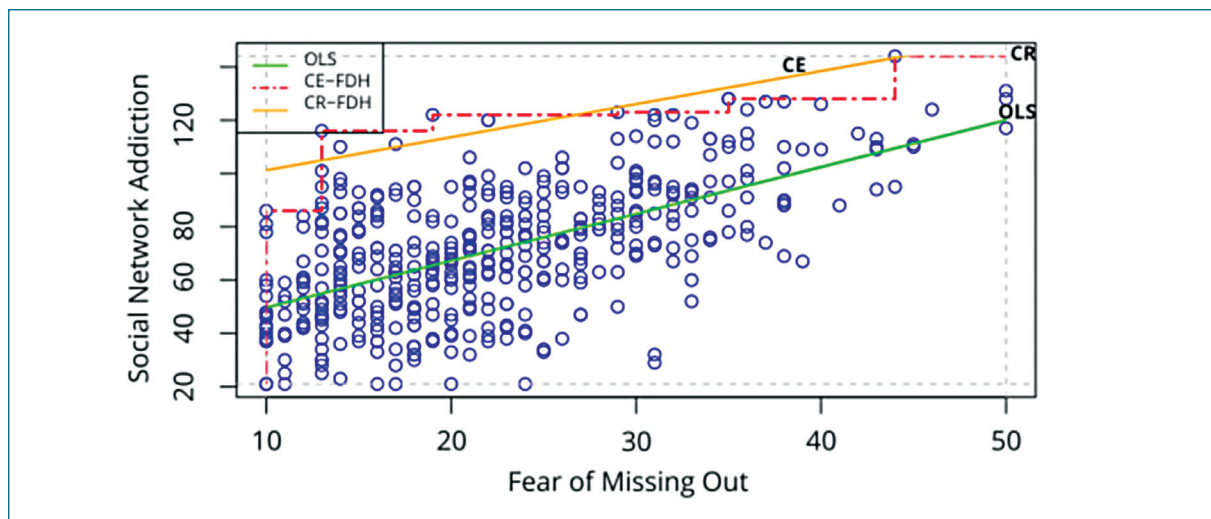
Demographic Variables		SNA ≤ 84		SNA > 84		χ ²	p	Effect Size (φ)
		n	%	n	%			
Gender	Female	132	77.6	38	22.4	8.16	.004	.13**
	Male	181	64.9	98	35.1			
Education	Undergraduation	190	66.9	94	33.1	7.12	.068	.12
	Postgraduation	97	71.9	38	28.1			
	Ph.D	14	77.8	4	22.2			
	Other	12	100	0	0			
Marital Status	Single	203	64.9	110	35.1	11.53	<.001	-.16***
	Married	110	80.9	26	19.1			
Children	No Children	226	66.3	115	33.7	7.93	.019 [^]	.13*
	1 Child	40	80.0	10	20.0			
	≥ 2 Children	47	81.0	11	19.0			
Family size	≤ 4 Members	215	69.8	93	30.2	0.004	.949	.003
	> 4 Members	98	69.5	43	30.5			
Residence	Rural	46	56.8	35	43.2	7.81	.005	-.13**
	Urban	267	72.6	101	27.4			
Occupation	Student	144	63.7	82	36.3	9.13	.027 [^]	.14*
	Employed	120	73.6	43	26.4			
	Self-Employed	29	80.6	7	19.4			
	Homemaker	20	83.3	4	16.7			

*** p < .001; ** p < .01; * p < .05

[^] p-values are shown to be insignificant after applying the Bonferroni correction.

Phi (φ) coefficients are presented for gender, marital status, family size, and residence variables, and Cramer’s V values are given for education, children, and occupation variable.

Figure 1. Scatterplot for Fear of Missing Out and Social Network Addiction (corner:1) [CR (straight ceiling line): y = 88.82 + 1.240x].



The scatterplot for FoMO and SNA presented in Figure 1 contains an empty space in the upper left corner above the space containing observations, indicating the probable presence of a necessary condition. By examining Table 3 and Figure 1 together, it can be observed that for FoMO versus SNA (corner = 1), the space for empirical observations (i.e., scope) is 4.92, with a ceiling zone of 737.47 (CR technique). Dividing the ceiling zone by the scope resulted in a medium effect size of .15, with p < .001. This indicates that a high level of FoMO is necessary for a high level of SN, supporting H3(a). A similar condition using corner = 4 indicated that a low level of FoMO is necessary for a low level of SNA, with a medium effect size of .24 and p < 0.001, supporting H3(b). Furthermore, applying the *effect aggregation* function (corners: 1 and 4) to FoMO and SNA, the results indicated that FoMO is necessary and sufficient for SNA (p < .001).

Table 3. Necessary condition analysis results for SNA, FoMO, and PWB

Construct	Corner	Method	Accuracy	Ceiling Zone	Scope	Effect Size (<i>d</i>)	<i>p</i> -value
FoMO-SNA	1	CE	100%	832.00	4920	.17 ^b	-
		CR	98.4%	737.47		.15 ^b	< .001
	4	CE	100%	1317.00		.27 ^b	-
		CR	98.7%	1202.01		.24 ^b	< .001
FoMO-PWB	2	CE	100%	1540.00	6080	.25 ^b	-
		CR	98.9%	1420.74		.23 ^b	< .001
	3	CE	100%	652.00		.11 ^b	-
		CR	99.3%	543.81		.09 ^a	< .001
SNA-PWB	2	CE	100%	3358.00	18696	.18 ^b	-
		CR	99.1%	2925.18		.16 ^b	.009
	3	CE	100%	2231.00		.12 ^b	-
		CR	99.6%	1641.59		.09 ^a	.023

Note: PWB-Psychological Well-being; FoMO-Fear of Missing Out; SNA-Social Networking Addiction; CE-Ceiling Envelopment; CR-Ceiling Regression

^a 0 < *d* < .1: small effect

^b .1 ≤ *d* < .3: medium effect

The same approach has been adopted to examine the remaining two conditions as well (shown in Figures 3–6 and Table 3). The NCA analysis indicated that a low level of FoMO is necessary for a high level of PWB (Figure 3; corner = 2, medium effect of .23, and *p* < .001), supporting H4(a). Similarly, a high level of FoMO is necessary for a low level of PWB (Figure 4; corner = 3, small effect of .09, and *p* < .001), supporting H4(b). It is also observed that a low level of SNA is necessary for a high level of PWB (Figure 5; corner = 2, medium effect of .16, and *p* = .01), supporting (H5(a). Additionally, a high level of SNA is necessary for a low level of PWB (Figure 6; corner = 3, small effect of .09, and *p* = .023), supporting (H5(b).

NCA allows researchers to assess necessary conditions in degree using the tool known as the “bottleneck table”. This table presents the ceiling line in tabular form, with the first column of the table indicating the outcome, while the subsequent columns include the necessary conditions. It is important to note that the interpretation of bottleneck tables differs based on the corner selected (Dul, 2021). Using the CR technique, PWB was designated as the outcome, with FoMO and SNA as the necessary conditions. The bottleneck condition was applied to Corner 2 to identify the values of FoMO and SNA that must be equal to or lower than the threshold value for a given PWB value.

Figure 2. Scatterplot for Fear of Missing Out and Social Network Addiction (corner:4) [CR (straight ceiling line): $y = -86.85 + 4.156x$]

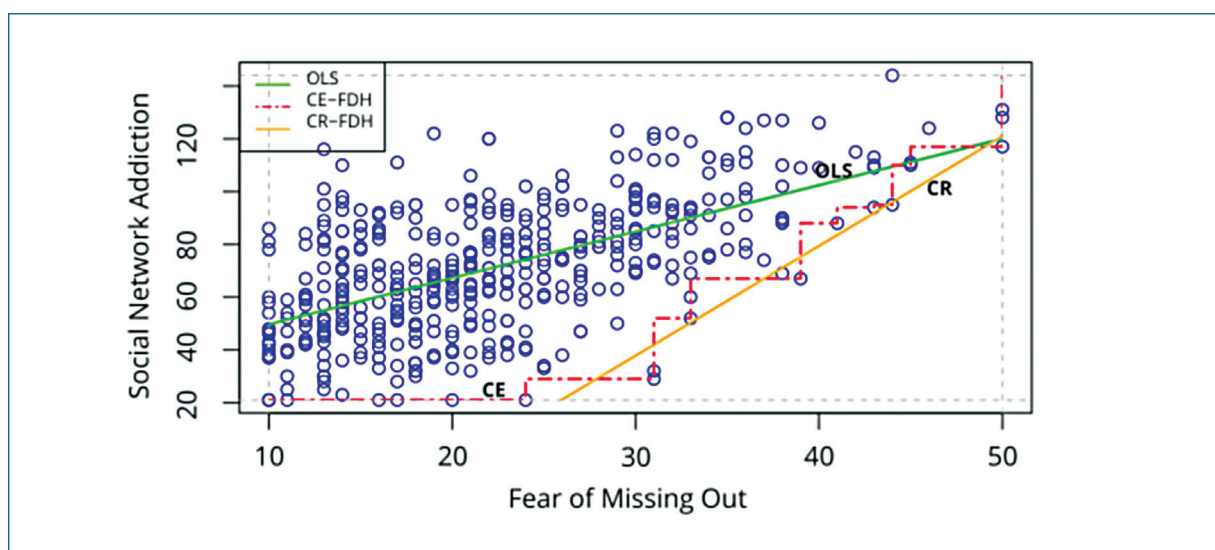


Figure 3. Scatterplot for Fear of Missing Out and Psychological Well-being (corner:2) [CR (straight ceiling line): $y = 296.24 - 2.842x$]

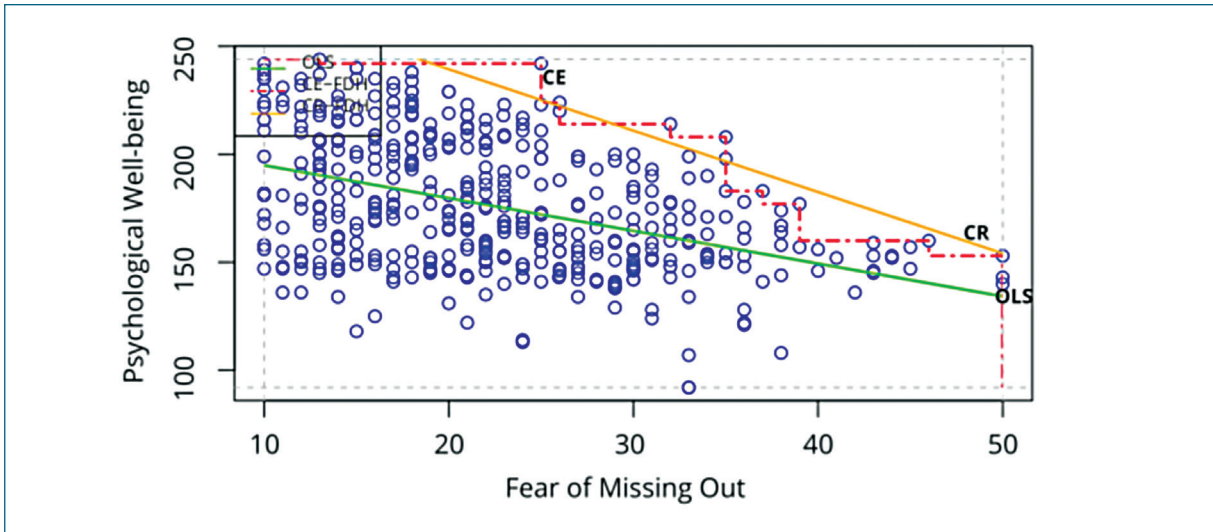


Figure 4. Scatterplot for Fear of Missing Out and Psychological Well-being (corner:3) [CR (straight ceiling line): $y = 160.74 - 2.098x$]

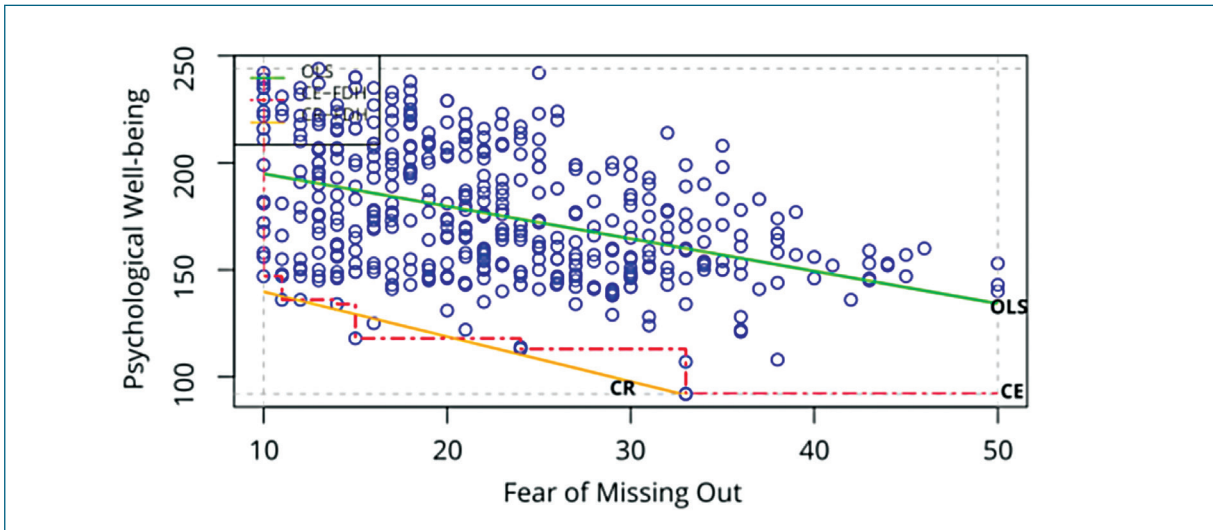


Figure 5. Scatterplot for Social Networking Addiction and Psychological Well-being (corner:2) [CR (straight ceiling line): $y = 301.41 - 0.904x$]

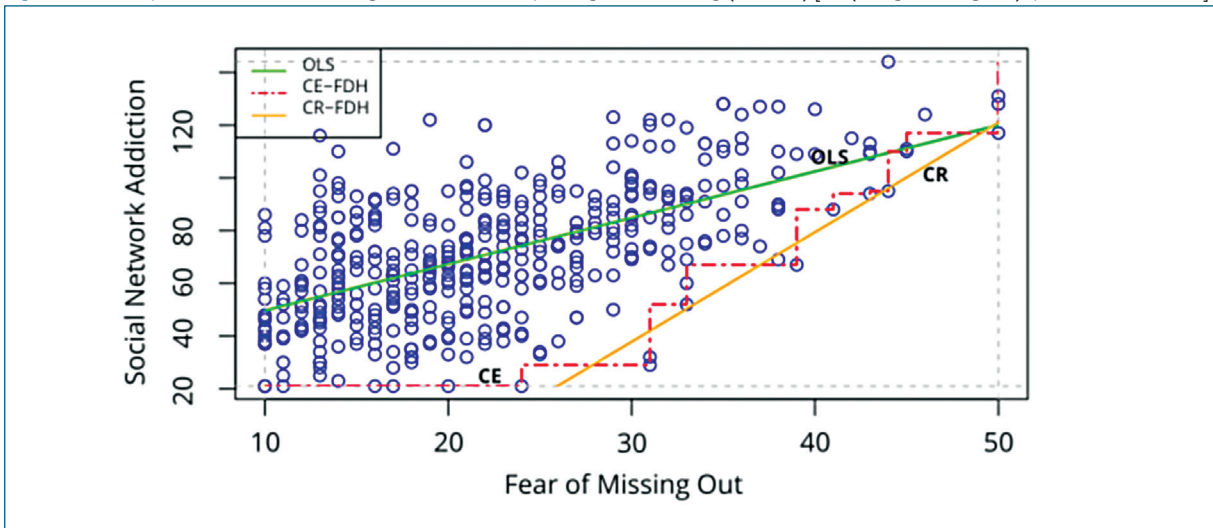
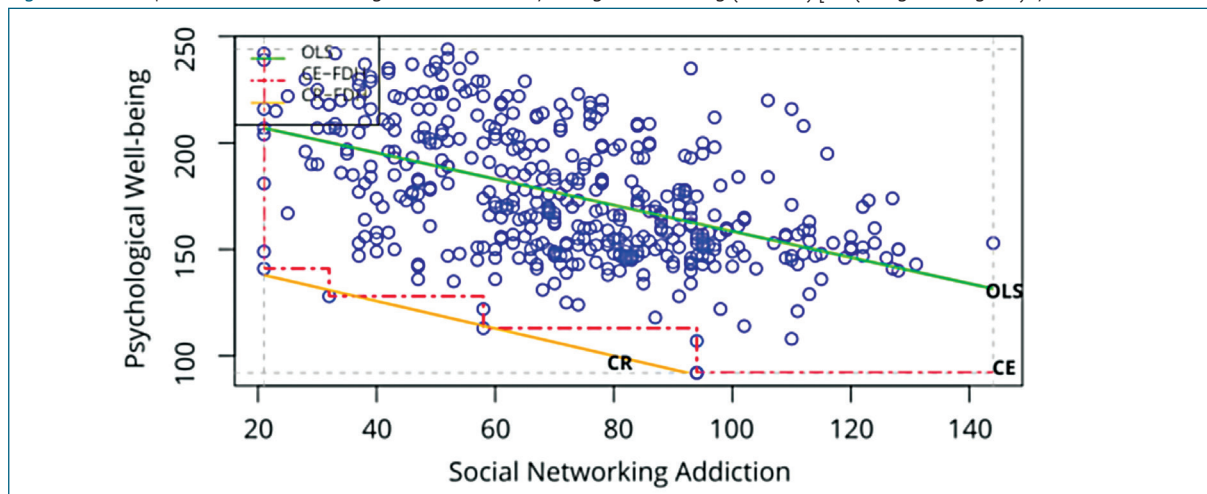


Figure 6. Scatterplot for Social Networking Addiction and Psychological Well-being (corner:3) [CR (straight ceiling line): $y = 151.49 - 0.644x$]



To facilitate interpretation, the observations in the bottleneck table (Table 4) were divided into three groups based on PWB data. The first level (up to 40%) indicates a low level of PWB, corresponding to PWB scores below 156. The table also shows that none of the conditions were found to be necessary for low levels of PWB. The second level (45% to 70%) indicates a medium level of PWB, with PWB scores ranging from 156 to 204. At this level, it can be observed that 45% of PWB corresponds to 94.5% FoMO, and at 55%, it is shown to correspond to 96.1% SNA. These levels clearly indicate that FoMO and SNA must remain below 94.5% and 96.1%, respectively, to attain a medium level of PWB. Lastly, the third level (above 75%) indicates a high level of PWB, with PWB scores of more than 204 (maximum 244). At this level, it can be observed that the levels of FoMO and SNA must be less than 21% and 34.6%, respectively, to attain the highest levels of PWB.

Table 4. Bottleneck Levels (in percentage) using Ceiling Regression (NN = Not Necessary)

Psychological Well-being	Fear of Missing Out	Social Networking Addiction
0	NN	NN
5	NN	NN
10	NN	NN
15	NN	NN
20	NN	NN
25	NN	NN
30	NN	NN
35	NN	NN
40	NN	NN
45	94.5	NN
50	87.8	NN
55	81.1	96.1
60	74.4	89.3
65	67.7	82.4
70	61.1	75.6
75	54.4	68.8
80	47.7	61.9
85	41.0	55.1
90	34.3	48.3
95	27.6	41.4
100	21.0	34.6

Notes: 1. The percentages provided represent the proportion within the range of a condition, stretching from the lowest observed value to the highest found in the dataset.
 2. Highlighted in bold lines, signify the divisions between three categories of psychological well-being. These categories were determined based on the distribution of data on psychological well-being.

Discussion

In recent research, PWB and FoMO have been identified as key psychological factors associated with problematic social media behaviors, including SNA (Groenestein et al., 2024; Meier & Reinecke, 2021). While prior research (Fioravanti et al., 2021; Groenestein et al., 2024; Hjetland et al., 2021; Nekkanti & Datti, 2024) has used diverse methodological approaches to examine these variables, the current study contributes to the literature by employing NCA, a novel method that offers unique insights into how key psychological factors constrain one another. Additionally, various theoretical frameworks, such as the multidimensional model of social media use, uses and gratification theory, and the Interaction of Person-Affect-Cognition-Execution (I-PACE) model (Arya et al., 2021; Bhatiasevi, 2024; Yang et al., 2021), have been employed to understand the relationships between social media usage, PWB, and FoMO. This existing research consistently highlights the strong relationship between PWB, FoMO, and SNA (Bhatiasevi, 2024; Blackwell et al., 2017; Hayran & Anik, 2021; Reer et al., 2019; Roberts & David, 2020; Stead & Bibby, 2017).

The current study examined the relationship between sociodemographic variables and SNA cut-off scores. The findings indicate that 30.3% of participants screened positive for probable SNA based on their scale scores. Previous studies in other southern Indian cities reported higher prevalence rates, specifically 36.9% and 70.7% (Masthi et al., 2017; Raj et al., 2018), whereas a study conducted in a western Indian city reported a lower prevalence of 15.02% (Patel et al., 2021). This indicates that the prevalence of probable SNA may vary considerably across different regions of India, potentially reflecting cultural, environmental, and lifestyle differences influencing social networking site usage patterns.

The demographic variable of gender was shown to be significantly associated with SNA scores, with a higher proportion of males screening positive for probable SNA compared to females. Existing Indian literature both supports and contradicts these findings. While one Indian study observed higher SNA levels among males (Chidambaram et al., 2023), another found higher scores among females (Patel et al., 2021). Considering international research, a Spanish study observed higher SNA among males (Aparicio-Martínez et al., 2020), further supporting the present results. In contrast, an American study observed greater SNA among females (Chen, 2019), and an Italian study observed no significant gender difference (Bottaro et al., 2024). These mixed findings across different cultural contexts suggest that gender differences in SNA may be influenced by cultural, social, and contextual factors, highlighting the need for further cross-cultural and longitudinal research to better understand these patterns.

Residence also emerged as a significant demographic factor associated with SNA scores. A higher proportion of participants from rural areas screened positive for probable SNA compared to urban residents. This could be due to growing digital penetration in rural India (KANTAR & IAMAI, 2024), even though urban residents, on average, continue to spend more time online. Rural users have increasingly adopted the internet, often using it primarily for entertainment purposes rather than educational or professional activities (Laskar, 2023). This entertainment-focused usage pattern may increase the risk of developing problematic or addictive social media behaviors among rural populations.

The social variable of marital status was found to be associated with SNA, with married individuals showing a lower proportion of probable SNA cases compared to single individuals. While direct studies on marital status and SNA are limited, it is possible that the added responsibilities and life commitments often associated with marriage may reduce the likelihood of excessive engagement with social networking platforms (Sharifinia et al., 2019). Although the study observed that the social variables parental status and occupation were initially shown to be associated with SNA, upon further analysis these were revealed to be insignificant. This insignificance may partly be attributed to the limited subgroup sizes within the sample, which could have reduced the statistical power to detect differences.

The current study also utilized Uses and Gratifications Theory and Compensatory Internet Use Theory, along with NCA, a novel and evolving data analysis approach, to further examine the relationships between the previously mentioned variables within the Indian context. The NCA model adopted in this study provided a better understanding of the relationship between these variables. NCA revealed that low levels of FoMO and SNA are necessary for achieving high levels of psychological well-being. The findings also indicated that varied levels of PWB necessitate individuals to attain distinct threshold levels of SNA and FoMO. Failure to meet any of these specific thresholds would result in lower PWB outcomes, regardless of whether the remaining thresholds are met or surpassed. This underscores the interconnectedness and dependency of these factors, indicating that a comprehensive balance between SNA and FoMO is crucial for achieving better PWB.

From the perspective of UGT, these findings further emphasize the role of user motivations and their impact on psychological outcomes. The results suggest that when these motivations are skewed toward excessive engagement, as seen in cases of high levels of SNA or through by the anxiety of missing out on experiences, as represented by FoMO, the balance required for positive PWB is disrupted. This aligns with UGT's assertion that both the type and intensity of media use are influenced by the gratification individuals seek, which in turn impact users' experiences (Dhir & Tsai, 2017; Katz et al., 1973).

However, integrating CIUT adds a deeper layer to this interpretation: it suggests that compulsive or anxiety-driven engagement may not stem merely from goal-directed media use but from an attempt to compensate for offline emotional or psychological deficits (Kardefelt-Winther, 2014). From this lens, FoMO may function as a psychological stressor that drives individuals to use social media not merely to fulfill needs but to escape discomfort-creating a loop that heightens SNA and undermines long-term well-being.

Together, these perspectives imply that to promote higher PWB, individuals need to maintain mindful, moderated social media use driven by balanced and conscious motivations rather than emotional avoidance or anxiety (Kardefelt-Winther, 2014; Meier & Reinecke, 2021). By drawing on both UGT and CIUT, this study underscores the importance of understanding what users seek online and why they seek it-and how unmet offline needs can shape problematic digital behaviors. A balanced approach to engagement that mitigates the compensatory pull of FoMO and the addictive tendencies of SNA is essential for sustaining healthy psychological outcomes.

Strengths and Limitations

A key strength of the present study' lies in its application of an innovative methodological approach to observe associations among the relevant variables. Using NCA, the study provides a unique perspective on how specific thresholds of social networking addiction and FoMO are essential for achieving optimal PWB. This approach clearly indicates that certain levels of SNA and FoMO are necessary to maintain PWB, emphasizing the interdependence of these factors. Additionally, focusing on young adults in the Indian context adds a valuable cultural dimension to the research. This approach improves the study's relevance and contributes to the existing literature on social media and mental health.

The study acknowledges limitations related to data collection and analysis. Utilizing convenience sampling and self-reported online forms, while common in social sciences, introduces issues including response bias, subjectivity, and potential social desirability bias. Though the employed scales demonstrated validity and reliability, respondents' understanding of questions may have led to inaccuracies. Moreover, the study acknowledges the need to validate Ryff's 42-item PWB scale and Przybylski's FoMO scale in the Indian context. The SNA scale used in the study is measured using a self-reported scale; therefore, the conclusions of the study should be interpreted with caution.

It is also important to acknowledge the lack of updated state-level population statistics for Andhra Pradesh beyond the 2011 Census. Given this limitation, coupled with the absence of current demographic breakdowns, constrains direct comparisons between the study sample and the broader population. As a result, it is difficult to accurately assess the representativeness of the sample against the existing population profile. Furthermore, the study did not examine demographic variables in their continuous form or conduct additional NCA analyses involving these variables in order to maintain focus on the primary variables of interest. The study also categorized SNA scores based on established cut-off points to assess group differences; treating SNA as a continuous variable in future analyses could offer more detailed insights.

NCA, like other analytical techniques, relies on valid and reliable variable scores, which are susceptible to measurement errors. Given that the present research is an observational study without experimental manipulation, caution is warranted in establishing causal relationships. Moreover, NCA is an emerging technique, necessitating further exploration and refinement in terms of its statistical and causal inferences. While it offers a unique perspective on causality, ongoing development and validation are essential (Van der Valk et al., 2016). In conclusion, these limitations highlight the need for future research that involved including more diverse populations, refining measurement tools, validating NCA, and exploring mediation and moderation. This iterative process will enhance understanding and promote more robust conclusions.

Conclusion, Implications and Future Directions

The current study examined the prevalence of probable SNA cases and its associations with sociodemographic variables among the participants. Females, individuals residing in urban areas, and those who are married were shown to have lower SNA scores compared to their counterparts. Additionally, the study applied NCA, a new data analysis technique commonly used in the field of management to identify necessary conditions within a dataset. As expected, this method provided new insights into an already well-researched topic, showing that low levels of problematic factors such as FoMO and SNA are necessary for high levels of PWB, and vice versa. Given these promising results, it is important for researchers to explore this technique further in psychology research.

The findings of this study imply that for young adults, excessive attachment to social media or a constant need to stay updated and connected might negatively impact their PWB. However, it is important to recognize that the relationship between social media use and mental health is not merely one of causality. Underlying psychological factors such as emotional distress, unmet psychological needs, or a lack of coping mechanisms may also play a significant role in the development of FoMO and SNA. Addressing these underlying issues is essential for promoting overall mental health and preventing problematic digital behavior.

Interventions and strategies should be designed with an understanding that it is not solely the quantity of social media use that matters but also the emotional and psychological motivations behind it. Mental health professionals, educators, and policymakers should adopt holistic approaches combining digital behavior regulation with psychological support, such as cognitive-behavioral strategies, to address underlying issues contributing to FoMO and SNA. For example, interventions might include mindfulness-based practices, stress management techniques, and the building of emotional resilience as ways to manage FoMO and reduce the need for compensatory social media use.

Furthermore, raising awareness about the psychological drivers of social media addiction and FoMO is essential. Programs can be designed to educate young adults on how to recognize and address internal factors, such as low mood or anxiety due to personal or social issues, which may contribute to their need for constant online engagement. The focus should not solely be on reducing screen time but also on understanding and addressing the psychological mechanisms that lead to problematic social media use.

In addition, interventions could include offline engagement opportunities, such as peer support groups, offline activities, or community involvement, which can help reduce FoMO, improve PWB, and provide healthy alternatives to excessive social media use. Tailoring interventions to specific demographic factors—such as gender, age, or location—can further enhance their relevance and effectiveness.

Furthermore, the findings add to the body of knowledge on new and emerging data analysis techniques, particularly NCA. The study demonstrates that it can be utilized to examine the interdependencies and thresholds necessary to understand complex relationships between various psychological factors.

Future research exploring social media-related factors such as media-associated anonymity (Bacaksız et al., 2023), emotional responses like anger and worry (Elhai et al., 2019), attachment styles (Blackwell et al., 2017), and personality traits (Blackwell et al., 2017; Stead & Bibby, 2017) could benefit from the application of the NCA method. Examining these factors through the lens of NCA might reveal additional causal factors and their direct impact on outcomes, contributing significantly to our understanding of the complex web of influences that shape individual well-being. Furthermore, future NCA research may consider using continuous demographic variables to better understand nuanced relationships, which could inform the development of more targeted, demographic-specific interventions. In addition to this, it is also important to use more diverse and representative sampling methods to study a broader range of individuals. As NCA is still an emerging analytical technique, future research should focus on refining and validating its application in psychology.

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Author contribution

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Declaration of interest statement

The authors have no conflicts of interest to disclose.

Ethical statement

This manuscript is the authors' original work.

All participants engaged in the research voluntarily and anonymously.

Their data are stored in coded materials and databases without personal data.

The studies involving human participants were reviewed and approved by Department Research Committee, Department of Applied Psychology, School of Humanities and Social Sciences, GITAM (Deemed to be University) on 01.03.2024 (File No. DRC/03/2024/0001).

Data availability statement

Datasets presented in this article are available from the corresponding author upon reasonable request.

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RESEARCH ARTICLE

Self-Oriented and Socially Prescribed Perfectionism Among Hungarian Professional Folk Dancers

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Introduction

Perfectionism is a phenomenon that has been studied for decades, and its interpretation has changed and differentiated significantly over time. While initially considered to be a purely psychopathological condition associated exclusively with psychological problems (Burns, 1980; Pacht, 1984; Ranieri et al., 1987), it has now become clear that it is a multidimensional psychological construct that is associated with both positive and negative psychological states (Frost et al., 1990, 1993; Gaudreau, 2019; Stoeber & Otto, 2006).

Dance artists are often described as having a tendency towards perfectionism, which includes technical knowledge, artistic performance, and physical appearance. However, research results suggest that “true” perfectionism

Introduction: Those characterized by high levels of self-oriented or socially prescribed perfectionism strive to meet high expectations. Dancers are prone to perfectionism and related negative psychological factors.

Aims: In this study, we investigated how perfectionism among Hungarian professional folk dancers is related to certain psychological factors.

Methods: Ninety-six professional dancers completed an online survey (47.9% male, 52.1% female, mean age: 29.91 years, $SD = 8.46$). To measure perfectionism, we utilized Hewitt and Flett’s Multidimensional Perfectionism Scale. We carried out a moderation analysis based on linear regression to measure the associations between the perfectionism subscales and various psychological variables and examine whether the two subscales moderated each other’s effects.

Results: Higher levels of socially prescribed perfectionism were associated with higher perceived stress, burnout, weaker concentration, and lower coachability. On the other hand, self-oriented perfectionism showed fewer associations; however, these were indicative of a better mental state: those with higher self-oriented perfectionism showed lower levels of burnout, better concentration, and higher coachability. We also found that the two dimensions of perfectionism moderate each other’s effects. In the case of concentration and coachability, self-oriented perfectionism may mitigate the detrimental effects of socially prescribed perfectionism. In contrast, in the case of perceived stress, self-oriented perfectionism may actually exacerbate the harmful effects of socially prescribed perfectionism.

Conclusions: The results showed significantly more dysfunctions associated with socially prescribed perfectionism. On the other hand, self-oriented perfectionism was associated with adaptive psychological outcomes.

Keywords: perfectionism, dancers, perceived stress, burnout, coping skills

is rare; instead, we can see that elements of perfectionism are common among professional dancers (Hill et al., 2020; Nordin-Bates et al., 2011). As part of our larger research of professional folk dancers in Hungary, this study examines multidimensional perfectionism among these dancers and the psychological factors associated with it.

Perfectionism

Although there is a wide range of literature on perfectionism, it is difficult to provide an exact definition for the concept. Comparing studies on the subject, perfectionism can be described as setting unrealistically high goals, striving for flawless performance, and selective attention to failure, as well as overly critical evaluation and excessive self-criticism (Frost et al., 1990; Gaudreau, 2021; Hewitt & Flett, 1991). Gaudreau (2019) distinguishes between striving for perfection and striving for excellence, pointing out that a person striving for excellence may feel satisfaction upon achieving their goal, while a person striving for perfection is incapable of feeling satisfied.

Until the 1990s, perfectionism was considered a dysfunctional trait associated with numerous negative psychological problems (Burns, 1980; Pacht, 1984; Ranieri et al., 1987). During the same period, Hamachek (1978) established a two-dimensional theory by distinguishing between normal and neurotic perfectionism.

A significant change in the interpretation of the phenomenon began in the 1990s when two independent research groups described perfectionism as a multidimensional construct (Frost et al., 1990; Hewitt & Flett, 1991). Frost et al. (1990) evaluated the perfectionist experience according to six criteria (Concern over Mistakes, Personal Standards, Parental Expectations, Parental Criticism, Doubts about Actions, and Organization). In some of these areas, they also discovered some positive personal characteristics associated with perfectionism. Hewitt and Flett's (1991) three-dimensional model acknowledges the interpersonal aspects of perfectionism, distinguishing between self-oriented, other-oriented, and socially prescribed perfectionism.

The Three-Dimension Model of Perfectionism

In this study, we examined our sample using the three-dimensional approach developed by Hewitt and Flett (1991). The authors moved beyond two-dimensional models that divide perfectionism into aspects that are positive or negative (Frost et al., 1993; Rice et al., 1998; Terry-Short et al., 1995), and instead examined perfectionism from a social perspective based on the idea that it involves both intrapersonal and interpersonal components. Accordingly, they distinguish between self-oriented, other-oriented, and socially prescribed perfectionism. Individuals with high self-oriented perfectionism have high expectations of themselves, set high goals, and try to perform as flawlessly as possible. This kind of perfectionism can be a strong internal driving force for the individual, acting as a supportive factor. However, it may also result in dissatisfaction with less than ideal performance and excessive self-criticism. Other-oriented perfectionism involves imposing expectations of perfect performance on others, such as colleagues, friends, family, or strangers; therefore, it is directed outwards. Individuals with high other-oriented perfectionism may experience frustration when others fail to meet their expectations, which can be a source of conflict and may negatively impact the individual's social relationships. Socially prescribed perfectionism is rooted in an individual's belief that significant others expect them to perform perfectly and that they must meet these expectations to earn and keep their love, respect, or appreciation. Failure to meet such expectations leads to rejection and devaluation (Hewitt & Flett, 1991).

Frost et al. (1993) compared the dimensions of the two influential concepts developed by Frost et al. (1990) and Hewitt and Flett (1991). They concluded that the dimensions of the two frameworks mentioned above show similarities: Frost's Personal Standards and Organization, along with Hewitt-Flett's self-oriented and other-oriented perfectionism, can be classified as positive strivings. In contrast, Frost's Concern over Mistakes, Parental Criticism, Parental Expectations, Doubts about Actions, and Hewitt-Flett's socially prescribed perfectionism can be classified as maladaptive evaluation concerns. Furthermore, positive strivings were associated with positive affect, while maladaptive evaluation concern were associated with negative affect.

Interaction Between Dimensions of Perfectionism

Considering any two- or multidimensional model of perfectionism, it can be seen that certain aspects of perfectionism are associated with positive outcomes, while other aspects are associated with adverse outcomes. Despite this, a positive correlation can often be observed between the dimensions of perfectionism; for example, those with high levels of perfectionistic strivings often also exhibit high levels of perfectionistic concerns (Stoeber & Otto, 2006). This raises the question of what outcomes can be expected if both the positive and negative aspects are high.

Based on the model proposed by Stoeber and Otto (2006), perfectionistic strivings and perfectionistic concerns can be used to categorize individuals into three groups. Non-perfectionists are those for whom both values are low or only perfectionistic concerns are high (since in their model, perfectionism cannot be interpreted in the absence of a desire for high performance). Healthy perfectionists are those for whom perfectionistic strivings are high but concerns are low, and unhealthy perfectionists are those for whom both values are high. Thus, the positive effects of perfectionistic strivings manifest only in the absence of elevated perfectionistic concerns. The authors list several studies demonstrating the advantages of healthy perfectionists over unhealthy perfectionists (and often non-perfectionists as well) across several psychological domains, such as self-esteem and academic performance (Stoeber & Otto, 2006). Results relevant to the present study are that healthy perfectionists are characterized by lower anxiety (Dixon et al., 2004; Mobley et al., 2005), easier social cooperation and better social functioning (LoCicero et al., 2000; Parker, 1997; Rice & Dellwo, 2002), as well as stronger personal control and a more internal locus of control (Periasamy & Ashby, 2002; Rice et al., 2003) compared to unhealthy perfectionists or non-perfectionists. It should be noted, however, that a significant portion of the research listed above was conducted with undergraduates or adolescents.

In their 2x2 model, Gaudreau and Thompson (2010) attempted to further refine perfectionism as a personality trait by suggesting that the two dimensions, personal standards perfectionism and evaluative concerns perfectionism, may co-occur in an individual's personality. According to the model, individuals are not considered perfectionists if neither component is active. Adaptive (healthy) perfectionists possess high personal standards but low evaluative concerns, while maladaptive (unhealthy) perfectionists are those with high evaluative concerns and low personal standards. The fourth category of the model is characterized by similarly high levels of the two perfectionism components, which the authors refer to as mixed perfectionism. In their research on university students, Gaudreau and Thompson examined the effects of perfectionism on academic self-determination, academic satisfaction, and general positive and negative affects. They found that the most favorable outcomes were observed for healthy perfectionism, while unhealthy perfectionism yielded the least favorable outcomes. Additionally, for mixed perfectionists, personal standards were found to reduce the negative impact of evaluative concerns. In their study on burnout, Rice and Liu (2020) also demonstrated the buffering effect of perfectionistic striving against the negative impact of concerns among research and development workers regarding cynicism.

Cumming and Duda (2012) carried out cluster analysis among vocational dance students and, consistent with Gaudreau and Thompson's (2010) model, found that the four-cluster solution was the most optimal. Based on their results, positive affect was higher in the pure personal standards cluster than in the non-perfectionist cluster and the pure evaluative concerns cluster. The mixed perfectionist cluster was between these, scoring lower than the pure personal standards cluster but above the pure evaluative concerns and non-perfectionist clusters, with no significant differences between the two. Interpreting the differences through the lens of moderation, positive affect is increased by high personal standards, but the effect is moderated by high concerns, partially reducing it. In the case of negative affect, the differences between the clusters suggest that concerns increase negative affect, regardless of the presence of personal standards (i.e., we would not expect a moderating effect here). In the case of physical and mental exhaustion, no clear conclusions can be drawn from a moderation analysis perspective. However, the data indicates that the pure personal standards cluster has lower exhaustion compared to both the pure evaluative concerns and mixed perfectionist cluster.

Using the theoretical framework of Cumming and Duda (2012), Nordin-Bates et al. (2017) found that personal standards cannot mitigate the detrimental effects of evaluative concerns in case of burnout and motivational regulation among dancers. Hill et al. (2020) also examined athletes and dancers using the 2x2 model developed by Gaudreau and Thompson (2010). Their results show that, among the groups, individuals in the pure evaluative concerns group exhibit the worst prospects in terms of mental health problems.

Moving beyond studies that rely on grouping or clustering, Stoeber (2011) suggests that perfectionistic concerns suppress the positive effects of strivings, such that the effect of the two aspects is only visible if the overlap between the two is controlled for in the study. He based this conclusion on research in which he used regression or partial correlation to control for the effects of different aspects of perfectionism on each other (e.g., Sagar & Stoeber, 2009; Stoeber et al., 2007). On the other hand, Hill (2014) cautioned against the use of partialing, warning that if the correlation between the factors in the model is too strong, then the residual part of the variables remaining after partialing may be conceptually difficult to interpret. However, Hill and Curran's (2015) meta-analysis found that the effects of perfectionistic concerns are not significantly altered by partialing, and that changes are observed mainly in the case of perfectionistic striving, which, after partialing, was associated with more positive outcomes.

In summary, research examining different aspects of perfectionism highlights that the actual effects of these aspects only become observable when the overlap between them is controlled (for an extensive review, see Stoeber, 2011). Moderation research on this topic is scarce and primarily focuses on cases in which both positive and negative aspects are high. Evidence exists that the positive aspect of perfectionism can serve as a buffer against the detrimental aspect, as well as evidence that the negative aspect masks the effect of the positive. However, it is difficult to reveal the actual range of moderating effects through categorization-based research. Moreover, previous studies mainly focused on conceptual approaches that divide the phenomenon into perfectionistic strivings and concerns. To our knowledge, no moderation analysis has been conducted within the interpretative framework proposed by Hewitt and Flett (1991), which divides perfectionism into self-oriented, other-oriented, and socially prescribed perfectionism. Therefore, we consider this approach to be one of the novel elements of the present research.

The Relationship Between Perfectionism and Mental Health

Numerous studies have investigated the associations between perfectionism and mental health among athletes and dancers. While adaptive forms of perfectionism can serve as supportive factors, providing individuals with higher levels of motivation, self-confidence, and better coping skills (Dunn et al., 2014; Stoeber, 2011), maladaptive forms are more strongly linked with anxiety, higher levels of perceived stress, burnout, lower self-esteem, and higher fear of failure (Nordin-Bates, 2014; Nordin-Bates et al., 2017; Quested et al., 2014).

Investigating Hewitt and Flett's (1991) model in a community sample of young adults, Molnar et al. (2006) found that the self-oriented dimension of perfectionism was associated with higher positive and lower negative affects, while the socially prescribed dimension was linked to lower positive and higher negative affects. Furthermore, they demonstrated a relationship between the perfectionism dimensions and perceived physical health via positive and negative affects. Partly contradicting this, Mor et al. (1995) found that both socially prescribed perfectionism and self-oriented perfectionism were associated with higher levels of debilitating anxiety, lower happiness while performing, and lower goal satisfaction in a sample of performing artists. Stevenson and Akram (2022) also found both self-oriented and socially prescribed perfectionism to be associated with perceived stress, the inadequate self, and the hated self among undergraduates. However, both authors also found a positive correlation between self-oriented and socially prescribed perfectionism, which raises the question of how these associations may have differed if the partialing approach proposed by Stoeber et al. (2011) had been used.

Perfectionism and Perceived Stress

Perceived stress is defined as how individuals interpret the amount of stress to which they are exposed at a given time or over a given time period (Phillips, 2013). According to studies conducted among university students, perfectionism is associated with higher levels of perceived stress through various psychological dysfunctions (Stevenson & Akram, 2022). Perfectionistic concerns and self-critical perfectionism have been strongly associated with higher levels of distress through the mediating effects of hassles, avoidant coping, and perceived social support (Dunkley et al., 2000, 2003). Personal standards were also positively associated with distress as shown by bivariate correlation analysis; however, this relationship disappeared after controlling for perfectionistic concerns. Additionally, an interesting interaction was observed between personal standards and hassles in relation to distress: the moderation analysis revealed that hassles resulted in higher levels of perceived distress in the presence of high personal standards (Dunkley et al., 2000). Other features typical of maladaptive perfectionism, such as concerns about mistakes, doubts about actions, and fear of negative evaluation, can also lead to higher levels of perceived stress (Shafique et al., 2017; Smith et al., 2017). A study conducted among coaches also found that adaptive perfectionism was not associated with elevated stress levels, while maladaptive perfectionism results in more threatening perceptions of stress (Tashman et al., 2010).

Perfectionism and Burnout

Burnout syndrome (hereafter: *burnout*) is a state of emotional, physical, and cognitive exhaustion caused by prolonged exposure to various stressors. Its three key dimensions are overwhelming exhaustion, a reduced sense of accomplishment, and a feeling of disconnection from work (Maslach & Leiter, 2016).

There are several studies across different populations on the relationship between perfectionism and burnout (Garratt-Reed et al., 2018; Rice & Liu, 2020; Tashman et al., 2010). The results clearly show that perfectionism is

associated with burnout and that its maladaptive form, perfectionistic concern, poses a significant risk for burnout. This is less typical of perfectionistic aspiration strivings (i.e., adaptive perfectionism).

Research conducted with athletes also supports the notion that perfectionism can be a predictor of athlete burnout (Gustaffson et al., 2008; Olsson et al., 2022). Hill and Curran's (2015) meta-analysis, spanning sport, work, and education-related domains, found that perfectionistic strivings were negatively correlated with burnout in sport-related studies, while perfectionistic concerns showed positive associations. Yang et al. (2023) found a similar result among athletes in their systematic review and meta-analysis: self-oriented perfectionism was shown to be either weakly related or unrelated with burnout, whereas socially prescribed perfectionism showed positive relationships.

Jowett et al. (2016) examined the relationship between burnout and perfectionism among athletes using Gaudreau and Thompson's (2010) 2x2 model. They found that pure personal standards perfectionism was not associated with burnout, while pure evaluative concerns perfectionism was more strongly correlated with burnout than the other dimensions of the model. Similarly, Cumming and Duda (2012) found that dancers with pure evaluative concerns perfectionism or mixed perfectionism reported higher emotional and physical exhaustion than dancers with pure personal standards perfectionism. In contrast, Hall and Hill (2012) argued against the idea that only perfectionistic concerns have a detrimental effect on mental health. According to the authors, personal strivings can also have a debilitating effect and lead to burnout, as they may be associated with a mindset where achievement is closely tied to self-worth and marked by constant self-criticism, obsessive mistake-avoidance, harmful rumination, and feelings of personal inadequacy.

Perfectionism and Coping Skills

Research among athletes has shown that certain psychological skills, such as psychological coping skills in sports, contribute significantly to performance (Gyömbér, 2017; Smith et al., 1995; Szájer, 2019) and result in better mental health outcomes for athletes (Brown, 2024; Fry et al., 2021). Such skills include concentration and coachability.

Concentration is the sustained maintenance of attention, enabling individuals to focus on a task by filtering out distractions (Gyömbér, 2017), and is shown to increase engagement (Özcan, 2021). It has also been associated with higher self-esteem (Smith et al., 1995) and well-being (Brown, 2024), as well as with perfectionism. Among dancers, perfectionistic concerns have been observed to have an inhibitory effect on dispositional flow in dance, a key element required for deep concentration, when perfectionistic striving is low. However, this effect is not observed in the case of high striving (Arslan & Altan-Atalay, 2023).

The literature suggests that a further contributor to performance is the athlete's relationship with the coach and how this relationship is perceived by the athlete (Jowett & Cockerill, 2003). Simons and Bird (2022) describe the coach-athlete relationship as one of the major stressors to an athlete's psychological well-being, while the behavior of the dance director is also one of the strongest drivers of stress in dancers (Noh et al., 2009). The construct of coachability describes how an individual receives, processes, and responds to feedback (Ober et al., 2024). Coachability in sports can be defined as a behavior that enhances an athlete's teachability and is considered an important predictor of athletic success (Giacobbi, 2000). It also reflects the athlete's ability to learn and accept coaching feedback and criticism (Favor, 2011). Fry et al. (2021) reported a positive association between the perception of a caring climate and coachability, while Brown (2024) reported a negative association between coachability and stress among athletes. To our knowledge, no academic paper has been published on the relationship between coachability and perfectionism; thus, this research may provide new insights into this area. Examining related constructs, it was found that individuals classified as healthy perfectionists (characterized by high standards and low concerns) were more willing to cooperate with others (LoCicero et al., 2000), had higher levels of agreeableness and conscientiousness (Parker, 1997), and exhibited greater social integration (Rice & Dellwo 2002).

Hungarian Folk Dance Groups

Hungarian folk dance is a branch of Hungarian folk art. It is performed by individuals, couples, or groups, and is accompanied by music and singing. Folk dance traditions are actively present in both the performing arts and dance education. There are currently four professional folk dance companies in Hungary: the Hungarian National Dance Ensemble (Magyar Nemzeti Táncgyűttes, n.d.), the Hungarian State Folk Ensemble (Magyar Állami Népi Együttes, n.d.), the Danube Art Ensemble (Duna Művészegyüttes, n.d.) and the Dezső Fitos Company (Fitos Dezső Társulat, n.d.). In addition to these, a few dozen amateur folk dance groups are active throughout Hungary and beyond its borders.

Professional folk dance companies in Hungary perform regularly in theatres and at events throughout the year. As the preparation for these performances involves daily rehearsals and training sessions, making dance a full-time occupation for the members of these companies. Since Hungarian folk dance involves individual, pair, and group elements, the companies are organized around pairs, usually maintaining an equal number of male and female dancers. Both male and female dance troupes have soloists, and a male and a female dance leader are normally appointed from among the dancers. Companies are led by one or more artistic directors and sometimes a manager who deals with the operational aspects of the company.

To date, only a few studies have examined Hungarian folk dancers from a psychological point of view. Medveczné Atinay et al. (2022) investigated the mental well-being and coping methods of dancers during the COVID-19 lockdown period, while Szászi and Szabó (2021) explored dancers' body satisfaction, body attitudes, and self-esteem. Building on this research, we aimed to examine the psychological state of professional folk dancers from additional perspectives.

Research Aims

The literature presented earlier suggests that dancers are prone to perfectionism and certain negative psychological characteristics associated with it (Hill et al., 2020; Nordic-Bates et al., 2011). However, no such studies have been conducted specifically among folk dancers, and studies investigating the mental states of Hungarian folk dancers are scarce in general (Medveczné Atinay et al., 2022; Szászi & Szabó, 2021). Therefore, the present study aims to investigate these factors among professional folk dancers in Hungary.

Accordingly, we formulated three hypotheses and one research question for this study.

Based on previous results, we hypothesize that folk dancers will have higher levels of perfectionism compared to the general population (H1). We also theorize that (H2) self-oriented perfectionism will be associated with certain psychological outcomes (i.e., lower levels of perceived stress, burnout, and worry, as well as higher levels of concentration and coachability). In contrast, (H3) socially prescribed perfectionism will be linked to more negative effects on these factors. Following Stoeber's (2011) recommendation, the analyses are carried out while controlling for the potential overlap between the two perfectionism scales.

Moderation analyses on perfectionism are rare, and to our knowledge, none have applied the Hewitt and Flett (1991) model. Studies offering insights into moderation effects have been based on grouping or clustering individuals along the adaptive and maladaptive axes of perfectionism (for a detailed discussion, see the section entitled "Interaction between dimensions of perfectionism"), and the results are inconclusive. Therefore, an additional research question of the present study is whether self-oriented and socially prescribed perfectionism not only coexist with each other but also whether they also influence each other's effects. This influence can take two forms: the two perfectionism scales can either mitigate or enhance each other's effect, that is, it is possible that high levels of self-oriented perfectionism may protect against the adverse effects of socially prescribed perfectionism (i.e., reduce its negative effect), but it is also possible that high levels of self-oriented perfectionism may aggravate the effect of socially prescribed perfectionism.

To our knowledge, no prior study has investigated the interaction between self-oriented and socially prescribed perfectionism; thus, the present study is the first to explore such moderating relationships.

Methods

Sample and Procedure

An online questionnaire was used to examine Hungarian professional folk dance artists across psychosocial dimensions. The survey was conducted between March and June 2024. Following a written request to the company leaders, the survey was completed online. Respondents were assured of the anonymous and voluntary nature of the survey and were assured that they could discontinue the survey at any time. Ethical permission for the study was granted under the reference number TUKEB BM/819-1/2024.

There are currently four major professional folk dance companies in Hungary, employing approximately 130–140 folk dance artists. In the current survey, we reached 96 of these dancers (see [Appendix Table 1](#)), which represents approximately 70% of the Hungarian professional folk dance artist population.

The gender distribution of the sample was relatively balanced, with 47.9% male and 52.1% female, which corresponds to the typical gender distribution of the population given the pair-based nature of this dance style.

Participants ranged in age from 19 to 51 years old, with a mean age of 29.91 years ($SD = 8.46$). In terms of educational level, a significant part of the sample held higher education degrees. Regarding marital status, approximately one-third of the participants were single, while two-thirds were in a relationship. Three-quarters of the sample reported having no children. On average, participants had been dancing for an average of 21.52 years ($SD = 8.55$), with a range from 6 years to 43 years of dancing experience. Of these, they had been dancing professionally for an average of 9.14 years ($SD = 8.78$), ranging from 3 months to 39 years of professional experience. Descriptive statistics are shown in [Table 1](#).

Table 1. Descriptive Statistics

Sample characteristics	<i>n</i>	%					
Gender							
male	46	47.9					
female	50	52.1					
Marital status							
single	37	38.5					
in a relationship	23	24.0					
married	31	32.3					
divorced	4	4.2					
widowed	1	1.0					
Number of children							
0	72	75.0					
1	16	16.7					
2	6	6.3					
3	2	2.1					
Education							
secondary education	13	13.5					
vocational training	10	10.4					
higher education	73	76.0					
Sample characteristics	<i>Mdn</i>	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>	<i>Min</i>	<i>Max</i>
Age (in years)	27	29.91	8.46	0.96	0.05	19	51
Total dance experience (in years)	20	21.52	8.55	0.70	0.10	6	43
Professional dance experience (in years)	6.5	9.14	8.78	1.34	1.24	0.3	39

Note. $N = 96$.

Measurements

The results presented in this paper are part of a larger research project, which included several questionnaires assessing the psychosocial state of the dancers, as well as questions about their physical condition and injuries. Due to the limited number of eligible participants in the target population and the comprehensive nature of the test battery, which included several questionnaires, special attention was paid to ensuring that the dropout rate was low. To promote a high completion rate, the questionnaire was designed with a uniform appearance, and the questionnaire battery was standardized. Accordingly, all Likert-type items were presented using a 5-point scale (with 1 indicating the lower end and 5 the higher end of the scale). This change was applied to items of the Multidimensional Perfectionism Scale (originally using a 7-point scale), as 5-point scales are believed to result in higher response rates compared to longer versions by reducing respondent frustration (Revilla et al., 2014). Similarly, the Athletic Coping Skills Inventory was adjusted from a 4-point scale to a 5-point scale. [Appendix Table 2](#) presents the original scaling and level names of the questionnaires, as well as those used in the current study. To make the results of this study comparable with those of others, means and standard deviations were also reported according to the original scaling. The following questionnaires were used in this study:

Multidimensional Perfectionism Scale (MPS)

The Multidimensional Perfectionism Scale (MPS) measures self-oriented, other-oriented, and socially prescribed perfectionism (Hewitt & Flett, 1991). It was adapted into Hungarian by Olajos et al. (2021), who studied secondary school and university students ($N = 446$). Their results were consistent with the normative data provided by the original authors for young adults. Two of its three subscales were used in the present study: self-oriented perfectionism and socially prescribed perfectionism. As the questionnaire battery was extensive and other-oriented perfectionism was beyond the scope of the research project, the third scale was excluded from the battery. The self-oriented subscale included 11 items (e.g., “One of my goals is to be perfect in everything I do”), and the socially prescribed perfectionism subscale included six items (e.g., “My family expects me to be perfect”). Although the original questionnaire was measured using a 7-point Likert-type scale ranging from strongly disagree (1) to strongly agree (7), the current study utilized a 5-point Likert-type scale. While both sum and average item scores are common in the literature, in the present research the scale scores were calculated by averaging. The reliability of the two scales was excellent: for the self-oriented perfectionism scale, Cronbach's $\alpha = .90$ and McDonald's $\omega = .90$; for the socially prescribed perfectionism scale, $\alpha = .81$ and $\omega = .82$.

Perceived Stress Scale (PSS)

The perceived stress was measured using the 14-item Perceived Stress Scale (PSS), which is a widely used unidimensional measure to assess the amount of stress in an individual's life over the previous month (Cohen et al., 1983; adapted to Hungarian by Stauder & Konkoly-Thege, 2006). In the present study, items were rated on a 5-point Likert-type scale ranging from never (1) to very often (5), and the scale values were computed by averaging. The reliability of the scale in this study proved excellent ($\alpha = .86$, $\omega = .87$).

Athlete Burnout Questionnaire (ABQ)

The 15-item Athlete Burnout Questionnaire (ABQ) was developed by Raedeke and Smith (2001) and adapted into Hungarian by Kovács et al. (2020). The questionnaire is used to assess the athlete's attitude towards sports. It is a common practice to modify the items of this questionnaire to match the given sport investigated in the study. In this research, the questions about sports were adapted to refer to dance. For example, the item “I am not achieving much in sport” was changed to “I am not achieving much in dance”. The ABQ is organized into three subscales: Reduced sense of accomplishment (5 items; e.g., “I am not performing up to my ability in dance”); Physical and emotional exhaustion, (5 items; e.g., “I feel overly tired from dance”); and Sport devaluation, called “Dance devaluation” in the current study (5 items; e.g., “I am not into dance like I used to be”). Items were rated on a 5-point Likert-type scale ranging from almost never (1) to almost always (5), and the scale values were computed by averaging. The reliability of all three subscales was good: for Reduced sense of accomplishment, $\alpha = .77$ and $\omega = .78$; for Physical and emotional exhaustion, $\alpha = .90$ and $\omega = .90$; and for Dance devaluation, $\alpha = .84$ and $\omega = .84$.

Athletic Coping Skills Inventory (ACSI-28)

The Athletic Coping Skills Inventory (ACSI-28) was developed by Smith et al. (1995) to measure the coping skills of athletes and was adapted to Hungarian by Jelinek (2000). The 28 questions of the original questionnaire are organized into seven subscales, four of which were used in the present research: Concentration (4 items; e.g., “When I'm dancing, I can focus my attention and block out distractions”), Freedom from worry (4 items; e.g., “During performance, I worry about making mistakes or failing to come through”), Confidence and achievement motivation (4 items; e.g., “I get the most out of my talent and skill”), and Coachability (4 items; e.g., “If a coach criticizes or yells at me, I correct the mistake without getting upset about it”). The sport-specific expressions in the questionnaire were adapted for the dance context. Items were rated on a 5-point Likert-type scale ranging from almost never (1) to almost always (5), and the scale values were computed by averaging. The reliability of the Confidence and achievement motivation subscale proved to be inadequate ($\alpha = .55$ and $\omega = .59$) and was therefore excluded from further analyses. The remaining three subscales showed adequate reliability: for Concentration, $\alpha = .74$ and $\omega = .74$; for Freedom from worry, $\alpha = .78$ and $\omega = .78$; and for Coachability, $\alpha = .68$ and $\omega = .72$.

Data Analysis

After examining the demographic data, descriptive statistics were calculated for the scales used in this study, with an additional focus on the perfectionism subscales. Based on the skewness and kurtosis values, normal distribution could be assumed for the perfectionism subscales (for self-oriented perfectionism, $S = -0.39$ and $K = -0.58$; for socially prescribed perfectionism, $S = 0.19$ and $K = -0.82$). The skewness and kurtosis values of the other psychological scales used in the analyses also fell within the normal range, with skewness values falling between -0.85 and 0.65 and kurtosis values falling between -0.82 and 0.89 .

One-sample t -tests were used to examine the deviation of the perfectionism subscales measured in the current sample from the normative values for a community sample provided by the authors of the MPS questionnaire (Hewitt & Flett, 2014). The normative data were reported as the sum of the item values measured on a 7-point Likert-type scale (ranging from 1 to 7) and categorized by age groups, including 18–25 and 26–45 age ranges. In contrast, the current study used the mean scores of 5-point Likert-type scales across all instruments (ranging from 1 to 5). In order to make the normative data comparable with the results of the present study, the following transformations were performed: Firstly, an average score from the total score was calculated by dividing the sum by the number of items. Secondly, the 7-point Likert-type scale was rescaled to a 5-point scale. Equations were used for the conversion of means $((\text{Normative Value} - 1) / 6 * 4 + 1)$ and for the conversion of standard deviations $(\text{Normative Value} / 6 * 4)$. Lastly, the values of the two age groups relevant to the research were averaged. As a result, normative data (on a 5-point Likert-type scale, based on the mean score) was obtained for self-oriented perfectionism ($M = 3.22$, $SD = 0.16$) and for socially prescribed perfectionism ($M = 2.51$, $SD = 0.14$). The one-sample t -tests were carried out using these values.

Pearson correlation was used to measure the association between the two perfectionism subscales, while Spearman correlation was used to test the correlations between the perfectionism scales and the demographic variables in order to reduce the possibility of demographic biases.

Linear regression was employed to examine how the two perfectionism scales predict perceived stress, burnout, and psychological coping skills. The advantage of regression over correlation is that regression controls for the overlapping effects of the two perfectionism scales, which is particularly important consideration in studies regarding perfectionism, as emphasized by Stoeber (2011). We also examined whether the two perfectionism subscales influence the psychosocial factors independently from each other or whether they moderate each other's effect. This was tested for by introducing an interaction term for the two perfectionism scales to the model: the regression model included the standardized version of the continuous perfectionism scales and the product of the two scales as the interaction term. For visualization purposes, we divided the sample into three groups based on the self-oriented perfectionism scale (low score of self-oriented perfectionism: $Z < -0.5$; medium score: $-0.5 \leq Z \leq 0.5$; and high score: $Z > 0.5$). Simple slopes were displayed for these three groups.

To address concerns about partialing raised by Hill (2014), in addition to regression analyses, we also conducted Pearson correlations between the perfectionism and psychological scales.

All analyses were carried out using JASP 0.18.3.

Results

Perfectionism Levels Among Dancers

In the sample, the mean value of self-oriented perfectionism was 4.02 ($SD = 0.67$) on the five-point scale, indicating a high degree of self-perfectionism. As the study did not include a control sample (i.e., individuals not engaged in folk dance), comparisons were made to the normative value provided by the original authors of the questionnaire (Hewitt & Flett, 2014), which was 3.22 (after rescaling). Self-oriented perfectionism in the present sample was significantly higher compared to the average population, $t(95) = 11.75$, $p < .001$, Cohen's $d = 1.20$. The observed difference, exceeding one standard deviation, indicates a large effect and partially supports our first hypothesis. The normative value of socially prescribed perfectionism was 2.51 , while the average value of the folk-dance sample examined in this study was 2.46 ($SD = 0.88$). The value of the sample did not differ significantly from the average population, $t(95) = 0.51$, $p = .609$, Cohen's $d = 0.05$. As such, the first hypothesis regarding socially prescribed perfectionism was not confirmed.

Association with Demographic Variables

Pearson correlation analysis revealed a significant, weak, positive correlation between the two perfectionism subscales in the sample, $r = .27$, $p = .007$. Additionally, the perfectionism subscales did not show any significant correlation with the demographic and dance-related indicators based on the results of the Spearman correlation analyses (Appendix Table 3), with the exception of a significant, weak, negative relationship between education level and the socially prescribed perfectionism subscale (i.e., those with a higher level of education experienced less socially prescribed perfectionism). None of the objective indicators of the participant's dancing careers (i.e., total dancing experience, professional dancing experience, weekly and daily hours of dance practice, and number of monthly performances) were correlated with the perfectionism subscales.

The Relationship Between Self-Oriented and Socially Prescribed Perfectionism and Psychosocial Variables

To test the association between the two perfectionism subscales and the other psychological variables, linear regression analyses were utilized, including the perfectionism subscales as predictors. To test the interaction between the two subscales, an interaction term was also included as a predictor. As outcome variables, the PSS scale and the subscales of the ACSI-28 and ABQ questionnaires were used. Table 2 contains the results of these moderation analyses.

Table 2. Regression and Moderation Analyses of the Two Perfectionism Subscales

Outcomes	Predictors	<i>B</i>	<i>SE</i>	β	<i>p</i>
PSS - Perceived stress	$F(3, 92) = 10.29, p < .001, R^2 = 25.1\%, \Delta R^2 = 3.5\%$.				
	self-oriented perfectionism	0.01	0.05	.02	.859
	socially prescribed perfectionism	0.26	0.05	.45	< .001
	interaction	0.12	0.06	.19	.042
ABQ - Dance devaluation	$F(3, 92) = 10.62, p < .001, R^2 = 25.7\%, \Delta R^2 = 0.4\%$.				
	self-oriented perfectionism	-0.42	0.09	-.43	< .001
	socially prescribed perfectionism	0.41	0.09	.42	< .001
	interaction	-0.07	0.10	-.07	.474
ABQ - Reduced sense of accomplishment	$F(3, 92) = 6.79, p < .001, R^2 = 18.1\%, \Delta R^2 = 0.2\%$.				
	self-oriented perfectionism	-0.12	0.08	-.15	.137
	socially prescribed perfectionism	0.36	0.08	.44	< .001
	interaction	-0.03	0.08	-.04	.688
ABQ - Physical and mental exhaustion	$F(3, 92) = 2.82, p = .043, R^2 = 8.4\%, \Delta R^2 = 1.2\%$.				
	self-oriented perfectionism	-0.24	0.11	-.24	.027
	socially prescribed perfectionism	0.24	0.11	.23	.030
	interaction	-0.13	0.11	-.11	.272
ACSI - Coachability	$F(3, 92) = 6.40, p < .001, R^2 = 17.3\%, \Delta R^2 = 7.1\%$.				
	self-oriented perfectionism	0.22	0.08	.27	.008
	socially prescribed perfectionism	-0.24	0.08	-.30	.003
	interaction	0.24	0.08	.27	.006
ACSI - Concentration	$F(3, 92) = 6.00, p < .001, R^2 = 16.4\%, \Delta R^2 = 2.3\%$.				
	self-oriented perfectionism	0.23	0.07	.33	.002
	socially prescribed perfectionism	-0.22	0.07	-.32	.002
	interaction	0.12	0.07	.15	.099
ACSI - Freedom from worry	$F(3, 92) = 6.34, p < .001, R^2 = 17.1\%, \Delta R^2 = 1.0\%$.				
	self-oriented perfectionism	0.12	0.10	.12	.223
	socially prescribed perfectionism	-0.42	0.10	-.42	< .001
	interaction	0.11	0.10	.10	.296

Note. $N = 96$. R^2 represents the total explained variance in the model, while ΔR^2 represents the part of variance due to the moderation. Bold font indicates statistical significance at $p < .05$.

PSS = Perceived Stress Scale, ABQ = Athlete Burnout Questionnaire, ACSI = Athletic Coping Skills Inventory.

To ensure that partialing did not fundamentally change the correlations of the perfectionism scales and the psychological factors, a Pearson correlations analysis was also conducted between the scales. The results are included in [Appendix Table 4](#). The overall pattern of the results did not change; the only notable difference was that the correlations in the bivariate analyses were slightly weaker compared to the regression results.

Perfectionism and Perceived Stress

In the case of perceived stress, the two perfectionism subscales and the interaction term explained 25.1% of the variance. Of this, the interaction term was responsible for 3.5%. Socially prescribed perfectionism had a positive, moderate effect on stress, while the effect of self-oriented perfectionism was not significant. Our second and third hypotheses were therefore partially confirmed with regard to perceived stress. The interaction term was significant (i.e., the effect of the two perfectionism subscales on perceived stress was not independent, but they also moderated each other's effect). The nature of this moderation can be interpreted using [Figure 1A](#), which shows that the positive effect of socially prescribed perfectionism on stress was the steepest in the case of high self-oriented perfectionism. Perceived stress was lowest when high self-oriented perfectionism combined with low levels of socially prescribed perfectionism. However, in the presence of severe socially prescribed perfectionism, self-oriented perfectionism aggravated its effect, resulting in the highest levels of perceived stress in such individuals.

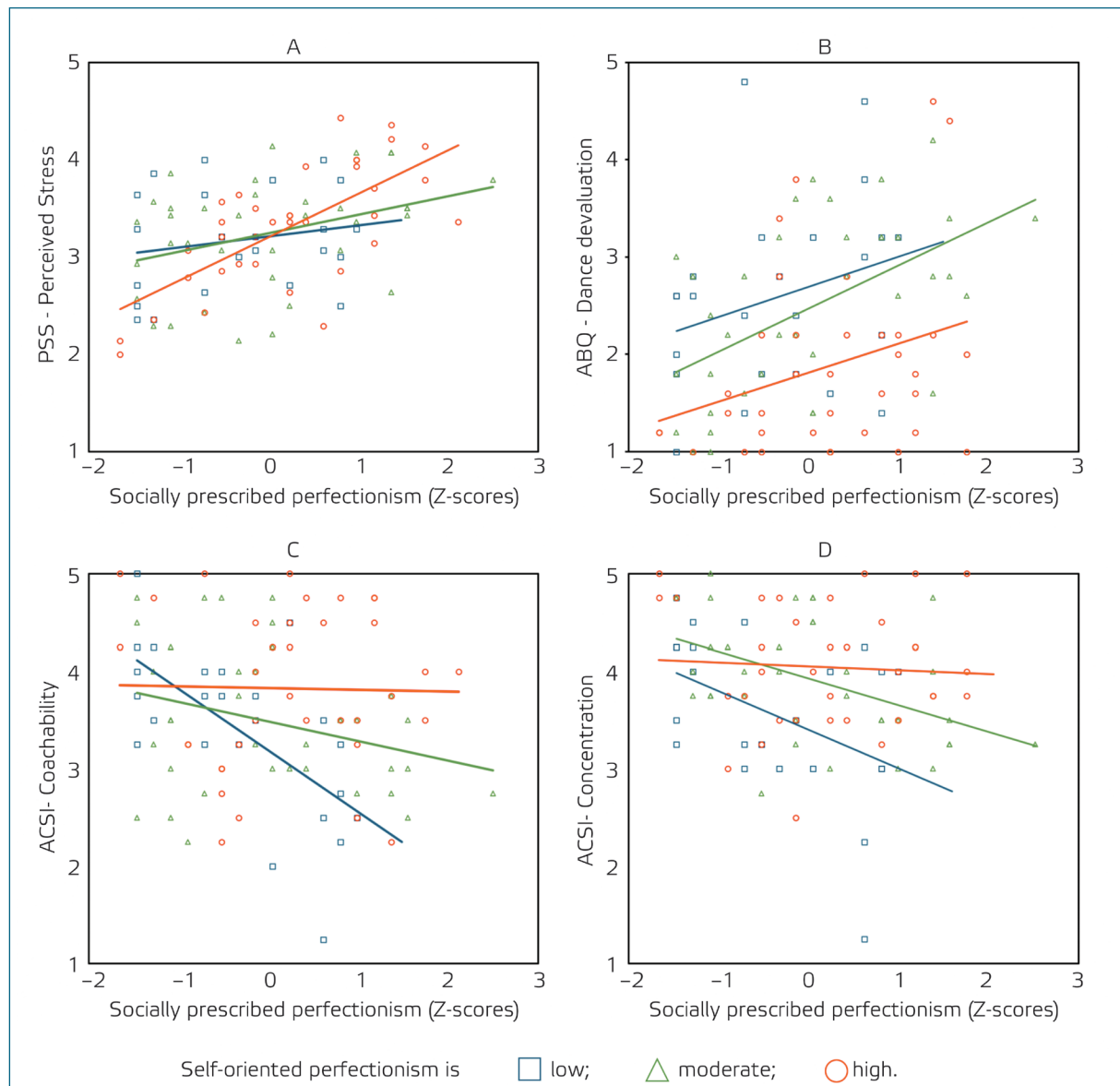
Perfectionism and Burnout

In the case of the burnout scales, socially prescribed perfectionism showed a positive association with a reduced sense of accomplishment, physical and mental exhaustion, and devaluation of dance. In contrast, self-oriented perfectionism did not significantly predict a reduced sense of accomplishment, and it showed a negative association with physical and mental exhaustion as well as devaluation of dance (meaning those with high levels of self-oriented perfectionism rated dance more highly). Thus, our second and third hypotheses were also only partially confirmed with regard to burnout. The interaction term was not significant for predicting any of the burnout subscales. Overall, the two subscales had independent effects on dance devaluation: socially prescribed perfectionism aggravated it, while self-oriented perfectionism reduced it ([Figure 1B](#)). To a lesser extent, similar relationships can be seen in the case of Physical and mental exhaustion. In the case of the reduced sense of accomplishment scale, the effect of socially prescribed perfectionism was significant, but the effect of the self-oriented scale and the interaction term were not.

Perfectionism and Coping Skills

The two perfectionism subscales were associated with dance-related coping skills in fundamentally different ways. While high levels of self-oriented perfectionism were associated with significantly higher concentration ability and marginally higher coachability, socially prescribed perfectionism was associated with lower concentration ability and coachability as well as increased dance-related worry. With regard to coping skills, our second and third hypotheses were confirmed, with the exception of the freedom from worry subscale, which was only partially confirmed. Regarding coachability, both perfectionism subscales and their interaction term had a significant effect. The total explained variance was 17.3%, with the interaction term accounting for 7.1%. [Figure 1C](#) shows that with low levels of socially prescribed perfectionism were linked with high levels of coachability; however, as this type of perfectionism increased, coachability declined. Self-oriented perfectionism mitigated this negative impact and could even nullify it if sufficiently high. A similar pattern was observed with the concentration scale ([Figure 1D](#)), though the interaction term was only marginally significant in this case. For the freedom from worry subscale, only the effect of the socially prescribed perfectionism scale was significant.

Figure 1. Interaction Between the Perfectionism Subscales



Note. $N = 96$. For the self-oriented perfectionism scale, low indicates a value smaller than $Z = -0.5$, moderate indicates a value between -0.5 and 0.5 , and high indicates a value greater than $Z = 0.5$.

PSS = Perceived Stress Scale, ABQ = Athlete Burnout Questionnaire, ACSI = Athletic Coping Skills Inventory.

Discussion

According to the biopsychosocial model, health also encompasses an individual's psychological well-being (Moravcsik-Kornyczki & R. Fedor, 2021). In light of this, as part of our larger research project, the present study examined the factors influencing the mental health of dancers. To date, there are only a few studies on the mental states of Hungarian folk dancers (Medveczné Atinay et al., 2022; Szászi & Szabó, 2021). Therefore, in this study, multidimensional perfectionism among Hungarian professional folk dancers was investigated along with certain psychological factors associated to it. Consistently high physical and mental demands are placed on dancers during rehearsals and performances. Moreover, this load is not seasonal (such as the competitive season for athletes), as dancers must perform at a high level all year round (Koutedakis, 2000; Twitchett et al., 2010). The pressure to meet the high expectations set by themselves or others can easily drive dancers into perfectionism, which can become embedded in the everyday life of dance artists (Hill et al., 2020; Nordin-Bates et al., 2016, 2017).

It is often suggested that dancers tend to strive for perfection (Nordin-Bates et al., 2011). Our initial hypothesis (H1) that the dancer group would exhibit higher levels of perfectionism compared to the general population has been partially confirmed. The prevalence of self-oriented perfectionism, as measured by Hewitt and Flett's (1991) multidimensional model, was higher among dancers compared to the general population, but the degree of socially prescribed perfectionism among dancers did not differ from the general population. The lack of deviation from the average population was surprising and inconsistent with the literature, which suggests that dancers are subject to high expectations and that their socially prescribed perfectionism is reinforced by the expectations of others, especially from art directors (Nordin-Bates, 2014).

The regression analyses examining the association between the psychosocial factors and the two subscales of perfectionism (H2 and H3) suggest that, among folk dancers, socially prescribed perfectionism is more closely related to psychological dysfunctions, thereby supporting the multidimensional conceptualization of perfectionism (Molnar et al., 2006; Stoeber et al., 2009). Since the two types of perfectionism are often observed together in dancers (Nordin-Bates, 2014), we also investigated whether self-oriented and socially prescribed perfectionism influence each other's effects. Using moderation analyses, we also sought to answer the question as to whether self-oriented perfectionism is able to moderate the adverse psychological effects induced by socially prescribed perfectionism or, on the contrary, amplify them. Our results showed a mixed picture.

Our findings show that the stress perceived by dancers was affected differently by the two types of perfectionism. While self-oriented perfectionism did not significantly increase perceived stress, socially prescribed perfectionism was associated with higher levels of stress. This is entirely consistent with the results of previous studies (Dunkley et al., 2000, 2003; Shafique et al., 2017; Smith et al., 2017; Tashman et al., 2010). However, the moderation analysis revealed a complex interaction between the two perfectionism scales and added a more nuanced understanding of self-oriented perfectionism. Perceived stress was lowest when low socially prescribed perfectionism combined with high self-oriented perfectionism; that is, when dancers are not worried about external expectations, self-oriented perfectionism may indeed be a kind of adaptive striving, aiding them and protecting them against stress. This configuration might be the most ideal attitude in resisting perceived stress. In contrast, the highest levels of perceived stress are expected when high levels of socially prescribed perfectionism are accompanied by high self-oriented perfectionism. In this case, the combined effect of the two subscales increases perceived stress, demonstrating the dual nature of self-oriented perfectionism. The literature has associated the self-oriented aspect of perfectionism with positive outcomes, which are thought to be adaptive and associated with perfectionistic strivings. In contrast, our current study showed that although it is indeed positive in most cases, it can also aggravate the damaging effects of socially prescribed perfectionism. This result is consistent with the observation that self-oriented perfectionism increases feelings of shame and guilt in the event of failure (Stoeber et al., 2008). That is, although self-oriented perfectionism is generally associated with positive outcomes, in the presence of certain negative factors such as an event of failure, according to Stoeber et al. (2008), or in the case of the present study high socially prescribed perfectionisms, it can also have negative outcomes. The result also resonates with Hill and Hall's (2012) warning that personal strivings can also have a detrimental effect, as it is characterized by obsession with perfect performance, mistake avoidance, and harmful rumination.

Elite athletes and performing artists, including dancers, are highly prone to burnout, given the high physical and mental load they face throughout the year and the fewer opportunities for recovery (Gustafsson et al., 2008; Hall & Hill, 2012; Koutedakis, 2000). Our results show that higher levels of self-oriented perfectionism are inversely related to burnout, (i.e., the higher the level of self-oriented perfectionism, the more the dancer values dance, finds pleasure in dance, and feels motivated). They do not judge their own performance negatively and do not report physical or emotional exhaustion. In contrast, dancers with a high level of socially prescribed perfectionism show strong signs of burnout: they evaluate their performance more negatively, report physical and emotional exhaustion, feel that they are not good enough, and experience a consequent decrease in interest and motivation to dance. These results are consistent with previous studies on burnout associated with maladaptive forms of perfectionism (Cumming & Duda, 2012; Gustafsson et al., 2008; Hill & Curran, 2015; Jowett et al., 2016; Rice & Liu, 2020; Yang et al., 2023), but it is partly inconsistent with Hall and Hill (2012), who stated that in addition to perfectionistic concerns, personal strivings are also positively associated with burnout. In the moderation analysis, we found no significant interaction between the two perfectionisms, meaning that they independently affect dancer burnout; moreover, the presence of self-oriented perfectionism does not modify the negative effect of socially prescribed perfectionism, neither reducing nor increasing it.

Given that dance is a high-stress activity, making the dancer vulnerable to injury (Deu, 2020; Koutedakis, 2000), where even the slightest mistake can result in serious injury, it is necessary for the dancer to be in the

right mental state to perform in rehearsals, training, and performance, in addition to being physically fit. A high level of concentration, freedom of movement without anxiety, and the acceptance of the leader's direction (i.e., coachability) are essential for safe preparation and successful performances (Giacobbi, 2000). To investigate this attitude, we adapted the Athlete Coping Questionnaire (Smith et al., 1995) from the field of sport, as we found it suitable for measuring dancers' attitudes with modifications to the instrument text.

The regression analyses revealed a strong difference between the two types of perfectionism. In the case of self-oriented perfectionism, we see a positive and significant association with concentration (i.e., the higher the level of perfectionism, the more the dancer can focus their attention on the task). In contrast, the same factor is the opposite in the case of socially prescribed perfectionism, where higher levels of perfectionism are associated with lower concentration. These results are consistent with the findings of Arslan and Altan-Atalay (2023). Similarly, association with coachability differs between the two subscales: a higher level of socially prescribed perfectionism is linked to lower coachability, leading to demonstrably weaker cooperation with leaders. Performance anxiety was also observed in the same dancers, whereas no evidence of this was found in the case of self-oriented perfectionism. Thus, dancers who hold high expectations of themselves and do not overestimate what others expect of them exhibit lower anxiety in their company as well as greater concentration and smoother cooperation with their leader. Our results support research showing that adaptive perfectionism has a positive relationship with behavioral and cognitive engagement in task performance, in contrast to maladaptive perfectionism (Arslan & Altan-Atalay, 2023). As we found that maladaptive perfectionism is associated with higher perceived stress, in line with previous literature, our finding that maladaptive perfectionism is associated with poorer coachability is in line with Brown (2024), who found a negative correlation between perceived stress and coachability in athletes.

This observation is further nuanced by the moderation analyses. In the case of coachability, an interaction was found between the effects of socially prescribed and self-oriented perfectionism: high self-oriented perfectionism was shown to function as a protective factor, as it can reduce the adverse effect of socially prescribed perfectionism on coachability. Although no moderation studies on coachability have been found in the literature, LoCicero et al. (2000) reported that students with healthy perfectionism (high standards but low discrepancy) had higher willingness to cooperate with others compared to those with unhealthy perfectionism (high standards but high discrepancy) or who were not perfectionists. Parker (1997) reported higher agreeableness and conscientiousness, while Rice and Dellwo (2002) reported higher social integration among healthy perfectionists. Both studies suggest that the adaptive form of perfectionism is associated with better social outcomes, but these may be masked by negative aspects of perfectionism. The present study reached similar but not entirely identical results. Based on the present study, in the case of coachability, self-oriented perfectionism is able to maintain its positive effect even in the presence of high levels of socially prescribed perfectionism and may even function as a kind of buffer.

A similar, albeit weaker moderating effect was observed for concentration. In this case, the interaction between the two perfectionism scales was only marginally significant. For both coachability and concentration, the highest levels are observed when a dancer's socially prescribed perfectionism is low. In such cases, self-oriented perfectionism does not confer any additional positive effect on these traits. However, as socially prescribed perfectionism increases, both concentration and coachability decline. This negative impact, however, can be mitigated by self-oriented perfectionism. While similar studies are rare in the literature, Periasamy and Ashby (2002) found that individuals classified as healthy perfectionists have a more internal locus of control, and according to Rice et al. (2003), they exhibit greater personal control.

The moderation analyses presented in the present study contribute to the body of research examining the interaction between different aspects of perfectionism. On the one hand, the study applies Hewitt and Flett's (1991) model, which has not been previously reported in the literature; on the other hand, it also provides examples of two possible forms of moderation, highlighting that the impact that perfectionism dimensions have on each other depends on the domain under investigation. For example, the buffering role of self-oriented perfectionism against socially prescribed perfectionism in the case of concentration and coachability aligns well with research that found a similar buffering effect of the positive aspects of perfectionism in relation to academic self-determination, academic satisfaction, and general positive and negative affects (Gaudreau & Thompson, 2010) as well as cynicism (Rice & Liu, 2020). However, this contradicts Stoeber's (2011) review, according to which perfectionistic concerns suppress the positive effect of strivings. In contrast, in the case of perceived stress, another type of moderation effect was demonstrated: self-oriented perfectionism and socially prescribed perfectionism not only counteract each other, weakening each other's effect, but in certain cases can also exacerbate each other's effect. This is evidenced by the finding that the highest level of perceived stress was detected for dancers characterized by both high self-oriented and high socially prescribed perfectionism.

In summary, the results of our research highlight the psychological vulnerability of Hungarian folk dancers, since, as predicted from the literature, they were characterized by a high level of self-oriented perfectionism (Hill et al., 2020; Nordin-Bates et al., 2011). Self-oriented perfectionism can be considered a more adaptive form of perfectionism; this was also confirmed by the results of the present study, where it was found to be less associated with negative psychological outcomes. On the other hand, the present study also highlighted the negative side of self-oriented perfectionism, which in certain cases can strengthen the negative effect of socially prescribed perfectionism. In addition, the present study also confirmed the association between socially prescribed perfectionism and negative psychological outcomes such as higher perceived stress, burnout, and worry as well as lower concentration and coachability. This underscores the importance of developing measures to support the mental health of dancers and the teaching of self-care techniques.

Strengths and Limitations

Only a few studies in the Hungarian literature have focused on the psychological states of Hungarian folk dancers (Medveczné Atinay et al., 2022; Szászi & Szabó, 2021). Notably, none of these studies deal with the construct examined in the present study and its relationship to certain psychological factors, which we consider to be one of the strengths of our research. Our findings provide useful insights for artists who aim to preserve Hungarian folk traditions, particularly for designing future interventions to support artists' mental well-being.

Another strength of the present study is its complex analysis of psychosocial factors and their interactions. In particular, the investigation of the relationship between coachability and perfectionism as well as the moderating effect of co-existent self-oriented and socially prescribed perfectionism represent novel contributions to the literature.

One limitation of this research was the size of the studied population. Given the fact that there are only four major professional folk dance companies operating in Hungary, the number of participants for the research was also limited. Of the approximately 140 professional dancers, 96 were included in the study. Although this represents 70% of the total population studied, the low sample size may have affected the reliability of some of the statistical results and resulted in weaker statistical power.

Due to the limited population size, special attention was paid to designing the questionnaire battery in such a way as to minimize the dropout rate. One method to achieve this was to standardize all items in the questionnaires to a 5-point Likert-type scale, as this format has been shown to result in the highest completion rate (Revilla et al., 2014). However, this conversion makes it difficult to compare our results with those of other studies due to the different scaling formats. To address this issue, we also reported the means and standard deviations converted to the 7-point scale in [Appendix Table 1](#).

Conclusion, Implications, and Future Directions

Perfectionism is a commonly observed personality trait among performing artists, including dancers, which as a multidimensional construct can support or hinder a dancer in achieving better performance and sustaining a meaningful, long career. In this study, we sought to examine how different aspects of perfectionism relate to dancers' psychological states. Our results, harmonizing with previous research, show that socially prescribed perfectionism, which stems from the expectation to conform to others, is negatively associated with dancers' mental state (e.g., higher levels of stress and burnout), which may potentially increase dancers' mental or physical vulnerability. In contrast, self-oriented perfectionism is essentially adaptive, functioning as a supportive factor. Our results highlight the dual nature of self-oriented perfectionism, which was shown to moderate the effect of socially prescribed perfectionism in a complex manner. In regard to coachability and concentration, it can reduce the damaging effect of socially prescribed perfectionism; however, it can also aggravate the negative effects of stress. As maladaptive forms of perfectionism can be a threat to a dancer's mental health, it is important to help dance artists to recognize and overcome it. To do this, they can benefit from psychological support and tools to help them develop better coping strategies and to manage their high expectations of themselves and their performance in a constructive way. It would be ideal to introduce them to these tools during their studies.

Further research should be conducted on the relationship between perfectionism and other psychological factors, including possible mediational models. Furthermore, the correlation between perfectionism and injury would also be worth investigating from a prevention perspective.

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Author contribution

Csilla ALMÁSY: conceptualization, design, investigation, project administration, data management, formal analysis, interpretation, writing original draft, writing review and editing.

Klára SOLTÉSZ-VÁRHELYI: conceptualization, design, methodology, data management, formal analysis, interpretation, writing original draft, writing review and editing.

Anita R. FEDOR: conceptualization, design, supervision, writing original draft.

Declaration of interest statement

The authors have no conflicts of interest to disclose.

Ethical statement

This manuscript is the authors' original work.

All participants engaged in the research voluntarily and anonymously.

Their data are stored in coded materials and databases without personal data.

The studies involving human participants were reviewed and approved by Nemzeti Népegészségügyi és Gyógyszerészeti Központ Klinikai Kutatások Főosztály. The ethical permission number is TUKEB BM/819-1/2024.

Data availability statement

No datasets were presented in this article.

Declaration on using artificial intelligence in research and manuscript preparation

The authors have not used AI technologies in our research or the preparation of this manuscript.

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Appendix

Appendix Table 1. Number of Professional Hungarian Folk Dancers in 2025

Dance company	Number of dancers
Fitos Dezső Társulat ^a	16
Duna Művészegyüttes ^b	31
Magyar Nemzeti Táncegyüttes ^c	44
Magyar Állami Népi Együttes ^d	40

Notes. Information on the number of dancers was collected from the dance companies' websites in May 2025.

^a<https://fitosdezsotarsulat.hu/rolunk/> ^b<https://dunamuveszegyuttet.hu/tarsulat/>

^c<https://mnte.hu/hu/tancegyuttet/> ^d<https://hagyományokhaza.hu/hu/mane/tarsulat>

Appendix Table 2. Scaling, Means, and Standard Deviations Calculated Based on the Original Scaling of the Questionnaires and Based on the 1 to 5-Point Scaling Utilized in the Current Study

Characteristics	Original scaling			Scaling utilized in this study		
	Range of scale	<i>M</i>	<i>SD</i>	Range of scale	<i>M</i>	<i>SD</i>
MPS - Self-oriented perfectionism	1 to 7	5.53	1.01	1 to 5	4.02	0.67
MPS - Socially prescribed perfectionism	1 to 7	3.19	1.32	1 to 5	2.46	0.88
PSS - Perceived stress	0 to 4	2.25	0.57	1 to 5	3.25	0.57
ABQ - Reduced s. of accomp.	1 to 5	2.23	0.81	1 to 5	2.23	0.81
ABQ - Phys./emot. exhaustion	1 to 5	2.43	1.03	1 to 5	2.43	1.03
ABQ - Dance devaluation	1 to 5	2.28	0.97	1 to 5	2.28	0.97
ACSI - Coachability	1 to 4	2.94	0.61	1 to 5	3.59	0.81
ACSI - Concentration	1 to 4	3.15	0.53	1 to 5	3.87	0.70
ACSI - Freedom from worry	1 to 4	2.53	0.74	1 to 5	3.04	0.99
Questionnaires	Original scaling			Scaling utilized in this study		
MPS	The original English version only names 1 = Strongly disagree; 4 = Neutral or undecided; 7 = Strongly agree. The Hungarian version names all levels; 1 = Entirely not true; 2 = Mostly not true; 3 = Somewhat not true; 4 = I don't know; 5 = Somewhat true; 6 = Mostly true; 7 = Entirely true.			Two endpoints named: 1 = Strongly disagree; 5 = Strongly agree.		
PSS	0 = Never; 1 = Almost never; 2 = Sometimes; 3 = Fairly often; 4 = Very often.			1 = Never; 5 = Very often.		
ABQ	1 = Almost never; 2 = Rarely; 3 = Sometimes; 4 = Frequently; 5 = Almost always.			1 = Almost never; 5 = Almost always.		
ACSI	1 = Almost never; 2 = Rarely; 3 = Often; 4 = Almost always.			1 = Almost never; 5 = Almost always.		

Notes. MPS = Multidimensional Perfectionism Scale, PSS = Perceived Stress Scale, ABQ = Athlete Burnout Questionnaire, ACSI = Athletic Coping Skills Inventory.

Appendix Table 3. Spearman Correlations Between Perfectionism Subscales and Demographic and Dance Career Indicators

Sample characteristics		Self-oriented perfectionism		Socially prescribed perfectionism	
		<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Demographic indicators	Age	.03	.754	.01	.925
	Gender ^a	.11	.279	.02	.881
	Education level	-.04	.702	-.25	.013
	Number of children	.03	.791	-.07	.474
Dance carrier indicators	Total dance experience	.12	.265	-.02	.859
	Professional dance experience	.03	.774	-.05	.637
	Weekly dance practices	-.04	.727	-.15	.143
	Daily dance practices	.13	.203	-.04	.669
	Monthly performances	.15	.155	-.13	.193

Notes. *N* = 96. ^aMale = 1, Female = 2. Bold font indicates statistical significance at $p < .05$.

Appendix Table 4. Pearson Correlations Between Perfectionism Subscales and the Psychological Scales

Psychological scales	Self-oriented perfectionism		Socially prescribed perfectionism	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
PSS - Perceived stress	.13	.108	.47	< .001
ABQ - Dance devaluation	-.31	.001	.30	.002
ABQ - Reduced sense of accomplishment	-.02	.410	.40	< .001
ABQ - Physical and mental exhaustion	-.16	.057	.16	.058
ACSI - Coachability	.17	.049	-.21	.018
ACSI - Concentration	.23	.014	-.23	.014
ACSI - Freedom from worry	<.01	.491	.39	< .001

Notes. *N* = 96. Bold font indicates statistical significance at $p < .05$.

PSS = Perceived Stress Scale, ABQ = Athlete Burnout Questionnaire, ACSI = Athletic Coping Skills Inventory.

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RESEARCH ARTICLE

Enhancing User Empowerment and Agency through Co-Creation of a Nonattachment-Based Post-Traumatic Stress Reduction Intervention

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Introduction: Individuals with post-traumatic stress typically experience feelings of helplessness, which are often exacerbated by current treatment approaches whereby clinicians tend to rely more on personal experiences than case-by-case, evidence-based care.

Aims: This study aimed to address this issue by extending the framework of existing public healthcare interventions to co-create a new nonattachment-based approach in collaboration with end users and clinicians. The practice of nonattachment involves intentionally releasing judgement of or attachment to events, relationships, and the self, while accepting life's changes with openness and compassion.

Methods: This study employed a three-stage co-creation process: 1) evidence review and stakeholder engagement, 2) co-creation of an initial intervention, and 3) prototyping. Twenty participants (17 with experience of post-traumatic stress and three clinicians) contributed to the intervention's development over the three stages through one-to-one meetings and group discussions, which were recorded and analyzed using reflexive thematic analysis. Artificial intelligence was used to generate language featured in the final intervention.

Results: Key themes identified through the thematic analysis were empowerment and agency, the importance of grounding, as well as normalization and validation. Co-creation input from participants focused primarily on the structure and format of the intervention, while input from clinicians focused on feasibility, barriers to adoption, and safety planning. The final intervention took the form of an online program comprised of 8 self-guided modules integrating nonattachment and mindfulness principles, allowing users to control how and when they interact with the content.

Conclusions: To our knowledge, this co-created protocol is the first intervention for post-traumatic stress to be principally grounded in ancient Eastern nonattachment principles. Future studies can now evaluate the intervention to determine its feasibility in post-traumatic stress settings.

Keywords: post-traumatic stress, nonattachment, co-creation, evidence-based practice, shared decision-making

Introduction

Post-traumatic stress (PTS), whether clinically diagnosed or not, can have a profound and life-altering impact on everyday life and functioning (van der Kolk, 2014). Its wide range of symptoms can include depression, anxiety, physical health deterioration, hypervigilance, problems with attention, hyperarousal, agoraphobia, and many more. According to the Substance Abuse and Mental Health Services Administration (SAMHSA, 2014), the general difference between stress and PTS is that, in PTS, the experience of the event(s) remains vivid and present in one's body and mind. That is, physical and mental trauma remains at the forefront of experience, inhibiting optimal functioning. While many people may encounter extremely traumatic events, not everyone will develop symptoms of PTS. There are several hypotheses that have been proposed to explain this variability, including individual differences in personality, culture, hormones, comorbidities, and neural circuitry. Trauma is somewhat unique in clinical diagnoses in that it requires the occurrence of one or multiple external events (SAMHSA, 2014). The individual's experience of the event(s), in combination with individual differences, likely accounts for the onset of PTS symptoms. Additionally, the external event(s), along with the individual's processing of it, is often accompanied by a sense of intense and often overwhelming helplessness (van der Kolk, 2014). This is posited as the precursor to the frequently reported experience of dissociation: a psychological protective measure whereby the individual mentally escapes from the deeply traumatic experience for an unspecified amount of time (Beutler et al., 2022). This helplessness may be exacerbated in healthcare settings by the process through which symptoms of PTS are addressed (Elwyn et al., 2012).

While clinicians vary in their approaches to trauma interventions, there is research to suggest a gap in evidence-based practices (Etingen et al., 2022; Stewart et al., 2018). Evidence-based practice is a three-pronged approach to clinical care in which practitioners are encouraged to incorporate the following into treatment planning: 1) research and evidence, 2) clinical experience, and 3) patients' preferences (Stewart et al., 2018). However, studies show that in practice, clinicians tend to place the most emphasis on clinical experience, often disregarding the first prong altogether. Furthermore, although there is acknowledgement amongst clinicians of the value of research evidence (Stewart et al., 2018), there remains a tendency to develop diagnoses and treatment plans based mostly on their own unstructured assessments and perceptions (Etingen et al., 2022; Stewart et al., 2018).

The efficacy of pharmacotherapies alone for PTS has not been well demonstrated (Hafid & Kerna, 2019), prompting the development of numerous alternative therapies ranging from traditional psychotherapy, talk therapy, cognitive-behavioral therapy, and exposure therapy to cognitive processing therapy, and many more. Studies have shown that complex trauma may be best treated through a combination of psychopharmacological, cognitive, and somatic treatments (van der Kolk, 2014). Current evidence-based treatments, such as trauma-focused cognitive behavioral therapy and eye movement desensitization and reprocessing, are useful tools in clinical contexts. They are bolstered by strong evidence bases, personalization, responsiveness, and the means to deeply process traumatic events (National Institute for Health and Care Excellence, 2018). However, issues of accessibility and cost can impact how these supports are received. Additionally, experiencing a major life event characterized by intense helplessness or loss of control, followed by the vulnerable process of trauma recovery under the primary direction of a mental health practitioner, may risk compounding those very feelings. Advocates of shared decision-making suggest this risk can be mitigated (Elwyn et al., 2012; Etingen et al., 2022). For example, research indicates that patients engaged in shared decision-making around their treatment planning were highly likely (90%) to report feeling confident about moving forward with the developed plan (Etingen et al., 2022). In some cases, such as limited access to therapy, mild symptoms, relapse prevention, or high-functioning individuals, a more self-directed approach may also be beneficial (Kuester et al., 2016).

Research on mindfulness-based interventions (MBIs) has highlighted mindfulness as a promising area of focus for public health strategies. However, the volume of MBI-based research lags notably behind that of more established or conventional approaches which place less emphasis on resilience-building, that is, engaging the patient or individual in the process (Oman, 2023). Nevertheless, the efficacy of MBIs, such as mindfulness-based stress reduction (MBSR), has shown significant reductions in PTSD symptoms compared with control interventions (Shapira et al., 2022).

Mindfulness research has also identified nonattachment as a significant contributor to improvements in trauma-related variables (Joss et al., 2020), where nonattachment is defined as "a flexible way of relating to one's experiences without clinging to or suppressing them" (Sahdra et al., 2015, p. 263). Nonattachment is considered to be a related but distinct construct from mindfulness, which is supported by findings that mindfulness and non-

attachment do not always yield similar effects on symptom improvement (Joss et al., 2020; Sahdra et al., 2016; Sahdra et al., 2017). However, as with mindfulness, nonattachment faces similar challenges in its application due to the lack of specific, practice-oriented guidelines for its use in trauma treatment (Hafid & Kerna, 2019; Sys et al., 2024; Tremblay et al., 2024; Tremblay & Van Gordon, 2023).

A sense of agency is important in addressing traumatic experiences (Elwyn et al., 2012), as a profound sense of helplessness is commonly reported as part of trauma, usually as a function of a significant loss of control (Salcioglu et al., 2017). Nonattachment may therefore be a useful avenue of therapeutic exploration as it is characterized by an absence of attempts to control (Whitehead et al., 2018). Nonattachment involves experiencing life as it is and releasing the need for experiences, thoughts, and sensations to be otherwise (Tremblay et al., 2024). Cultivating nonattachment also encourages a more flexible relationship with reality, which may be particularly relevant for those suffering from common PTS symptoms such as hypervigilance, fear response, and anxiety (van der Kolk, 2014).

Nonattachment is associated with a wide range of positive psychological outcomes, including mediating the effects of mindfulness on subjective well-being (Whitehead et al., 2018) and pain reduction (Van Gordon et al., 2017); improvements in wisdom, self-actualization, and self-transcendence (Whitehead et al., 2020); and reductions in insecurity, which can help address issues such as materialism (Elphinstone & Whitehead, 2019). Nonattachment has been positively associated with flourishing (Tsoi et al., 2022), mental well-being (in the form of reduced attachment to self; Barrows et al., 2024), resilience (Feliu-Soler et al., 2016), and life satisfaction (Wang et al., 2016), as well as self-compassion, self-acceptance, and self-esteem (Sahdra et al., 2010; Sahdra et al., 2015). It has also been negatively correlated with suicidal ideation (Lamis & Dvorak, 2014) in addition to various forms of psychological distress, including depression, stress, and anxiety (Bhambhani & Cabral, 2015; Chio et al., 2018; Feliu-Soler et al., 2016; Ho et al., 2022). Nonattachment may also serve as a pathway toward “ideal mentalities”: mental states that have not yet been achieved but are considered valuable and worthy of pursuit within the broader context of alleviating suffering. Ideal mentalities are a feature of second-generation MBIs (Van Gordon & Shonin, 2020), which not only teach meditation skills but also seek to harness spirituality and wider ethical and wisdom-based aspects of MBIs in daily life (Zhou et al., 2023). However, despite the benefits associated with the practice of nonattachment, no research to date has focused specifically on cultivating nonattachment for the treatment of PTS symptoms, or in applied settings more generally.

Given the value of agency in treatment planning, it is important to consider patient-driven approaches to treatment planning and progress. While patients may not be able to actively cultivate responses to pharmacotherapies, they may be able to take a more active role in both deciding how they engage with an intervention and shaping the areas of focus upon which an intervention is based. Involving potential end users in the development of an intervention may increase the likelihood of adoption and sustainable change (Green et al., 1996). The process of co-creation as a participatory methodology has been successfully utilized in a variety of healthcare contexts and is a promising method to support other complex healthcare needs (Chen et al., 2021; Leask et al., 2017; Schuling et al., 2018). The ensuing challenge lies in creating an environment in which a patient can participate in shared decision-making around treatment decisions, guided by an area of focus which has either demonstrated efficacy for treating symptoms of PTS or shows promise in that regard.

Acknowledging the gap in evidence-based practice and the challenges surrounding the practical application of shared decision-making, this study was designed to involve stakeholders, including individuals with lived experience of PTS, in the development of a novel intervention based on the principles of nonattachment. In doing so, the present study aimed to develop a guide for cultivating nonattachment, which would be the first of its kind in Western applied settings. To achieve this, a co-creation approach was adopted to develop solutions that align directly with the goals of end users and potentially foster ownership in the intervention itself. Co-creation refers to the collaborative process of working together with stakeholders, namely representatives of the intended end-user demographic, to develop new solutions (Leask et al., 2019). This is a departure from the traditional approaches to solution development, which typically involve researcher-led idea generation followed by user testing, and has shown promise in other mindfulness-based intervention contexts (Schuling et al., 2018). Using co-creation can facilitate a more holistic understanding of the challenges faced by people experiencing symptoms of PTS, including the administrative and logistical barriers to accessing and navigating the various healthcare solutions offered to treat them, as well as the uncertainty surrounding the efficacy of current intervention options. While co-creation does not prescribe a fixed methodology per se, it allows for the methodological approach to be informed by a theoretical framework that underpins the desired or appropriate processes and target outcomes (Leask et al., 2019).

An approach that aligns well with co-creation, which was developed to support collaboration between researchers and intervention stakeholders, is Transdisciplinary Action Research (TDAR; Stokols, 2006), which was later expanded and refined to specifically account for intervention recipients as well as intervention providers (Hawkins et al., 2017). Harnessing the expertise of intervention providers offers a more comprehensive assessment of the acceptability and feasibility of an intervention during the development stage (Bartholomew et al., 2016; Hawkins et al., 2017; Stokols, 2006). TDAR entails the inclusion of stakeholders and intended beneficiaries to better understand relevant issues and work collaboratively to identify practical solutions, such as through co-creating new public health interventions (Hawkins et al., 2017). It also emphasizes the need for clear and *equitable* collaboration in the pursuit of collective goals and outcomes (Stokols, 2006). Equitable collaboration goes beyond community consultation, where power imbalances often exist between researchers and participants. In contrast, TDAR is grounded in principles of participant empowerment and equitable collaboration, making it an appropriate methodological framework for the current study. In addition to the core principles of TDAR, this qualitative study draws on insights from two existing co-produced public health interventions that further refine these principles: 1. ASSIST - a school-based and peer-led intervention shown to effectively reduce the uptake of smoking in UK secondary schools (Campbell et al., 2008). 2. +Frank and Frank Friends - informal drug prevention interventions designed as adjuncts to ASSIST (Hawkins et al., 2017). The underlying research question guiding the present study was as follows: What features and content are important and feasible (i.e., relevant to the intervention's ultimate implementation and adoption) in the co-creation of a nonattachment-based intervention for PTS?

Methods

A multi-stage, multi-method framework was employed whereby participants were recruited and screened prior to participating in three stages of co-creation, during which the program's development was informed by their lived experience. The process followed the checklist of key components for co-creation and the production of a minimum viable product (MVP) prototype based on the principles of TDAR (see Hawkins et al., 2017). These stages were: 1. Evidence review in consultation with stakeholders, 2. Co-creation, and 3. Prototyping. Key stakeholders were defined as potential end users with lived experience of PTS and potential intervention providers (PIPs) in the form of practicing clinicians.

Setting and Participants

The research followed the guidelines of the British Psychological Society's code of ethics (2018) and was approved by the Research Ethics Committee of the authors' institution, based in the East Midlands (UK). Recruitment took place via social media platforms, including Reddit and Facebook, as well as charitable or independent support organizations related to PTS. Ultimately, participants were primarily recruited via PTSD UK on Facebook. A total of 130 participants completed the pre-screening survey designed to assess eligibility. Potential candidates who were currently in treatment for PTS symptoms, non-English-speaking, under 18 years of age, and diagnosed with a psychotic disorder were excluded from the research. Inclusion criteria required that participants had received a diagnosis of PTSD/C-PTSD or self-identified as experiencing related symptoms (i.e., a clinical diagnosis was not necessary). This was assessed through a Qualtrics-based pre-screening survey that asked whether participants currently experienced symptoms of PTS, which was defined to include symptoms such as chronic stress, extreme irritability, hypervigilance, emotional numbing, and avoidance. Respondents who endorsed these symptoms were deemed eligible for participation. Of the initial 130 pre-screened respondents, 88 did not reply when contacted for Stage 1 participation, 10 scheduled meetings for Stage 1 but subsequently withdrew, 11 declined to proceed beyond the initial pre-screen, and 4 were unable to participate within the timeframe of the study. Thus, a total of 17 participants participated in the subsequent co-creation stage(s). During Stage 2, three licensed and practicing clinicians experienced in implementation of PTS interventions contributed to the design of the MVP, focusing on feasibility, usability, effectiveness, and potential barriers to adoption. Demographics of the 20 participants (17 with lived PTS experience and three clinicians) are detailed in Table 1. Of these, 80% ($n = 16$) had a formal diagnosis, 75% ($n = 15$) were female, and the median age bracket was 35–44 years. In accordance with the General Data Protection Regulation (GDPR), only essential data for the study were collected, including at the pre-screening stage. Therefore, data related to ethnicity and socioeconomic status were not collected. All data collection and participant meetings were conducted online using Qualtrics, Microsoft Teams, or Outlook to help ensure successful participant recruitment and engagement as well as data security.

Table 1. Participant Demographics

Participant No.	Participant Type 1 or 2*	Formal PTSD/C-PTSD diagnosis?	Age Bracket	Sex M/F/X	Level of Education
1	1	Y	35-44	M	High school or equivalent
2	1	Y	45-54	F	Some college, no degree
3	1	Y	35-44	F	Bachelor's degree
4	1	Y	35-44	M	Some college, no degree
5	1	Y	55-64	F	Bachelor's degree
6	1	Y	45-54	M	Master's degree
7	1	Y	35-44	F	Master's degree
8	1	Y	45-54	F	Associate degree
9	1	Y	45-54	X	Some college, no degree
10	1	N	35-44	F	Bachelor's degree
11	1	Y	35-44	F	Bachelor's degree
12	1	Y	25-34	F	Master's degree
13	1	Y	35-44	F	Bachelor's degree
14	1	Y	35-44	F	Associate degree
15	1	Y	35-44	M	Master's degree
16	1	Y	35-44	F	Master's degree
17	1	Y	45-54	F	Some college, no degree
18	2	N	35-44	F	Master's degree
19	2	N	35-44	F	Master's degree
20	2	N	35-44	F	Master's degree

* 1 = Individual with lived experience of PTS, 2 = Clinician.

Procedure

The methods used to generate the intervention are described in three stages below.

Stage 1: Evidence Review and Stakeholder Consultation

Stage 1 entailed a one-to-one, hour-long meeting with the primary researcher to familiarize participants with the concept of co-creation and the principles of nonattachment. The discussion in Stage 1 was led as much as possible by the participant, focusing on their experiences with previous PTS interventions and their thoughts on nonattachment as a concept. This included gathering participants' initial thoughts and experiences related to trauma interventions, including what had been positive or negative as well as what they perceived as areas in need of improvement. With participants' consent, the researcher transcribed the meetings for later data extraction and integration, and also took detailed notes on discussions. A prompt sheet was used to frame discussions if participants veered off track, though this was rare. Examples of such prompts included the following: "Should all information exchange be verbal, written, or a hybrid?"; "Should there be a request for feedback at the end of each session or block?"; "Does each session have a facilitator and a 'client' role, or is there an alternative to this?"; and "What do you see as external or internal barriers to self-acceptance?". Understanding that participants were unlikely to be well-versed with Eastern contemplative concepts such as nonattachment and mindfulness, the researcher focused primarily on eliciting input related to participants' experiences with previous interventions and PTS symptoms. However, as nonattachment was the central theme of the intended output, participants were introduced at the earliest possible stage to the definition of nonattachment used in the study, which was provided in the participant invitation form as follows:

This particular intervention will be based on principles of nonattachment, which is a balanced and flexible way of existing in the world such that someone with a nonattached attitude can be deeply present and encounter ups and downs without a need to control or fix things. They can simply allow them to be. The concept of nonattachment may be relevant to trauma because so often people who have experienced traumatic events can connect those events with control being taken from them, and their world being altered from what it should have been. Nonattachment cannot change the events, but it may be able to modify how we respond to them.

Participants were also given additional information and resources for self-directed discovery related to nonattachment in the participant information form. This facilitated meaningful discussion across all stages of the study regarding how attractive or useful the participants found the concept of nonattachment. In addition, it ensured that participants had a clear understanding of the concept, which was a critical and foundational step in developing a nonattachment-based intervention.

Following Stage 1, participant data was compiled and thematically analyzed to generate a summary of emergent themes related to the design of the MVP. This was then presented to the participants in Stage 2 for validation and further discussion.

Stage 2: Initial Co-Creation

Stage 2 involved gathering participant feedback on a working draft of the intervention. This entailed a one-to-one, hour-long meeting with the primary researcher, during which priorities, ideas, problems to be addressed, and proposed intervention elements were discussed. This began with a researcher-led presentation outlining a proposed framework based on the input received from the participants in Stage 1. Having underscored the importance of participant-led collaboration and co-creation principles, participants were then requested to provide feedback. Specifically, they were presented with an outline of the program, which included a welcome page summarizing the intervention, followed by an introduction detailing the program structure as well as the roles of the user and clinician. A sample of an outlined area of focus (subsequently renamed “module”) was also presented for participants to review and reflect on. Feedback was provided on various aspects, including the areas of focus, language used, the flow of the overall program along with its individual units, strategies for facilitating learning among those with symptoms of PTS, and the program platform.

In addition, PIPs (clinicians), were solicited for feedback related to the intervention design to facilitate future adoption and implementation. PIPs were emailed a copy of the MVP outline and asked to provide input. Following the integration of this feedback, participants were emailed an updated version of the draft outline, allowing them time to reflect and offer additional input, which was provided by eight participants.

Stage 3: Prototyping

Stage 3 involved hour-long collaborative sessions with sub-groups of participants. The researcher organized these forums and provided prompts for group discussion. Prompts included asking each participant to summarize their own understanding of the co-creation process, the nonattachment-based intervention developed, and any additional suggestions for how the intervention might be improved. Smaller sub-groups were used to permit more time and space for participants to contribute. The researcher began by framing the session with a final reiteration of the principles of co-creation and the importance of participant-led thinking and idea generation. Each participant was then prompted to summarize their reflections on the process, intervention, and any suggestions for improvement to the group. This was followed by a participant-led group discussion discussing the merits and drawbacks of the MVP as presented in Stage 2. Content and format refinements were displayed on screen while they conversed. The researcher’s role was to transcribe the conversation and take notes on any additional ideas, considerations, or concerns raised by the co-creators.

Following Stage 3, a more complete version of the proposed intervention, which became known as Nonattachment for Post-Traumatic Stress (NPTS), was developed. Participants were thanked for their time and participation, and were informed that they would receive a copy of the final pilot version for member-checking.

Data Analysis

A fundamental component of the TDAR approach is the development of sustainable and replicable processes that support effective collaboration between stakeholders to capture as much latent expertise as possible, ensuring that the acceptability and feasibility of the output are considered and maximized at the development phase (Hawkins et al., 2017). Acknowledging this, the primary researcher facilitated all participant interactions, which led to consistent and contextualized data collection. Participant input was recorded and transcribed verbatim using Microsoft Teams, then analyzed thematically to ensure that the data collected during each iteration of the MVP was representative of the sample. Reflexive thematic analysis (Braun & Clarke, 2021) was used to interpret the data and identify latent content through six steps: 1) familiarization with the data, 2) generation of initial

codes, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes, and 6) producing the report (Braun & Clarke, 2006). This required analytic sensibility (Braun & Clarke, 2021), through which insights beyond surface-level content were generated and connections to existing theory and wider contexts were identified. Where discrepancies or contradictions emerged, the researcher presented these issues back to the participants, asking them to rank outcomes by preferences. The option receiving the highest number of votes was accepted. For example, one participant challenged the use of the term “safety” in safety planning and offered “action” as a preferable alternative. The researcher shared this with the other participants in Stage 3, and a vote was taken on whether they preferred the term “safety”, preferred the term “action”, or were indifferent, with terminology adjusted accordingly.

Reflexivity

Data were interpreted through the primary researcher’s knowledge of the wider context of the subject matter and the aims of the research. This allowed for the consideration of relevant research and theory to add theoretical depth to the analysis. The researcher is a clinical therapist with experience in working with individuals diagnosed with PTSD, C-PTSD, and sub-clinical trauma. The researcher is also a certified yoga and meditation teacher with a professional interest in mindfulness principles and MBIs. Although there is no singular or objectively correct interpretation of the data, the socially constructed, semantic, and critically analytic approach adopted in this study does not reduce the data to underlying causes nor impose theoretical formulations onto the findings (Willig & Rogers, 2017). When prompted to consider their own experiences, biases, and epistemologies in relation to the study, participants were generally positive about their involvement, characterizing it as an opportunity to “give back” or share the value of their difficult experiences. Additionally, due to the iterative format of the study design, participants were able to receive, review, and influence data at multiple points throughout the process.

Results

This section presents the outputs from the three stages of the study, which were iterative and cumulative, along with a summarized table of results for each stage.

Stage 1: Evidence Review and Stakeholder Consultation

Post-hoc analysis of Stage 1 data yielded themes reflecting participants’ intervention priorities, which emerged as a “wish list” of factors to be considered and addressed in subsequent stages. These included: 1) empowerment and agency, 2) the importance of grounding, and 3) normalization and validation.

Empowerment and Agency

While some participants, such as P4, explicitly stated that “empowerment is just so important” in the context of intervention dynamics, others described previous intervention experiences in which they felt led in a direction that they did not want to go. P5 stated: “My second counsellor almost wanted me to follow her track despite my lack of desire to do so.” P15 positioned empowerment in the context of vulnerability, stating: “...healing work requires extreme vulnerability, anything to mitigate this is positive.” These statements reflect the connection participants made between their own experiences of helplessness and a sincere desire to re-establish self-confidence through an intervention that could reconnect them with a sense of empowerment and agency.

The Importance of Grounding

Participants expressed an awareness of how their symptoms had served as distractions or obstacles in previous interventions. P6 emphasized the importance of grounding as an essential prerequisite for engagement: “When you’re in the eye of the storm, interventions are a negative...I knew I was ready because there was a window or pause in the storm.” In reference to previous interventions she had undergone, P6 added that “The efficacy was a function of my readiness.”

P8 described the importance of grounding in terms of specific methods she had used and found helpful: “The Calm app helped with night terrors, meditations and breathing exercises helped, just grounding, and noticing,

like I'll spray a scent. It just gives me confidence. I even carry a kit with a stone and a scented hand cream, or I'll do the rainbow exercise and look for colours.”

All participants seemed to understand the importance of being aware of the impact of their symptoms and of intentionally guiding themselves into a receptive state to support improved outcomes.

Normalization and Validation

Without exception, all participants spoke to the need for an intervention that normalizes and validates PTS. Participants noted feelings and experiences of shame, negativity, isolation, and their accompanying vulnerability. Participants followed up by discussing various ways to convey the criticality of an intervention throughout which foundational elements of normalization and validation are woven.

Reflecting on past intervention experiences, P10 stated that “I never liked feeling pathologized.” Similarly, P13 remarked that “I needed someone to say something that would help. No one had told me it wasn't my fault, and I had needed so badly to hear that.” In these examples, participants recounted experiences in which normalization and validation would have been meaningful. In contrast, P12 described receiving validation in a previous intervention and framed it as his first moment of relief following traumatic exposure: “My initial relief was validation when my therapist explained what was happening to me.”

Several participants also addressed the misconception that PTSD is exclusive to military veterans, noting that this belief further contributed to their own experiences of shame. P17 expressed this sentiment, stating that “I think we need more education generally that PTSD is not just for the military. There's a social stigma to it, even in healthcare settings, people don't know how to be aware or engaged with this.” This perception of persistent misconception of PTS symptoms and the associated social stigma was viewed as something that could be made navigable through a focus on normalization and validation.

Stage 1 also provided participants with the opportunity to reflect on factors related to the structure and format of the intervention. Participants shared thoughts on considerations such as duration, cadence, modality (online or in-person), disposition toward psychoeducation, methods for identifying self-biases, and more. Stage 1 data indicated a strong preference for self-paced structure, one not bound by the schedule or availability of a therapist or facilitator. Participants also emphasized the importance of digestibility, expressing a desire for information to be available in “bite-sized” segments. The reflection and/or feedback discussed after every session or block was positively received, with participants noting that that such feedback could be directed internally as well as externally. The idea of safety/action planning was mentioned, along with the need to ground or self-regulate prior to engaging with the intervention. Mixed sentiments were expressed regarding independently-led versus professionally-led formats, as well as the appropriate timing of a self-paced intervention (i.e., before, during, after, or in lieu of therapy). There were also mixed sentiments regarding the format of delivery: some favored a tangible, paper-based workbook while others preferred a digital platform. Ultimately, the participants voted to proceed with an online format, possibly due to the average age of the participants (44). There was consensus across all participants that there is no one-size-fits-all solution, and that different stages of trauma exist and must be accounted for. This insight led to the decision to introduce a pre-screening into the final version of the intervention to encourage potential users to reflect on their own readiness to engage in an online program aimed at addressing their symptoms. The main findings from Stage 1 are summarized in [Table 2](#) below.

Table 2. Main Findings From Stage 1

Data Source	Co-creation Stage 1, PIPs.
Objective	Participants' experiences and insight into existing interventions and areas in need of improvement.
Stakeholders	Participants meeting pre-screening criteria.
Results	Themes of empowerment/agency, the need for grounding, and normalization and validation. Data for intervention structure and initial responses to how an intervention rooted in principles of nonattachment could be received. The critical factor of identifying an appropriate user base was highlighted, along with the importance of control and normalization. The idea of a 'choose your own adventure' format was presented.

Stage 2: Initial Co-Creation

The objective of Stage 2 was to take data from Stage 1 and co-create an initial response representative of this data to present back to stakeholders. Additionally, feasibility, usability, and data related to barriers to adoption were solicited from PIPs to be incorporated into the initial MVP and presented back to participants in Stage 3.

Participants indicated that although they were interested in a sort of “band-aid” solution to bridge the gap between referral and intake, they stated that they might not feel confident engaging in a trauma intervention without at least a small amount of initial support. This idea was conveyed by P2: “If I’m left to my own devices, I may not do it at all, but I probably won’t have confidence in if I’m doing it right.”

Additionally, participants did not want to use valuable “in-person” therapy time on a course they could eventually undertake themselves. They also did not want to be discharged from therapy and then receive access to the course as a follow-up without some context or initial support. In response to this, the researcher proposed a hybrid model of user engagement, whereby users could not access the program without the support of a professional healthcare provider (e.g., therapist, counsellor, community care nurse, etc.). The purpose of this was three-fold: 1) to act as an initial pre-screening measure for program/user suitability, 2) to provide the user with at least one module (ideally 2–3) undertaken with a facilitator to help normalize and support adoption of the remainder of the program, and 3) to support the theme of normalization and validation. This theme was reinforced in Stage 2 through discussions on the role of the PIP and how they could be most supportive. For example, P8 shared that “I would feel more vulnerable to begin with if there wasn’t a “grown up” in the room to help remind me this is real and this is normal.” This is supported by existing research highlighting the importance of recognizing that suffering is part of the human condition (Gilbert, 2011). Helping individuals understand trauma responses as natural, and shared by many, can mitigate feelings of isolation and enhance the sense of being understood.

Data collected directly from PIPs focused primarily on safety and ethical considerations, as well as experiences of administering trauma interventions in clinical contexts. A suggestion was put forward to modify the order of flow within the intervention by moving action planning to the very beginning as a way of partially screening out users who may not be the right fit for the program. Participants rejected this modification, characterizing it as “too soon”. PIPs agreed on the importance of the grounding theme as a valuable precursor to any self-reflection, psychoeducation, or mindfulness-based practice. They also emphasized the need for a clinician’s guide, along with visual aids and additional resources available either upon request or by default at the end of each module for further user exploration. Participants fully agreed with these suggestions. The main findings from Stage 2 are summarized in Table 3 below.

Table 3. Main Findings From Stage 2

Data Source	Co-creation Stage 2.
Objective	Participant responses to their data from Stage 1 are summarized and presented back to them.
Stakeholders	Participants from Stage 1 and PIPs.
Results	<p>Themes from Stage 1 were reinforced; the “choose your own adventure” format was refined, which sought to emphasize elements of empowerment, normalization, and integration toward purpose. The importance of grounding prior to engaging with content was highlighted.</p> <p>Data on intervention structure refinement, use of language, content within modules, appropriate timing, and context of delivery, as well as a reiteration of the need to pre-screen users so as not to waste time or resources and to prevent discouraging users from seeking alternative or additional support if needed.</p>

Stage 3: Prototyping

The objective of Stage 3 was to extract data in a more communal or collaborative context through small group dialogue regarding the MVP created and the co-creation process itself. Stage 3 data led to refinements in language, areas of focus, and the flow of user experience within the intervention format. Participants agreed that moving action planning to an earlier stage, either in the form of a workbook or online platform, would be more beneficial. They also agreed on the need to “screen out” users who were unlikely to benefit from the program early on. Participants also agreed that the elements of control and empowerment present in the “choose your own adventure” component of the program were critical in facilitating a sense of shared decision-making and influence. As P10 stated, “The non-linear part feels like empowerment, it’s different, but it feels a bit safer.” Furthermore, partici-

pants advocated for the inclusion of a family/support guide, as well as a clinician's guide for modules initially undertaken with the support of a healthcare professional.

Participants spoke freely with one another, and all but one opted to turn their camera on (understanding that this was not mandatory nor necessary), which fostered an open flow of dialogue and exchange of ideas. Outputs included the suggestion to offer both paper and online versions of the intervention, with P9 stating that "I may be less honest in an app versus a paper workbook," which is consistent with the noted need for normalization and the fear of stigma associated with PTS. Additional outputs included continued emphasis on empowerment and confidence-building, as well as the suggestion of a reflection journal to support contemplation, pattern recognition, and the identification of future steps. These findings are summarized in Table 4 below.

Table 4. Main Findings From Stage 3

Data Source	Co-creation Stage 3.
Objective	Garner data from dialogue and idea exchange between participants as well as summaries from participants regarding the co-creation process and their understanding of the intervention created.
Stakeholders	Participants from Stage 2 (excluding PIPs).
Results	Themes of agency/empowerment and normalization/validation were emphasized in this stage. Modified intervention workflow; modified areas of focus for module; further language refinement; suggestions for a modified reflection space; the need for continued emphasis on user empowerment and validation for building confidence.

Intervention Prototype

Insights gained from the three stages of co-creation facilitated the development of a nonattachment-based intervention for PTS. Important elements contributed by co-creators primarily focused on the structure and format of the intervention and were informed by their lived experience with PTS symptoms and prior interventions. Important elements contributed by PIPs were primarily focused on safety, barriers to adoption, and clinician training. The flow, general feel, language, and several other key considerations are reflected in the final intervention prototype, which underwent three rounds of member-checking through the co-creation process (i.e., Stage 2, Stage 3, and a final post-hoc check via email).

Nonattachment-based content, which constitutes the focus of the intervention (as distinct from its structure or delivery format) was informed by academic and clinical practice literature on nonattachment and mindfulness, along with linguistic modifications suggested by co-creators and generated using artificial intelligence (AI). This required a blend of clinical-experiential and research-based awareness to determine how content areas could be effectively targeted and was member-checked to account for patients' preferences, as recommended in the evidence-based practice approach (Stewart et al., 2018). Areas of focus (modules) related to nonattachment and mindfulness that comprised the final "curriculum" of content included the following:

1. Compassion and self-compassion
2. Judgement and non-judgement
3. Interconnectedness
4. Nonattachment to self
5. Mindful acceptance
6. Letting go
7. Stress and reactivity
8. Embodiment

Using the co-created template, the researcher employed AI to extract "bite-sized" or digestible language related to each area of focus. The resulting document delivered a "choose your own adventure"-style guide for the mindful cultivation of nonattachment comprised of grounding, psychoeducation, a user preparation/reflection workspace, and two exercises targeting the focus of each module.

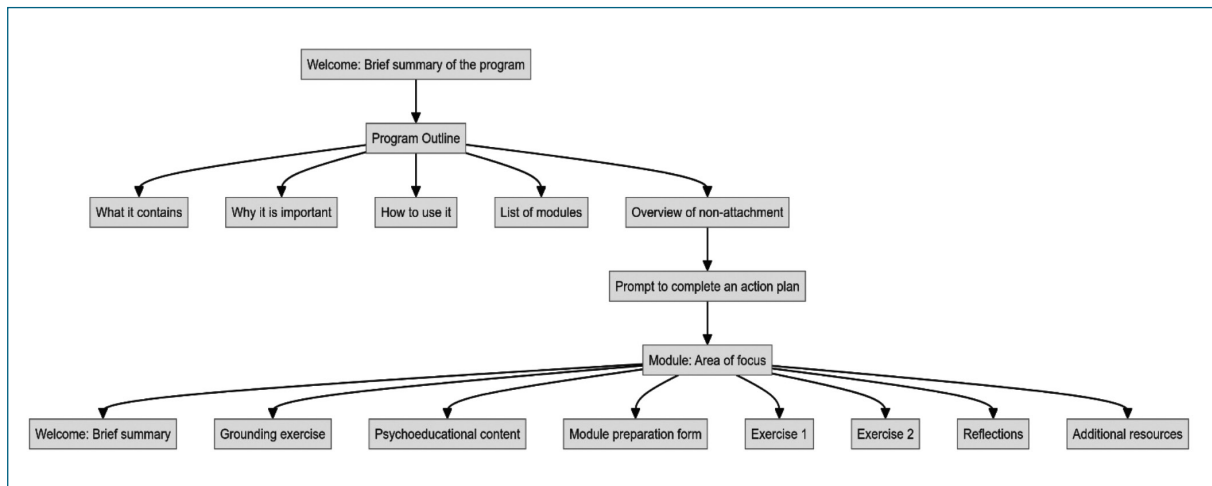
For example, in the compassion and self-compassion module, users are provided two different exercises developed based on existing research in compassion-focused therapy and targeting the cultivation of compassion and self-compassion. The exercises in this module include a self-compassion letter and a metta meditation. However, exercises vary based on the module topic. In the judgement and non-judgement module, exercises are drawn from dialectical behavioral therapy in the form of a sound observation exercise and from mindfulness-based cognitive therapy (MBCT) in the form of a mindful eating exercise. In the nonattachment-to-self module, exercises include

a decentering exercise from MBCT and a cognitive defusion exercise from acceptance and commitment therapy. Potential exercises were selected based on their alignment with nonattachment as defined in its affirmative context as something that can be practiced (verb state) as opposed to something less attainable (noun state). This is consistent with Tremblay et al.'s (2024) framing of nonattachment as involving intentional practices of acceptance, letting go, deep presence, openness to a universally interconnected self-schema, and perceptual distancing from stimuli and response.

An overall program workflow is represented in Figure 1, showing the flow of the user interface, which commences with a brief welcome, followed by an outline of the NPTS program and a brief overview of nonattachment. This is followed by a prompt to complete an action plan, which is positioned as an iterative or living document that users can update as they wish. The eight modules that follow use an identical delivery format, which co-creators indicated was important for managing expectations regarding time, structure, and layout. Users can select the module they find most desirable and proceed at their own pace, engaging with the content, exercises, and reflections as deeply as they choose. The exercises were not created from scratch but were informed by existing evidence-based therapeutic modalities bearing functional overlap with mindful nonattachment and are known to target specific elements of PTS (Tremblay et al., 2024). For example, within the compassion and self-compassion module, an exercise from compassion-focused therapy designed to target the inner critic is included. Here, participants are invited to write a letter to themselves using the following prompt:

Self-Compassion Letter: Write a letter to yourself from the perspective of a compassionate and understanding friend. Imagine what a supportive friend might say to you in times of difficulty or self-doubt. Offer yourself words of encouragement, kindness, and understanding, acknowledging your struggles, and affirming your inherent worth and value.

Figure 1. Program Workflow



Discussion

This study reported the development of a co-created, nonattachment-based intervention for PTS. The three-stage approach follows the framework of Hawkins et al. (2017) for co-producing and prototyping public health interventions prior to formal piloting and extends current guidance by offering a template for future data collection and analysis to improve the design of interventions employing mindfulness principles. While traditional first-line treatments for PTS have been shown to reduce symptoms, many patients continue to experience residual effects (Szoke et al., 2024). This highlights the need to consider not only the efficacy of conventional methods but also the potential value of a multi-phased, multi-modal approach to PTS symptom management, a key design feature of the present co-creation study.

There are notable distinctions between “simple” PTSD (typically a product of a single-event trauma, with core symptoms including hyperarousal, re-experiencing, and avoidance) and complex PTSD, which typically results

from prolonged or repetitive trauma and *also* includes affect dysregulation, negative self-concept, and interpersonal difficulties (Cloitre et al., 2014). Due to significant overlap in symptoms, several evidence-based treatments can be used for both diagnoses (Cloitre et al., 2014). However, complex trauma may additionally require areas of focus dedicated to shame and self-blame, interpersonal effectiveness, emotional regulation, and identity development. The findings of the present study yielded themes that appear to relate directly to these elements through empowerment and agency, grounding, and normalization and validation, which are discussed in the context of wider research below.

Themes

The theme of empowerment and agency is well supported by research on shared decision-making (Etingen et al., 2022) and evidence-based practice (Stewart et al., 2018). These approaches advocate for the idea that when patients feel they have an active voice in treatment planning (i.e., empowerment and agency, especially in PTS contexts), they are more likely to feel confident about moving forward (Etingen et al., 2022). This aligns with research indicating the value of agency in addressing traumatic experiences (Elwyn et al., 2012). Additionally, the flaws and risks of relying solely on clinician experience are well documented (see Lilienfeld et al., 2013). Participants consistently spoke about the feelings associated with the loss of control and the need for an intervention that could help them regain a sense of confidence in themselves and their own decision-making. This is consistent with existing research on flourishing, which is positively associated with nonattachment (Tsoi et al., 2022).

Participants reported an awareness that their symptoms had prevented them from fully engaging with prior treatments, highlighting the importance of grounding as a central theme. PTS symptoms, where the traumatic event(s) can still feel present, have been shown to occasionally trigger the neural circuitry responsible for onset of the fight-or-flight response, (amygdala activation) which can impair access to executive function and learning (Bremner et al., 1997; Fani et al., 2019; Harnett et al., 2020). Some interventions address this challenge (e.g., dialectical behavioral therapy begins by targeting life-threatening behaviors and working to achieve behavioral stability), but most do not do so explicitly. This is important because without participant understanding, agreement, and input, the efficacy of a multi-modal approach, such as stabilization or grounding prior to engaging with intervention content, may be reduced (Bowens & Cooper, 2012; Etingen et al., 2022). This is consistent with research showing the advantages of MBIs over somatic interventions such as progressive muscle relaxation for improving physiological and psychological variables (Krick & Felfe, 2024). Therefore, the explicitly (and frequently) stated importance of grounding emerged as a key and central theme.

The theme of normalization and validation is supported by research indicating a strong sense of shame commonly associated with PTS symptoms (Cunningham, 2020; Plante et al., 2022). External shame arises from cultural norms, standards, and expectations (Plante et al., 2022) and exists as a function of our own perception that we are creating negative emotions (e.g., disgust or anger) in the minds of others (Gilbert, 2011). Therefore, PTS symptoms can be extremely isolating, as individuals endure the painful experience of feeling abnormal. Internal shame, on the other hand, stems from perceived evaluations of the self as somehow inadequate (Plante et al., 2022), which can be deeply invalidating. Described by Gilbert (2011) as “the dark mirror within” (p. 328), internal shame can generate feelings of contempt, anger, disgust, or disappointment toward the self. It is therefore understandable that participants would emphasize the need for measures to mitigate such feelings and experiences.

Practical Outputs

In the current study, using co-creation as a vehicle for patient-led research on how individuals with PTS might best receive treatment using nonattachment principles yielded data consistent with existing interventions that utilize a more self-directed approach, such as internet-delivered cognitive behavioral therapy (Paiva et al., 2024). The areas of focus, or modules, were co-created with evidence-based practice in mind and resulted in a curriculum of nonattachment-based elements known to be accessible through the exercises built into each module. For example, in the mindful acceptance module, co-creation yielded a visualization exercise drawn from acceptance and commitment therapy, supported by research underscoring the importance of MBIs that employ creative and intrinsically-motivated guided visualizations (Diamond, 2024).

Additionally, the “choose your own adventure” model generated through this process is supported by research demonstrating the value of shared decision-making. Users can control whether they engage with the program through primary screening in a therapeutic context, whereby the program can be offered and then accepted or

rejected. Furthermore, the secondary screening at the very beginning of the program, in which users are evaluated based on their potential to benefit from engagement, can help users discern whether the nonattachment intervention is a good fit for them. Users can also decide how and when they wish to interact with the modules. Through the module preparation workspace, they maintain full control over the depth and nature of their engagement with the content, including meditative visualization exercises.

A pragmatic approach to reporting the development of this intervention facilitated an explanation of the steps involved in co-creation, the roles of stakeholders, and the objectives and results of each stage of the process. The result is the first evidence-based guide for the cultivation of nonattachment in Western applied settings, which could be modified to target almost any user base through the co-creation steps described herein. For example, this process could provide a pathway to pilot an intervention for anxiety by cultivating the benefits of breathwork (Banushi et al., 2023), or for depression by cultivating the benefits of yoga (Wu et al., 2023).

The addition of PIP input, as described by previous studies using co-creation approaches (e.g., Hawkins et al., 2017), adds value through its potential to mitigate implementation barriers, having been assessed by representatives of the target provider demographic in Stage 2. The knowledge and experience of these practitioners can help maximize adoption by PIPs themselves, in addition to supporting appropriate end-users in adopting the program. Lastly, the involvement of the target user demographic in a co-creation capacity helped to ensure a more holistic and complete understanding of the important elements involved in using non-attachment for PTS. Due to the participants' experience with previous interventions, it was possible to gather end-user insights into the usability, feasibility, and applicability of the MVP.

Strengths and Limitations

As with any co-creation process, there is potential for competing priorities or divergent goals, particularly when stakeholders represent a broad range of backgrounds (Stokols, 2006). In contrast, this study was limited by a relatively homogenous participant group and a narrow range of input, which may have restricted the diversity and richness of perspectives incorporated into the intervention design. Although the one-to-one format used in Stages 1 and 2 appeared to foster comfort and openness for some participants, it may have inadvertently constrained idea generation by limiting opportunities for dialogic exchange. This concern was underscored during the sub-group discussions in Stage 3, which appeared to encourage greater creativity and innovation through collaborative dialogue. It is plausible that incorporating an earlier collaborative PIP phase could have generated additional structural and content-related insights, particularly given the depth of experience and insight of the participant cohort.

Participant attrition posed another significant challenge. A notable drop-off occurred between initial recruitment and engagement in Stage 1, with 88 individuals failing to respond following pre-screening contact. This high attrition rate may be attributed to the extended duration of participation or the lack of anonymity inherent in a researcher-participant interface, especially in a context involving sensitive psychological content. Future studies may address this issue by offering a more condensed participation window or policies that preserve perceived anonymity (e.g., optional camera use during meetings). Importantly, given the therapeutic and emotionally sensitive focus of the study, participants who did not initially respond were not pursued, in recognition of the ethical imperative to avoid pressuring individuals who may not have been intrinsically motivated to engage.

Finally, although deliberate efforts were made to establish a participatory ethos, emphasizing power-sharing and participant empowerment at the outset of every interaction, residual power imbalances may have persisted. The extent to which these dynamics influenced participant contributions or the final intervention design remains unclear. Thus, while multiple steps were taken to enhance methodological rigor, the potential influence of researcher assumptions or preferences cannot be entirely excluded from the co-creation process.

Conclusion, Implications, and Future Directions

In response to the research question seeking to identify important content and design features in the co-creation of a nonattachment-based intervention for PTS, this study has yielded a prototype intervention for future piloting. Important themes included empowerment, agency, grounding and reflection space, normalization, and validation. Important content elements were rooted in mindfulness-based principles and practices and included areas of focus specifically dedicated to the cultivation of nonattachment. A unique gap between Eastern nonattachment principles and Western therapeutic approaches was addressed through the iterative and multi-phased approach to

developing a novel intervention that was primarily participant-driven. Design and feasibility elements included the importance of multi-level pre-screening for appropriate fit, action (safety) planning, timing of intervention onset or access, duration, cadence, and content accessibility (or digestibility). The approach taken in this co-creation study reflects an important first step toward addressing the evidence-based practice gap identified in previous research and delivers elements of shared decision-making shown to produce promising outcomes in applied settings. Future research should aim to implement a feasibility and acceptability trial of NPTS to determine its value in the mitigation of PTS symptoms as well as the broader adoption of nonattachment.

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Author contribution

Lindsay TREMBLAY: conceptualization, design, methodology, investigation, project administration, data management, formal analysis, interpretation, writing original draft.

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Declaration of interest statement

The authors have no conflicts of interest to declare.

Ethical statement

This manuscript is the authors' original work.

All participants engaged in the research voluntarily and anonymously.

Their data are stored in coded materials and databases without personal data.

The studies involving human participants were reviewed and approved by University of Derby College of Health, Psychology and Social Care Research Ethics Committee. Approval Number: ETH2324-0105.

Data availability statement

Datasets presented in this article are available from the corresponding author upon reasonable request.

Declaration on using artificial intelligence in research and manuscript preparation

The authors declare that they have used AI technologies (Open AI, Chat GPT Version 3) during exercise generation after thematic analysis yielded themes within the data set. AI was used to generate language that could be used in the co-created platform for meditations and contemplative exercises for future participants to use. Specific prompts included requests to generate mindfulness-based exercises most likely to target the core element of each module that came out of the co-creation process. Use of AI was acknowledged in the abstract of the manuscript and in the results sections and the authors are proud to have this serve as an appropriate example of the use of AI in a co-creation research study.

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RESEARCH ARTICLE

Why Do Adolescents Use Social Media? Validation of the Croatian Version of Motives to Use Social Networking Sites Scale

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Introduction: Motivation for social media use is a multidimensional construct; however, most existing questionnaires focus solely on motives and do not distinguish between active and passive use. To address this, the Motives to Use Social Networking Sites Scale (MOTUS; Reimann et al., 2023) was developed, integrating motivational aspects and usage modes.

Aim: This study examined the construct and convergent validity of the MOTUS scale in Croatian high school students. The original eight-factor model was tested with confirmatory factor analysis (CFA), and measurement invariance across gender was assessed with multigroup CFA. Associations with social media, loneliness, and fear of missing out were analysed for convergent validity. The Average Variance Extracted (AVE) and the Heterotrait–Monotrait (HTMT) ratio were also calculated to further evaluate the MOTUS scale. Reliability was assessed with Cronbach's α and Macdonald's ω .

Methods: Participants were 853 adolescents aged 14–19 ($M = 16.21$, $SD = 1.07$; 69.6% women). In addition to MOTUS, they completed the Fear of Missing Out Scale (FoMO), De Jong Gierveld Loneliness Scale and estimated daily time on social media.

Results: The eight-factor model showed acceptable fit after removing one item with cross-loadings (CFI = .916, TLI = .900, RMSEA = .061, SRMR = .074). Measurement invariance supported configural, metric, and scalar equivalence across gender. Convergent validity was confirmed through significant correlations between MOTUS subscales, time on social media, and FoMO.

Conclusions: The MOTUS scale shows acceptable psychometric properties for assessing motives and usage modes of social media in Croatian adolescents.

Keywords: social media, motivation, adolescents, MOTUS scale, fear of missing out

Introduction

Social Network Sites (SNSs) have become an integral part of daily life, especially among adolescents and young adults in developed countries. For example, the 2024 data from the U.S. context show that up to 95 % of adolescents aged 13–17 use at least one social media platform, with YouTube, TikTok, Instagram, and Snapchat standing out as the most popular (Faverio & Sidoti, 2024). The average time spent on these platforms continues to rise. Research shows that adolescents spend an average of 4.8 hours per day on social media, highlighting their significant role in this population's daily life (Rothwell, 2023). Social media provides opportunities for commu-

nication, content sharing, identity expression, information access, and entertainment (Anderson & Jiang, 2018), but it also carries several potential risks. Intensive social media use raises questions about its impact on users' psychosocial development and well-being (Uhls et al., 2017).

Research highlights both positive and negative consequences of SNSs use among young people. Positive outcomes include increased social connectedness, a sense of support and belonging, access to information, networking with peers and professionals, and opportunities for self-expression (Best et al., 2014; Ellison et al., 2014; Uhls et al., 2017). On the other hand, excessive social media use can lead to undesirable outcomes such as increased symptoms of anxiety and depression, reduced sleep quality, negative feelings of comparison with others, lower self-esteem, and a distorted body image (Keles et al., 2020; Twenge & Campbell, 2019; Uhls et al., 2017). Negative consequences are often linked to phenomena such as cyberbullying, uncontrolled overuse, or comparisons with idealized portrayals of others (Anderson & Jiang, 2018; Midgley et al., 2021; Vogel et al., 2014).

The effects of social media use are often influenced by the underlying motivation. Jarman et al.'s (2021) research demonstrated that diverse motivations for SNSs use (e.g., information sharing, passing time, social interaction, and appearance feedback) revealed mixed associations with social media engagement (e.g., intensity, active use, and passive use) and well-being. Using social media for social support can enhance a sense of connection with others and life satisfaction (Choi, 2024; Winstone et al., 2021), whereas using it for comparison with others may lead to negative emotional outcomes (Keles et al., 2020). Receiving 'likes' is one of the main motivations for social media use among young people, and research results show that feedback from other SNS users directly influences adolescents' emotional state, impacts their self-esteem, and plays an important role in identity construction (Jong & Drummond, 2016).

These findings highlight the complex relationship between motivation and the outcomes of social media use, necessitating precise measurement methods. Since social media use motivation is a multidimensional construct, numerous questionnaires have been developed to measure it. These instruments differ based on the theoretical framework they rely on, the aspects of motivation they assess, the target population, and the characteristics of specific platforms.

Several multidimensional questionnaires combine various dimensions of motivation. For example, the Motivation Scale for Using Social Network Sites (Masciantonio & Bourguignon, 2023) includes six motives: entertainment, social interaction, seeking information, instrumental use, self-documentation, and self-enhancement. The Social Network Sites Use Motivation questionnaire (Kim et al., 2011) measures motives such as seeking friends, social support, entertainment, information, and convenience. The Motives in Content Generation Using Social Media questionnaire (Leung, 2013) assesses five socio-psychological needs fulfilled by content generation: showing affection, venting negative feelings, gaining recognition, getting entertainment, and fulfilling cognitive needs. The Social Media Motivations Scale (Orchard et al., 2014) evaluates motives such as freedom of expression, information-seeking, social interaction, and others. These tools help researchers better understand the diversity of motives underlying social media use and their implications for user behavior. A literature review suggests that most of these questionnaires are based on the Uses and Gratifications Theory (UGT, Katz et al., 1973), which posits that users choose SNSs and content that best satisfy their needs.

While these motivation scales offer valuable insights into the multifaceted drivers of social media engagement, a significant limitation is that all were developed and validated primarily for adult or young adult populations. None of these instruments were specifically designed for, or psychometrically tested in, adolescent samples. This presents a critical gap in the field, as adolescents use social networking platforms in developmentally distinct ways, shaped by their ongoing identity formation, peer dynamics, and emotional regulation processes (Uhls et al., 2017; Valkenburg & Piotrowski, 2017). Constructs such as self-presentation, belonging, and social comparison may have different meanings and implications for adolescents compared to adults. Consequently, applying adult-validated measures to adolescent populations may result in reduced validity and reliability, as well as inaccurate interpretations of the psychological and behavioral mechanisms behind their social media use.

Besides these universal questionnaires, there are also context-specific instruments developed for particular platforms, such as TikTok (Omar & Dequan, 2020) or Instagram (Lee et al., 2015). These instruments focus on motivations related to the specific content of the platforms they are designed for, which limits their generalizability but provides deeper insights into user engagement.

Additionally, various measures focus on specific needs or motives underlying social media use, such as the need for social comparison (Yang et al., 2018) or the fear of missing out, which is characterized by the desire to stay connected to what others are doing and the fear of being absent from rewarding experiences (Przybylski et al., 2013).

This diversity of measures allows for a comprehensive analysis of motivation but also requires careful instrument selection to ensure validity and reliability in the context of an ever-changing digital environment. Understanding different instruments for measuring motivation for using SNSs is crucial for further research on its impact on mental health and user behavior.

Recent trends emphasize the importance of distinguishing between “active” and “passive” social media use (Verduyn et al., 2017), which traditional questionnaires often overlook. Active use refers to posting content or interacting with other users, whereas passive use involves consuming content posted by others (Reimann et al., 2023). Research suggests that passive use (e.g., lurking) is more likely to lead to negative outcomes than active participation (Verduyn et al., 2017).

However, most measures assessing motivation for using SNSs focus solely on motives, without differentiating between active and passive use. To address this limitation, Reimann et al. (2023) developed a new measurement instrument – the Motives to Use Social Networking Sites Scale (MOTUS) – in which items integrate both motivational aspects and active/passive usage.

In developing the MOTUS scale, Reimann et al., (2023) identified four key motives for social media use commonly reported in prior research: the need for self-presentation, need to belong, need for social comparison, and need for entertainment. These were assessed across both active and passive usage modes, resulting in an eight-factor structure. The final 28-item instrument demonstrated satisfactory psychometric properties in two studies conducted with German-speaking adult samples (mean age \approx 29 years), confirming its factor structure and showing good reliability and validity. However, as both studies were conducted exclusively with adults in a specific cultural-linguistic context, the generalizability of the MOTUS scale to adolescents and other language groups remains untested. There is a pressing need for age-appropriate, developmentally sensitive instruments that reflect the unique cognitive and social contexts of adolescent users. Validated adolescent-focused measures—such as an adapted version of MOTUS—represent a crucial step in enhancing the precision and relevance of research in this area.

Accordingly, the present study aims to address this gap by evaluating the construct and convergent validity of the Croatian version of the MOTUS scale in a large sample of high school students. Specifically, the study tests the original eight-factor model (Reimann et al., 2023), assesses measurement invariance across gender, and explores associations with self-reported time on social media, loneliness, and fear of missing out. This work contributes to the broader goal of developing valid instruments for adolescent populations, thereby informing future research, interventions, and policies on youth digital media engagement.

Method

Participants and Data Collection

This study was part of a large-scale project and employed a convenience sample. Participants were students from schools in both coastal and continental regions of Croatia whose principals had consented to the research. Adolescents were recruited from several high schools in towns across Primorje-Gorski Kotar County and Bjelovar-Bilogora County. The study included students who were present in class during questionnaire administration, had obtained parental consent, provided their own consent, and reported using social media.

A total of 853 adolescents aged 14 to 19 ($M = 16.21$, $SD = 1.07$; 69.6 % women) took part in the study. Only age and gender were collected as demographic variables, both because no additional information was necessary to address the research questions and to maintain participant anonymity. Since the project was designed to examine the relationships among different constructs, with the administration of a large number of paper-based measures, in order to minimize participant burden, all students completed several common questionnaires, while additional instruments were administered depending on the subsample. Namely, in this study, the MOTUS scale was administered to 853 adolescents and the Fear of Missing Out Scale and the De Jong Gierveld Loneliness Scale were administered to a subsample of 256 high school students aged 15 to 18 ($M = 16.10$, $SD = 0.88$; 71 % women). A scheduled time was allocated during school hours for students to complete the questionnaire, which typically required 15 minutes.

The research was approved by the Research Ethics Committee of the Faculty of Humanities and Social Sciences at the University of Rijeka (approval number: 640-01/24-01/04). Prior to the commencement of data collection, formal approval was obtained from the principals of participating schools. Informed consent was secured from the parents or legal guardians of all student participants. Parents received comprehensive information detailing the study's purpose, procedures, and any potential risks. Additionally, all participants were fully informed about the

voluntary nature of their involvement and provided their assent prior to participation. To ensure ethical integrity and participant protection, the data collection process was conducted in coordination with school psychologists. Confidentiality and privacy were strictly upheld, no personally identifiable information was collected, and all responses were fully anonymized. Data were securely stored and accessible only to the research team. Participants were assured that their responses would be used exclusively for research purposes and that they retained the right to withdraw from the study at any time without any adverse consequences.

Measures

The Motives to Use Social Networking Sites Scales

The Motives to Use Social Networking Sites Scales (MOTUS, Reimann et al., 2023) is a 28-item instrument grounded in a two-dimensional framework. It assesses four primary motives for social media use: self-presentation, belonging, social comparison, and entertainment, alongside the mode of engagement, distinguishing between active and passive use.

Therefore, MOTUS has an eight-factor structure (Reimann et al., 2023): (1) need for self-presentation – active (4 items, e.g., *I post pictures or videos of myself for self-presentation*), (2) need for self-presentation – passive (4 items, e.g., *I look at content from others to know what's trending*), (3) need to belong – active, close friends (4 items, e.g., *I interact with my friends to show that I am thinking about them*), (4) need to belong – active, groups (3 items, e.g., *I send out group invitations or respond to them to feel connected to that group*), (5) need to belong – passive (3 items, e.g., *I look at content from others to know what's going on in the lives of family and friends*), (6) need for social comparison – passive (4 items, e.g., *I look at content from others to find out whether they are more popular than me*), (7) need for entertainment – active (3 items, e.g., *I generate informative or funny content myself because I enjoy it*), (8) need for entertainment – passive (3 items, e.g., *I scroll through social networking sites because the content matches my interests*).

The scale was originally designed to be platform-independent, making it applicable across various social networking sites (SNSs). Participants respond using a five-point Likert scale ranging from 1 (*never*) to 5 (*often*), indicating the frequency with which specific SNS activities are performed to satisfy the stated motives. For the present study, the MOTUS was translated into Croatian using a back-translation procedure to ensure both linguistic accuracy and cultural appropriateness. First, two researchers independently translated the original English version into Croatian. Their translations were then compared, and any discrepancies were discussed to produce a preliminary consensus version. Next, this Croatian version was translated back into English by a bilingual expert. The back-translated version was carefully compared with the original English text to identify inconsistencies or potential differences in meaning. Any disagreements were thoroughly discussed, with particular attention paid to conceptual accuracy and cultural relevance. This process was undertaken to maintain the psychometric integrity of the scale while adapting it for use with a Croatian adolescent population. Data on validity and reliability are presented in the Results section.

The Fear of Missing Out Scale

The Fear of Missing Out Scale (FoMO, Przybylski et al., 2013; Croatian translation Kovač, 2024) is a 10-item scale that measures fear of missing out on social events, especially involving friends, often through social media. It reflects the desire to stay constantly connected with what others are doing (e.g., *I get worried when I find out my friends are having fun without me*). Answers are given on a 5-point Likert scale ranging from 1 (*not at all true of me*) to 5 (*extremely true for me*). The total score is obtained by summing all responses, with scores categorized as follows: 10–19 indicating a low level of fear of missing out, 20–39 a moderate level, and 40–50 a high level (Przybylski et al., 2013). In the current sample, the scale has demonstrated satisfactory reliability, as reported in the Results section.

De Jong Gierveld Loneliness Scale

The De Jong Gierveld Loneliness Scale (DJGLS, De Jong Gierveld & Kamphuis, 1985; De Jong Gierveld & Van Tilburg, 1999) has 11 items. Although the scale was developed with the distinction between social (e.g., *There are plenty of people I can lean on when I have problems*) and emotional (e.g., *I miss having a really close friend*) loneliness in mind, it can be used as a unidimensional loneliness scale. The scale used a five-point Likert scale ranging from 1 (*not at all*) to 5 (*completely*). After recoding the negatively worded items, a higher total score indicates a more intense global sense of loneliness. For the present study, the DJGLS was translated into Croatian using the same

procedure as the MOTUS scale. The scale has demonstrated satisfactory reliability in our sample, as reported in the Results section.

Social Media Use

Social media use was estimated using two simple open-ended questions. Participants had to estimate the number of hours they spend daily on social media (“*Estimate how many hours per day you are active on social media: _ hours.*”). They also estimated which social network they used the most. No response scale was provided; instead, the participants had to enter the number of hours they spent using social media themselves and indicate which social media platform they used the most. TikTok was the most popular social media (40.2 %), followed by Snapchat (26 %) and Instagram (18.4 %). The average self-reported daily social media use was 4.94 hours ($SD = 2.63$).

Data Analyses

To examine the factor structure of the Croatian version of the MOTUS measure, we conducted confirmatory factor analysis (CFA) with maximum likelihood estimation and robust standard errors, with JASP software (version 0.19.3). Maximum likelihood estimation with robust standard errors (MLR) was employed because this approach is particularly suitable when data deviate from strict multivariate normality (Satorra & Bentler, 1994). The results of the Mardia’s test of multivariate normality suggest that our data do not meet the assumption of multivariate normality ($p < .001$). We tested the eight-factor model originally proposed by Reimann et al. (2023). To evaluate the goodness of fit for the proposed models, we employed the χ^2 statistic, where a non-significant result indicates an acceptable fit. Given the chi-square test’s sensitivity to sample size (Brown, 2015), we also calculated the relative (normed) chi-square (χ^2/df). Reported guidelines for acceptable values vary, ranging from as high as 5.0 (Wheaton et al., 1977) to as low as 2.0 (Tabachnick & Fidell, 2007), with values below 5.0 generally considered indicative of reasonable model fit (Hooper et al., 2008). We computed several approximate fit indices with conventional cut-offs: Root Mean Square Error of Approximation (RMSEA) with a 95 % confidence interval, Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and Standardized Root Mean Square Residual (SRMR).

Acceptable fit standards were defined as TLI and CFI $> .90$, RMSEA $< .08$, and SRMR $< .08$ (Hooper et al., 2008; Little, 2013). To test measurement invariance across gender, multigroup confirmatory factor analysis (MG-CFA) was performed. We focused on changes in CFI (ΔCFI) and RMSEA ($\Delta RMSEA$), considering $\Delta CFI < .010$ and $\Delta RMSEA < .015$ as indicative of invariance (Chen, 2007; Cheung & Rensvold, 2002).

Internal consistency was evaluated using Cronbach’s alpha and McDonald’s ω , with a criterion value of $> .70$ considered acceptable (DeVellis, 2003).

For the MOTUS scale, we also calculated the Average Variance Extracted (AVE), which reflects the amount of variance captured by a construct relative to measurement error. According to Hair et al. (2012), a value of at least .50 demonstrates adequate validity, showing that the construct’s items consistently capture the same underlying concept. Discriminant validity of the MOTUS scale was assessed using the Heterotrait-Monotrait (HTMT) ratio of correlations, with values below .85 suggesting that the factors in the scale are sufficiently distinct from one another (Henseler et al., 2015).

Convergent validity was assessed through Pearson’s product-moment correlations between the MOTUS subscale scores, FoMO, De Jong Gierveld Loneliness Scale, and self-reported time on social media. Also, the correlations with demographics were analyzed.

Descriptive statistics, including mean, standard deviation, skewness, kurtosis, and Shapiro-Wilks test of normality distribution were calculated for all eight factors of MOTUS, FoMO, and De Jong Gierveld Loneliness scale.

Results

The Factor Structure of the MOTUS

The eight-factor model with correlated factors showed an almost acceptable model fit (Table 1). CFI and TLI were both just below the desired threshold of .90, while the RMSEA and SRMS had values below the .08 and .10, respectively. The modification indices indicated that item 19 may have cross-loadings onto factors 2, 3, 4, and 5, suggesting that it may not adequately represent a single underlying construct and could compromise the

construct validity of factor 6. When we excluded this item from the analysis, all fit indices were within acceptable values (Table 1).

Table 1. Results of the CFA for the Eight-Factor Model of the Motives to Use Social Networking Sites Scales (MOTUS)

	χ^2 (df)	χ^2/df	CFI	TLI	RMSEA [95% CI]	SRMR
Eight-factor model	1692.40 (322) $p < .01$	5.25	.884	.864	.071 [.068, .074]	.090
Eight-factor model (without item 19)	1241.98 (296) $p < .01$	4.19	.916	.900	.061 [.058, .065]	.074

An examination of the Croatian translation of item 19 suggests that the issue with this item may stem from subtle shifts in meaning introduced during translation. In the English version, item 19 states, “*I look at content from others to find out where they are professionally.*” Given that our participants were high school students, we intentionally avoided the term “professionally,” which might not be age-appropriate or meaningful in this context. Instead, the item was translated more broadly as “what they are up to” (e.g., “*I look at content from others to see what they are up to / to find out what they are doing*”). While this adaptation aimed to enhance relevance for adolescents, it likely altered the conceptual focus of the item, making it more general and ambiguous. As a result, participants may have interpreted the item in divergent ways, leading to inconsistent responses and substantial cross-loadings across multiple factors.

The invariance tests between genders confirmed the configural, metric, and scalar invariance (Table 2). The original eight-factor model with the same factor structures fits the data satisfactorily in both subgroups, and a further fixation of the factor loadings as well as an additional fixation of the intercepts did not lead to a significant deterioration of the model fit. For scalar invariance, it can be observed that the model fits the data slightly worse ($\Delta CFI = .013$, while $\Delta RMSEA$ is below the expected values of .015; Chen, 2007). Interestingly, as shown in Table 6, girls had a more pronounced need for self-presentation (active and passive) and need to belong (passive and active-close friends).

Table 2. Comparing Configural, Metric and Scalar Invariance of Eight-Factor model of MOTUS across Gender

Invariance	df	AIC	BIC	RMSEA	CFI	$\Delta RMSEA$	ΔCFI
Configural	592	63194	63972	.053	.924		
Metric	611	63230	63917	.054	.919	.001	.005
Scalar	630	63437	64291	.057	.906	.003	.013

All items had loadings of $> .40$ on their respective factors, except item 26, and were significant at $p < .001$. Item 26 had a value of .221, suggesting that this item should also be investigated to find out the reason for this low loading (Table 3).

To further test the validity of the MOTUS scale, we calculated the Average Variance Extracted (AVE), indicating a construct explains more variance in its own indicators than is shared with other constructs. For seven of the factors, the AVE values exceeded the recommended threshold of 0.50 (Hair et al., 2012), indicating that the constructs are adequately represented by their indicators. Only Factor 2 (Need for Self-Presentation Active) yielded a slightly lower AVE of 0.47, which is marginally below the criterion but still close to acceptable levels. Overall, these results suggest that the constructs are adequately represented by their indicators. The MOTUS scale was further examined using the Heterotrait-Monotrait (HTMT) ratio of correlations, as proposed by Henseler et al. (2015). All HTMT values were below the recommended threshold of 0.85, providing evidence of satisfactory validity (Table 4).

As expected, the correlations between the factors were positive and significant, varying between .14 and .51 (Table 4).

Reliability and Descriptive Statistics

Internal consistency for all MOTUS subscales as well as for De Jong Gierveld Loneliness Scale and Fear of Missing Out Scale is shown in Table 5.

Table 3. Average Variance Explained and Standardized Factor Loadings for the MOTUS Items

Factor	AVE	Items	λ
F1 Need for Self-Presentation active	.57	MOTUS1	.76
		MOTUS2	.81
		MOTUS3	.83
		MOTUS4	.46
F2 Need for Self-Presentation active	.47	MOTUS5	.67
		MOTUS6	.70
		MOTUS7	.65
		MOTUS8	.74
F3 Need to Belong active (close friends)	.59	MOTUS9	.81
		MOTUS10	.76
		MOTUS11	.81
		MOTUS12	.69
F4 Need to Belong active (groups)	.68	MOTUS13	.81
		MOTUS14	.83
		MOTUS15	.84
F5 Need to Belong passive	.51	MOTUS16	.78
		MOTUS17	.79
		MOTUS18	.55
F6 Need for Social Comparison passive	.61	MOTUS20	.59
		MOTUS21	.90
		MOTUS22	.77
F7 Need for Entertainment active	.75	MOTUS23	.87
		MOTUS24	.80
		MOTUS25	.92
F8 Need for Entertainment passive	.61	MOTUS26	.22
		MOTUS27	.89
		MOTUS28	.92

Note. All loadings are significant at $p < .001$ level. AVE = Average Variance Explained.

Table 4. Correlations between Factors of MOTUS Questionnaire (above the diagonal) and Heterotrait-Monotrait ratio (below the diagonal, in italics)

	F1	F2	F3	F4	F5	F6	F7	F8
F1 Need for self-presentation active	-	.43**	.20**	.21**	.31**	.48**	.43**	.16**
F2 Need for self-presentation passive	.55	-	.36**	.38**	.51**	.49**	.38**	.37**
F3 Need to belong active (close friends)	.24	.44	-	.42**	.47**	.23**	.14**	.30**
F4 Need to belong active (groups)	.26	.47	.47	-	.51**	.37**	.18**	.26**
F5 Need to belong passive	.35	.65	.59	.64	-	.49**	.24**	.39**
F6 Need for social comparison passive	.58	.51	.10	.33	.35	-	.31**	.26**
F7 Need for entertainment active	.51	.43	.15	.21	.29	.30	-	.28**
F8 Need for entertainment passive	.24	.57	.39	.38	.63	.24	.36	-

** $p < .01$

Table 5. Means, Standard Deviations and Coefficients of Reliability for eight MOTUS subscales, De Jong Gierveld Loneliness Scale and Fear of Missing Out Scale

	k	Min-Max	M	SD	Skew	Kurt	Shapiro-Wilks W	Coefficient ω	Coefficient α
F1 - Need for Self-Presentation active	4	1.00 – 5.00	1.66	0.84	1.26	1.03	.82**	.834	.803
F2 - Need for Self-Presentation passive	4	1.00 – 4.75	2.71	0.91	0.27	-0.64	.97**	.783	.781
F3 - Need to Belong active (close friends)	4	1.00 – 5.00	4.10	0.84	-1.06	0.59	.87**	.853	.848
F4 - Need to Belong active (groups)	3	1.00 – 5.00	2.95	1.15	0.25	-0.94	.94**	.864	.863
F5 - Need to Belong passive	3	1.00 – 5.00	3.26	0.92	-0.20	-0.70	.96**	.750	.743
F6 - Need for Social Comparison passive	3	1.00 – 5.00	1.98	0.75	0.96	0.63	.91**	.827	.781
F7 - Need for Entertainment active	3	1.00 – 5.00	1.62	0.88	0.94	-0.22	.82**	.901	.897
F8 - Need for Entertainment passive	3	1.00 – 5.00	2.80	0.73	0.13	-0.45	.97**	.791	.683
Loneliness	11	1.00 – 4.64	2.37	0.89	0.59	-0.39	.96**	.898	.900
FoMO	10	1.00 – 4.70	2.69	0.75	0.11	-0.35	.99**	.766	.803

Note. F1 to F8 – MOTUS subscales, Loneliness – De Jong Gierveld Loneliness Scale. FoMO – Fear of Missing Out Scale. k = number of items.

** $p < .01$

All factors and scales had satisfactory coefficients of reliability. Cronbach's alpha values ranged from .68 for need for entertainment–passive to .90 for need for entertainment–active, while McDonald's ω values ranged from .75 for need to belong–passive to .90 for need for entertainment–active. Although the Shapiro-Wilk test indicated significant deviations from normal distribution, the skewness and kurtosis values for all variables fell within the range of ± 2 , suggesting that the distributions can be treated as normal (Kline, 2005).

Convergent Validity

To examine convergent validity, we calculated correlations between MOTUS subscales with FoMO, De Jong Gierveld Loneliness Scale, and self-reported average time on social media. As stated before, data regarding fear of missing out and loneliness was collected on a subsample of participants ($n = 256$; Table 6).

Table 6. Intercorrelations between the MOTUS Subscales with Gender, Age, De Jong Gierveld Loneliness Scale, Fear of Missing Out Scale and Self-Reported Average Time on Social Media ($n = 256$)

	Gender	Age	Loneliness	FoMO	Time on social media
F1 - Need for Self-Presentation active	-.21**	-.13*	.04	.31**	.24**
F2 - Need for Self-Presentation passive	-.28**	-.03	.10	.46**	.18**
F3 - Need to Belong active (close friends)	-.24**	-.09	-.08	.25**	.16**
F4 - Need to Belong active (groups)	-.09	-.01	.07	.26**	.10**
F5 - Need to Belong passive	-.24**	-.07	-.06	.37**	.14**
F6 - Need for Social Comparison passive	-.04	-.12	.12**	.53**	.20**
F7 - Need for Entertainment active	-.03	-.02	.11	.15*	.13**
F8 - Need for Entertainment passive	.00	.07	.02	.16*	.08*

Note. Gender - 0 = woman, 1 = man. FoMO - Fear of Missing Out Scale. Loneliness - De Jong Gierveld Loneliness Scale. Time on social media - self-reported average daily time on social media.

* $p < .05$; ** $p < .01$.

All correlation coefficients between MOTUS subscales and FoMO scale were positive and significant, suggesting good convergent validity of MOTUS scale. The highest correlation was found between FoMO and the subscales Need for Self-Presentation passive (.46) and Need for Social Comparison passive (.53), while the FoMO had lowest correlations with both Need for Entertainment subscales – active (.15) and passive (.16). Results on the De Jong Gierveld Loneliness Scale were not significantly related to the MOTUS subscales, except for the passive Need for Social Comparison.

The correlation coefficients between MOTUS subscales and average daily self-reported time on social media were significant but low and should be interpreted with caution. The highest correlation was between self-reported time on social media and active Need for Self-Presentation. Participants who post material on social media motivated by need to actively present themselves (e.g., *I post pictures or videos of myself to be admired by others; I post pictures or videos of myself because I like to show how I look to other people*) report spending more time on social media.

Discussion

The primary objective of this study was to evaluate the Motives to Use Social Networking Sites Scale (MOTUS) by examining its psychometric characteristics within a Croatian adolescent population. Specifically, the study aimed to determine whether the original eight-factor model of the MOTUS could be replicated among high school students in Croatia and to assess the scale's criterion validity through correlations with theoretically relevant constructs - namely, self-reported average time spent on social media, loneliness, and fear of missing out. By doing so, this study not only contributes to the psychometric validation of the MOTUS in a new cultural and developmental context but also provides insights into the motivational underpinnings of social media use among adolescents. These findings are important for advancing our understanding of how social media motivations relate to psychological well-being and digital engagement across different sociocultural settings.

Psychometric Evaluation of the MOTUS Scale

We tested the original eight-factor model of the MOTUS scale as proposed by Reimann et al. (2023). The model with correlated factors demonstrated a nearly acceptable fit to the data. Closer inspection revealed that item 19 contributed to the suboptimal model fit, likely due to cross-loadings across multiple factors (specifically factors 2, 3, 4, and 5). This issue may stem from the translation process, particularly the adaptation of the original wording to better reflect adolescent experiences in the Croatian context. In an effort to make the item more relatable, the term “professionally” was omitted, potentially rendering the item overly broad and conceptually misaligned with its intended construct. The original item (“*I look at content from others to find out where they are professionally*”) captures not only current activities but also progress, status, and achievements. Our translation (“*I look at content from others to find out what they are doing*”) emphasizes only present activities and misses this dimension. Upon removing item 19 from the model, all fit indices reached acceptable levels, and the remaining items exhibited satisfactory loadings on their respective factors. One exception was item 26, which displayed a positive but relatively weak loading. Notably, in the original validation, this item loaded comparably to the other items within its factor. The reason for its diminished performance in the present sample remains unclear, particularly given that the translation (“*I scroll through social networking sites because content matches my interests*”) was straightforward and semantically consistent with the original. Future studies should consider employing cognitive interviews or small-scale qualitative pilots to explore how adolescents interpret such items, thereby identifying whether the observed psychometric issues stem from linguistic nuances or conceptual ambiguity. This approach could provide more definitive evidence regarding translation fidelity and semantic equivalence. It remains unclear whether this finding reflects cultural incongruence in how the item’s content is perceived or inherent vagueness in the item wording.

We confirmed the original eight-factor structure: need for self-presentation (active, passive), need to belong (active – close friends, active – groups, passive), need for social comparison (passive) and need for entertainment (active, passive). Significant correlations between the subscales occurred and all factors had satisfactory coefficients of reliability. A similar range of correlations between subscales (from $r = .14$ to $.51$) was found in the original study (Reimann et al., 2023). The original eight-factor model with the same factor structures fits the data satisfactorily in both gender subgroups. In the original, the scale was used with subjects over the age of 18 (Reimann et al., 2023), and our results show that the use of this scale is also justified for male and female adolescents in the age range from 14 to 19.

Descriptive and Convergent Validity Findings

Descriptive analyses of MOTUS showed that active Need to belong (close friends) and passive Need to belong had the highest average score. In contrast, active Need for Self-Presentation and active Need for Entertainment achieved lowest average score. In the sample of adult participants, the passive Need for entertainment had the highest average score, followed by the active Need to belong for close friends and the passive Need to belong (Reimann et al., 2023). According to Reimann et al. (2023), the need for affiliation may surpass other motives in importance, given its fundamental role in human life. Correlations of the MOTUS subscales and the self-reported average time on social media were significant, ranging from $r = .08$ to $r = .24$ with the highest association for active Need for Self-Presentation. In the German adult sample, the corresponding correlations varied from $.09$ to $.34$, with the highest association for active Need to belong and active Need for Self-Presentation (Reimann et al., 2023).

The convergent validity data of the questionnaire were observed in relation to the association with loneliness and fear of missing out. During adolescence, building and maintaining close relationships are important goals (Barry et al., 2009), and adolescents who do not achieve these goals may experience loneliness (Buecker et al., 2021; Teppers et al., 2014). Loneliness is a relevant factor in the context of social media use, with its relationship to social media being interpreted through several theoretical frameworks, including the social displacement model, the rich-get-richer model, and the social compensation model (Smith et al., 2021). In our sample, loneliness was significantly related only to the passive Need for social comparison. Given that the effects of social media on feelings of loneliness and social isolation depend largely on various user characteristics, including the need to belong (Smith et al., 2021), it was expected that loneliness would be most strongly associated with the need to belong, but this was not the case. In terms of FoMO, the highest correlation was found with the passive Need for Social Comparison and the active Need for Self-Presentation. This is in line with previous research that found a strong association between fear of missing out and the MOTUS social comparison subscale (Reimann et al., 2023).

Strengths and Limitations

This study contributes to social media research by validating the MOTUS scale as a comprehensive measure of social media use in different cultural contexts and age groups, offering valuable insights into the motivations and active–passive usage patterns among adolescents. Nonetheless, several limitations should be acknowledged. First, the sample was heavily skewed toward female participants (approximately 70 %), which may constrain the generalizability of findings, particularly in light of known gender differences in social media behaviors and motivational drivers. Second, since students completed the questionnaires in groups during class, where privacy may have been limited, their responses could have been influenced by social desirability. Third, the assessment of convergent validity was conducted in a smaller subsample, which reduces statistical power and may limit the representativeness of these results. The lack of additional validated motivation measures precludes an evaluation of convergent validity and limits the ability to triangulate findings. Incorporating such instruments in future work would bolster the construct validity of the MOTUS scale. Additionally, although many observed correlations reached statistical significance, their effect sizes were generally modest. It is therefore important to critically assess the practical relevance of these findings, especially in applied settings such as education or clinical practice. These limitations highlight the need for continued validation, the use of complementary methodologies, and diversified sampling strategies to enhance the robustness and applicability of the MOTUS scale across contexts.

Conclusion, Implications, and Future Directions

The validation data presented in this study on the Croatian version of MOTUS appear to offer support for the overall psychometric quality of this instrument in line with the original conceptualization. The present study has shown that MOTUS is generally a psychometrically acceptable instrument for assessing the motives for use (need for self-presentation, need to belong, need for social comparison, and need for entertainment) as well as the mode of use (active/passive) of social networks in a Croatian sample of male and female high school students. The theoretical and scientific contribution of this paper provides a better insight and understanding of the different motivations underlying the use of social networks as well as the possibility of a more complete operationalization of social network use by adolescents.

Future applications of this questionnaire to adolescents should examine additional criterion variables. Attention should also be paid to a better translation of question 19 and an additional review of question 26. Addressing these uncertainties through targeted qualitative methods would enhance the scale's validity and overall interpretive clarity. Future research should aim for more balanced sampling or conduct stratified analyses and sensitivity checks to examine potential gender-specific patterns. Furthermore, it would be desirable to apply the questionnaire to older participants as well. The question of measuring the frequency of social media use based on self-assessments remains open, as self-reports may not accurately reflect objective social media use (Mahalingham et al., 2023).

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Author contribution

Tamara MARTINAC DORČIĆ: conceptualization, design, funding acquisition, investigation, project administration, data management, interpretation, supervision, writing original draft, review and editing.

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Declaration of interest statement

The authors have no conflicts of interest to declare.

Ethical statement

This manuscript is the authors' original work.

All participants engaged in the research voluntarily and anonymously.

Their data are stored in coded materials and databases without personal data.

The studies involving human participants were reviewed and approved by the Research Ethics Committee of the Faculty of Humanities and Social Sciences at the University of Rijeka, Croatia. Approval number: 640-01/24-01/04.

Data availability statement

Datasets presented in this article are available from the corresponding author upon reasonable request.

Declaration on using artificial intelligence in research and manuscript preparation

The authors declare that they have used AI technologies (Instatext editor, Chat GPT, Google translate) to translate text from Croatian into English and for spelling, grammar and language editing. Each suggestion was reviewed by the authors.

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RESEARCH ARTICLE

Who Do Leaders Talk To? The Role of Workplace Friendships in Professional Discussion Networks and Burnout

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Introduction: Quantitative and emotional demands pose risks to leaders' mental health, while supportive workplace relationships may mitigate these effects.

Aims: This study examined the relationship between the friendship-based composition of the professional core discussion networks (pCDNs), job demands, and burnout among Hungarian social care leaders, guided by the social ledger framework to capture both the supportive and burdensome aspects of workplace relationships.

Methods: 547 Hungarian social care leaders were categorised into six groups based on their pCDN composition. Participants' pCDNs were assessed by social network analysis methods, and the COPSOQ II questionnaire measured work-related psychological dimensions and burnout. ANCOVA analyses were conducted to compare burnout and job demands across groups.

Results: Leaders whose pCDNs consisted exclusively of non-friends reported the highest levels of burnout, whereas those with a single friend exhibited the lowest. Emotional demands were highest among leaders with one-friend pCDN and lowest among those with non-friend pCDNs. Emotional demands were associated with burnout; however, this relationship was moderated by pCDN composition: Leaders with one-friend pCDN reported low levels of burnout, regardless of the emotional demands, whereas the burnout of leaders with non-friend pCDNs was high even at low emotional demand levels. Additionally, those with no pCDN showed a strong association between emotional demands and burnout.

Conclusions: The composition of pCDNs is important for leaders' mental health. While friendships within pCDNs may offer emotional protection, they could also introduce strain, emphasising the need to consider not only the existence but also the quality of workplace relationships.

Keywords: professional core discussion networks, workplace friendships, burnout, emotional demands, social care

Introduction

Leaders in the social care sector face complex emotional, administrative, and ethical demands that are often overwhelming, resulting in high levels of occupational stress and professional isolation (Choy-Brown et al., 2020; Giménez-Bertomeu et al., 2024; Győri & Ádám, 2024; Kozák et al., 2025; Schutzmann et al., 2025). Mental health problems, including burnout, set a substantial economic burden globally and nationally, highlighting the urgent need for effective workplace mental health interventions (Arias et al., 2022; Nekoei et al., 2024). In such environments, the presence of workplace friendships, particularly within professional core discussion networks (pCDNs), can play a pivotal role in shaping leaders' mental health and vulnerability to burnout. However, according to the social ledger theory (Berman et al., 2002; Labianca & Brass, 2006), these relations can have a dual nature, emphasising that both positive and negative ties can significantly influence well-being and organisational outcomes. Trusted social connections can provide essential emotional and instrumental resources that help mitigate occupational strain, especially as social care leaders often lack robust upper-tier support systems (Berman et al., 2002). While supportive workplace friendships may buffer the negative effects of job demands, these relationships can also introduce new sources of strain, especially when professional and personal boundaries overlap. Despite growing recognition of these dynamics (Methot et al., 2016), little is known about how the composition and quality of leaders' pCDNs influence their vulnerability to burnout in social care settings.

This study addressed this gap by examining the interplay between the friendship-based structural composition of a pCDN, emotional demands, quantitative demands, and burnout among Hungarian social care leaders.

Theoretical Background

Burnout

Burnout has been extensively examined within the realms of psychological theory and occupational health research, particularly in work-related stress. Employment is a fundamental aspect of many individuals' lives, providing structure, purpose, and the opportunity for significant societal contributions. While high-performance roles can offer substantial rewards, they may also present considerable stressors (Bakker & De Vries, 2020).

Burnout is predominantly characterised as a chronic stress condition, manifesting through continuous experiences of exhaustion, cynicism, and diminished professional effectiveness (Maslach, 2001). It exists on a continuum, ranging from transient fatigue after a demanding workday, resolvable through adequate rest, to profound, enduring exhaustion that is coupled with emotional detachment, cognitive impairments, and depressive states, following prolonged engagement with high-demand environments (Bakker & De Vries, 2020). Individuals experiencing burnout often find themselves drained and disenchanted with their once-meaningful work, with heightened feelings of disillusionment correlating with increased risks of severe consequences (Bakker & De Vries, 2020). Organisations employing helping professionals must recognise that burnout typically arises from a confluence of personal (such as high internal expectations, personality, ineffective coping strategies, or a tendency towards perfectionism), organisational (such as excessive caseloads, a lack of autonomy, poor supervisory support, or insufficient resources), and systemic stressors (such as chronic underfunding of the sector, burdensome administrative policies, or a lack of societal recognition for the profession), rather than a single causative factor. This notion highlights that burnout often reflects broader structural issues rather than individual deficiencies (Fernet et al., 2012).

The ramifications of burnout are substantial, generating considerable costs for both individuals and organisations, including a range of adverse physical, psychological, and organisational outcomes (Salvagioni et al., 2017). Recent research has also shown that managers are particularly vulnerable to burnout due to the pressures of their role. In addition to managing their workload and well-being, leaders are responsible for supporting their teams, making complex decisions, and navigating organisational change, often with limited support or guidance (Brooks et al., 2023; Parent-Lamarche & Biron, 2022). They must not only regulate their emotional responses but also effectively address and manage the often-conflicting emotions of their colleagues. Moreover, traditional job resources may be insufficient to buffer these unique challenges, highlighting the need for more specialised forms of support in leadership roles (Wittmers & Maier, 2023). This increased responsibility can lead to professional isolation and chronic stress, making leaders particularly vulnerable to burnout. Leaders' burnout not only affects them but can cascade down through the whole organisation. Burnt-out leaders are more likely to exhibit diminished leadership quality, which undermines positive leadership practices, team morale, and overall workplace climate. Furthermore, research has shown that leader burnout can negatively impact employee well-being

and amplify stress levels, creating a negative feedback loop within the organisation. These findings emphasise the importance of addressing burnout not only at the individual level but also in the broader context of organisational leadership and culture (Brooks et al., 2023; Parent-Lamarche & Biron, 2022; Skakon et al., 2010).

A leading framework for understanding these dynamics is the Job Demands-Resources (JD-R) model, which conceptualises burnout as the outcome of an imbalance between job demands and job resources (Demerouti et al., 2001). This model treats both demands and resources as broad, umbrella categories encompassing various workplace factors. Early applications of the model identified key demands such as work pressure, excessive workloads, role ambiguity, role conflicts, stress-inducing events, and emotional demands. Prolonged exposure to such demands results in chronic fatigue and a psychological distancing from one's work. Conversely, job resources—elements that facilitate goal achievement and foster personal growth—can influence the experience of burnout (Bakker & De Vries, 2020). When people lack resources like social support, independence, or opportunities to use different skills, their work can feel meaningless, and their basic psychological needs may not be met, but adequate resources can mitigate the adverse effects of job demands (Bakker & De Vries, 2020; Bakker et al., 2005; Schaufeli, 2017). For instance, Bakker et al. (2005) observed that factors such as workload, emotional and physical demands, and work-home conflict did not exacerbate burnout if employees engaged with sufficient levels of autonomy, constructive feedback, and social support or maintained robust supervisor relationships (Bakker & De Vries, 2020).

Job Demands

As the wide array of factors mentioned suggests, job demands represent a highly heterogeneous category within the JD-R framework. For analytical clarity, it is useful to organise these multifaceted stressors thematically. The distinction among three principal domains—quantitative, emotional, and role-related demands—is a practical approach that aligns well with the key stressors consistently highlighted in prominent reviews of the model (e.g., Bakker & Demerouti, 2017). The quantitative demands are a broad construct of work intensity that includes not only the volume and pace of tasks (workload, time pressure) but also the sheer cognitive and physical output required to perform the job. The second domain, emotional demands, involves the strain of managing one's own and others' emotions, particularly in interpersonally challenging situations. The final category centres on role-related demands, such as role conflict and ambiguity. While all three domains are significant contributors to occupational stress, this study narrows its focus to the first two. The reason for this is that in leadership positions, role-related demands can be particularly complex and difficult to isolate; navigating conflicting expectations and inherent ambiguity is often an intrinsic part of the leadership function itself rather than a distinct, variable stressor. Therefore, our research concentrated on two overarching constructs on the demands side of the model: quantitative and emotional demands.

Quantitative job demands refer to the amount and pace of work, such as workload and overtime, that require physical or psychological effort. These demands are influenced by both external (e.g., environmental uncertainty, labour market changes) and internal factors (e.g., management style, Human Resource Management practices; Van Veldhoven, 2013). Research demonstrates that quantitative demands perceptions are primarily shaped by organisational and structural factors rather than social networks. Inegbedion et al. (2020) found that organisational staff strength and structural workload comparisons were the dominant predictors of workload balance perception. Similarly, Bakker and Demerouti's (2017) Job Demands-Resources model emphasises that organisational aspects, including physical, psychological, and structural job characteristics, fundamentally determine quantitative demands. Quantitative job demands are not inherently harmful; under certain conditions, they can promote engagement and productivity. The motivational outcomes of quantitative job demands are mixed: While high demands can decrease job satisfaction and increase turnover, moderate levels may foster learning and engagement (Bowling & Kirkendall, 2012; Van Veldhoven, 2013). Quantitative demands are positively correlated with levels of burnout (Kumar & Narula, 2021; Salvagioni et al., 2017; Schaufeli et al., 2017). Research indicates that burnout mediates the relationship between job demands and mental health problems, suggesting that interventions targeting demands may indirectly improve employee mental health (Schaufeli & Bakker, 2004).

Emotional effort is increasingly expected in many professions, reflecting a broader trend toward greater emotional engagement at work (Reh & Scheibe, 2025). In human service occupations, emotionally charged interactions are frequent, and emotional work and emotional demands are especially prominent (Aiello & Tesi, 2017; Geisler et al., 2019; Reh & Scheibe, 2025). Emotional demands arise when individuals must deal with or are confronted by other people's feelings at work, and they are consistently associated with burnout and adverse outcomes, such as sickness absence and stress-related problems. However, the impact of emotional demands often depends on the presence and levels of other job demands and resources. Emotional demands in human service

roles are not solely detrimental; they can also serve as motivators and enhance work engagement when supported by adequate personal resources (Aiello & Tesi, 2017; Bakker & Sanz-Vergel, 2013; Demerouti et al., 2001; Geisler et al., 2019). These demands can help employees structure interpersonal interactions and amplify positive emotions, which are linked to greater job satisfaction (Aiello & Tesi, 2017; Côté & Morgan, 2002). Emotional demands can therefore have both negative and positive effects, depending on the availability of resources (Aiello & Tesi, 2017; Bakker & Demerouti, 2007; Bakker et al., 2003; Geisler et al., 2019; Schaufeli & Taris, 2014; Xanthopoulou et al., 2007, 2009). Given that human service professionals often face emotional demands alongside other types of demands, understanding their effects in different contexts is essential to determine when they function as challenges or hindrances (Aiello & Tesi, 2017; Geisler et al., 2019; Schaufeli & Taris, 2014).

A Key Social Resource: Workplace Friendships Within the Professional Core Discussion Network

Similar to job demands, the job resources component of the JD-R model is an equally broad and multifaceted umbrella category. It encompasses a wide range of factors, from organisational-level elements like autonomy, opportunities for professional development, and performance feedback, to interpersonal factors such as social support from supervisors and colleagues. While any of these resources can play a crucial role in mitigating burnout, the present study deliberately narrows its scope to investigate one particularly nuanced form of social support: workplace friendships operating within the context of the professional core discussion network.

The workplace is not only a site of formal work, but also a key setting for the development of social relationships. Informal networks evolve alongside formal structures, giving rise to distinct interpersonal ties (Granovetter, 1973; Sias et al., 2011). Among these, the professional core discussion network (pCDN) is particularly notable; it comprises a small group of trusted colleagues with whom individuals routinely engage in confidential, work-related discussions (Schutzmann et al., 2025; Small et al., 2014). Unlike broader social networks, the pCDN is defined by its core function: It is a primary source for sense-making, problem-solving, and receiving trusted feedback on sensitive professional matters. The confidentiality and high level of trust inherent in these ties are what allow individuals to discuss complex or politically sensitive issues that they would not share more widely.

The concept of workplace friendship, however, remains ambiguously defined in the literature, reflecting a broader lack of consensus regarding the definition of friendship in general (Albert et al., 2020). Nevertheless, both types of relationships share distinguishing characteristics that set them apart from other social ties. Key features of workplace friendships include voluntariness, informality, mutual trust, emotional closeness, and support, as well as the tendency for individuals to engage with each other beyond their professional roles and as whole persons (Albert et al., 2020; Berman et al., 2002). Within professional core discussion networks, workplace friendships form a specific subtype, characterised by emotional closeness, mutual liking, and voluntary socio-emotional engagement—distinct from, but often overlapping with, professional support ties (Berman et al., 2002; Durrah, 2022; Ferris et al., 2009; Methot et al., 2016; Sias, 2009).

These networks, especially for leaders, often extend beyond the physical boundaries of the workplace to include external professional and personal relationships, playing a crucial role in support, information flow, and professional development (Blommaert et al., 2019; Van Wijngaarden et al., 2006; Volmer & Wolff, 2018).

Workplace friendships have been linked to improved mental health, job satisfaction, organisational commitment, and performance, and may serve as valuable coping resources in high-demand professions such as social care, enhancing resilience and reducing burnout risk (Chen et al., 2024; Methot et al., 2016; Schutzmann et al., 2025; Zarankin & Kunkel, 2019). However, maintaining these relationships is a resource-intensive endeavour. The integration of affective and instrumental roles (relationship multiplexity) can enhance performance, but it can also increase emotional strain and maintenance demands (Methot et al., 2016).

This duality is consistent with the social ledger framework, conceptualising workplace relationships as sources of both social assets and liabilities. According to this perspective, the net impact of workplace relationships is determined by the dynamic balance between these positive and negative elements (Labianca & Brass, 2006). This complexity is especially pronounced in leadership roles, where the overlap of professional and personal ties intensifies both the benefits and challenges of workplace friendships. Theoretical frameworks such as Leader–Member Exchange (LMX) and Leader–Network Exchange (LNX) further highlight the complex organisational and individual outcomes of such relationships (Afota et al., 2024; Soares et al., 2020).

When placed within the Job Demands-Resources model, the pCDN and the workplace friendships within it can be understood as a highly specific and potent form of the job resource known as social support. However, conceptualising it merely as support fails to capture its unique properties. Unlike the broad perception of collegial support often measured in JD-R studies, the pCDN is a tangible network structure that provides targeted, mul-

tipler support—simultaneously offering instrumental advice for work tasks and affective validation for emotional strains. Furthermore, this complexity means that such relationships do not function solely as a resource. Consistent with the social ledger framework, the maintenance demands and potential for interpersonal conflict mean these ties can also function as a job demand themselves. It is this dual potential—to be a powerful buffer against burnout on one hand, and a source of additional strain on the other—that makes the pCDN a critical factor to examine separately from more generic measures of social resources.

In summary, understanding workplace friendships—especially in leadership contexts—requires a relationship multiplexity perspective, together with a consideration of how ties can simultaneously offer support and impose burdens, depending on their content, structure, and the broader relational environment.

Research Questions and Hypotheses Development

Different structural compositions can be identified when considering workplace friendships within professional core discussion networks. First, some individuals may not report any trusted ties, representing a state of social isolation or disconnectedness. Second, a pCDN may consist exclusively of non-friend ties. Third, a mixed configuration may emerge, where the network includes friends and non-friends. Finally, some leaders may maintain a pCDN composed solely of workplace friends. Each configuration may offer different resources and pose distinct psychological challenges, influencing leaders' perceived demands and vulnerability to burnout.

Thereby, the friendship-based structural composition of professional core discussion networks encompasses not only the presence of friendship ties but also their qualitative and topological characteristics, which fundamentally shape leaders' vulnerability to burnout.

Our study proposed a series of hypotheses to test these relationships empirically. To provide a clear and logical structure, our hypotheses were organised around four central themes. First, the relationship between the pCDN composition and the leaders' experience of burnout was examined. The second and third sections investigated the association between the pCDN composition and the perceived emotional and quantitative demands. Finally, the potential moderating role of these networks was explored, specifically how different pCDN compositions might alter the established relationship between job demands and burnout.

The Relationship Between pCDN Composition and Burnout

A pCDN refers to the group of colleagues with whom employees regularly engage in confidential, work-related discussions (Schutzmann et al., 2025). When these ties consist exclusively of non-friends, interactions tend to be purely instrumental and lack emotional support. As Methot et al. (2016) noted, workplace ties that incorporate elements of friendship provide richer emotional and instrumental support, whereas purely professional ties may become draining over time due to the ongoing cognitive effort and unresolved emotional tension (Bakker et al., 2005). According to the social ledger perspective, workplace relationships can carry both benefits and psychological costs (Labianca & Brass, 2006). Based on these considerations, it was hypothesised that maintaining a pCDN composed exclusively of non-friend ties would be associated with higher levels of burnout than any other network configuration or even the absence of such a network.

H1a *Leaders who maintain pCDNs composed exclusively of non-friend ties experience the highest levels of burnout among the groups with different pCDN compositions.*

A workplace friendship is characterised by emotional closeness, mutual care, and voluntary socio-emotional engagement (Methot et al., 2016; Sias, 2009). According to Methot et al. (2016), these ties offer instrumental and emotional support, which can contribute to maintaining psychological well-being. Emotionally supportive friendships may help reduce feelings of isolation and lower the risk of burnout (Rogers et al., 2016). Findings by Schutzmann et al. (2025) further suggested that the mere presence of a single friend within a professional discussion network can significantly protect against burnout, regardless of the number of friendships. Based on these considerations, it was hypothesised that maintaining a pCDN that includes workplace friendships, either partially or entirely, would be associated with lower levels of burnout than maintaining a network composed exclusively of non-friend ties.

H1b. *Maintaining pCDNs that partly or entirely include friendship ties decreases the burnout level.*

The Relationship Between pCDN Composition and Perceived Emotional Demands

Maintaining workplace friendships requires emotional investment, as these relationships offer support and entail expectations of loyalty, availability, and emotional presence (Methot et al., 2016). According to social ledger theory, relationships have a dual nature, providing benefits while also carrying emotional and psychological costs (Labianca & Brass, 2006).

H2a. *Leaders whose pCDNs include at least one workplace friend experience higher emotional demands than those whose pCDNs consist exclusively of non-friends.*

Workplace friendships are increasingly understood as relationships that, while potentially offering significant emotional and instrumental support, also require substantial emotional investment and maintenance, especially in leadership roles where professional and personal boundaries often overlap (Methot et al., 2016). According to the social ledger framework, workplace relationships—including friendships—have a dual nature: They can provide valuable resources but also impose emotional and psychological costs, particularly as the number of such ties grows (Labianca & Brass, 2006). Maintaining multiple workplace friendships involves ongoing expectations of loyalty, availability, and emotional presence, which can become increasingly demanding as these relationships multiply (Methot et al., 2016). The integration of affective and instrumental roles, known as relationship multiplexity, may enhance support but also intensify emotional strain and the effort required to sustain these ties (Methot et al., 2016). The social ledger perspective highlights that the overall effect of workplace friendships depends on how the benefits and liabilities of these relationships are balanced (Labianca & Brass, 2006). Theoretical and empirical literature suggests that both too few and too many friendship ties can be problematic: A lack of supportive ties may leave leaders vulnerable to stress, while an abundance of such ties may create excessive emotional obligations or *emotional overload* (Labianca & Brass, 2006; Methot et al., 2016). Thus, the relationship between the number of friends in pCDNs and perceived emotional demands is likely to be complex and context-dependent.

H2b. *Among leaders, the number of workplace friendships within their pCDNs is associated with the level of perceived emotional demands.*

The Relationship Between pCDN Composition and Perceived Quantitative Demands

Perceptions of quantitative job demands, defined as the amount and pace of work, have long been attributed primarily to organisational and structural factors (Van Veldhoven, 2013). However, the extent to which workers' personal cooperation networks shape these perceptions remains an open question. Some studies have suggested that perceived cooperation has explanatory power, indicating that workplace relationships may influence workload perceptions (Väisänen et al., 2024). In contrast, others have suggested that organisational staff strength and formal workload comparisons account for a significant portion of the variance in perceived demands (Inegbedion et al., 2020). Consistent with Van Veldhoven's perspective (2013), the organisational definition of quantitative demands was used in this research, while it was also acknowledged that social network factors may still prove to be influential in different contexts.

H3. *The friendship-based structural composition of leaders' pCDNs does not affect the perceived quantitative demands.*

The Moderating Role of pCDN Composition on the Demands-burnout Relationship

Emotional demands arise when individuals must deal with others' feelings at work and are consistently linked to burnout and adverse outcomes, including sickness absence and stress-related problems (Aiello & Tesi, 2017; Demerouti et al., 2001; Maslach & Leiter, 2016; Schaufeli et al., 2017). For leaders, these demands are intensified, as they must manage both their own and their colleagues' emotions, often without sufficient organisational support (Wittmers & Maier, 2023).

H4a. *Among leaders, higher levels of emotional demands are associated with increased burnout.*

Quantitative job demands, defined as high workload, time pressure, and the need to accomplish many tasks within a limited time, are well-established predictors of burnout in the occupational health literature. When such

demands are persistently high and not balanced by adequate resources or recovery, they contribute to chronic stress and increase the risk of burnout (Bakker et al., 2003; Kumar & Narula, 2021).

H4b. *Among leaders, higher levels of quantitative demands are associated with increased burnout.*

Theoretical frameworks such as the relationship multiplexity perspective and social ledger theory (Labianca & Brass, 2006) suggest that workplace friendships can serve as both resources and liabilities. The composition of pCDNs—specifically, the presence or absence of such valuable relationships as workplace friendship ties—may influence how individuals cope with emotional demands and whether it results in burnout. Supportive ties can buffer the negative effects of emotional strain, while the lack or overabundance of such ties may intensify it (Methot et al., 2016).

H4c. *Among leaders, the friendship-based structural composition of pCDNs moderates the effect of emotional demands on burnout.*

While social support and network composition can influence how employees manage emotional strains, research has indicated that quantitative demands are primarily associated with organisational and structural factors (Van Veldhoven, 2013). As such, the friendship-based structural composition of pCDNs is unlikely to moderate the relationship between quantitative demands and burnout.

H4d. *Among leaders, the friendship-based structural composition of pCDNs does not moderate the effect of quantitative demands on burnout.*

To summarise, our hypotheses guided a two-stage investigation. First, a series of analyses to determine whether leaders' friendship-based pCDN composition is associated with significant differences in their perceived levels of Quantitative Demands, Emotional Demands, and Burnout was conducted. Second, the potential moderating role of this pCDN composition was tested. Specifically, it was examined whether these network configurations alter the strength of the relationship between Quantitative Demands and Burnout, and likewise between Emotional Demands and Burnout.

Methods

Data Collection

The present study employed a quantitative, cross-sectional research design to explore the association of burnout with the friendship-based structural composition of pCDNs and emotional and quantitative demands.

Power analysis was performed using G*Power 3.1.9 (Faul et al., 2007) to estimate the required sample size for an ANCOVA model with the following parameters: number of groups 6, number of covariates 2, estimated effect size $f = .20$ (small to medium effect size), $\alpha = .05$, $\beta = .20$. The estimated total sample size for the analysis was 416 participants.

Participants were recruited from the master's program of the Hungarian Social Sector Leadership Training. The inclusion criteria were that respondents were active participants in the training and held a leadership position in an institution of the Hungarian social care system. The data collection was approved by the university's research ethics committee (Semmelweis University SE RKEB 61/2019). During the data collection, a multi-dimensional questionnaire was distributed to a total of 667 social care leaders at the training site. The questionnaire was completed by the participants on paper at the end of their training sessions. The research was conducted in Hungarian, participation was voluntary, and respondents could withdraw their participation at any time without consequences. Data were recorded anonymously using pseudocode.

A total of 547 social care managers completed the questionnaire (hence, the completion rate was 82.0%). The gender distribution is disproportionate, as expected based on the population, with 459 women (83.9%), 82 men (15.0%), and 6 persons not stating their gender (1.1%). The mean age is 45.7 years ($SD = 7.0$, $Min = 23$, $Max = 60$ years). The sample is highly educated, with 0.4% holding only a vocational qualification based on a high school diploma, 79.0% having a higher education degree, 20.1% having further education based on a higher

degree, and 0.6% having a PhD. They have an average of 21.8 years ($SD = 8.9$) of work experience and 10.2 years ($SD = 6.9$) of management experience and manage an average of 54.7 subordinates ($SD = 97.5$). 26.6% of the sample work in a village, 44.4% in a city, 18.2% in a county town or county seat, and 10.8% in the capital.

Measures

The Copenhagen Psychosocial Questionnaire

The Copenhagen Psychosocial Questionnaire (COPSOQ) II middle version (Pejtersen et al., 2009) was used to measure the psychosocial factors at work. The Hungarian version of the questionnaire was validated by Nistor et al. (2015). The COPSOQ is a widely recognised and comprehensive instrument for assessing psychosocial workplace factors, and many of its 28 scales align directly with the core components of the Job Demands-Resources model. From this extensive set of available scales, we selected those that best represented the key theoretical constructs of our study. Alongside the Burnout scale, we chose two broad and well-established scales from the domain of demands: Quantitative demands and Emotional demands. All three scales used in the study had four items each. According to the instructions (Pejtersen et al., 2009), responses to the items were collected using a five-point Likert-type scale. The values were converted to a 0–100 scale, and the COPSOQ dimensions were calculated by averaging the transformed items. The reliability for the Quantitative demands scale was excellent, Cronbach's $\alpha = .81$. For the Emotional demands scale, it was acceptable, $\alpha = .62$. For the Burnout scale, the reliability was excellent, with $\alpha = .90$.

Measuring pCDN

To examine the friendship-based structural composition of pCDNs, the study employed a social network analysis approach. Data on pCDNs were gathered using a recall-based name generator method (Burt et al., 2012; Pustejovsky & Spillane, 2009), which specifically targeted a subset of personal networks characterised by confidential, work-related discussions. Participants were instructed to list up to five individuals with whom they had engaged in confidential conversations about professional challenges or workplace conflicts over the previous six months (Merluzzi & Burt, 2013). To further characterise these ties, name interpreter modules (Stark, 2017) were integrated, capturing details such as the alter's gender or age. Crucially, respondents were also asked to indicate whether they considered each named individual to be a friend. The instruction prompted respondents to use their own subjective perception to make this designation, which is a standard methodological practice in friendship research that recognises the inherently subjective, self-defined nature of friendship (e.g., Adams & Allan, 1998; Marsden, 1990; Small, 2013; Wellman & Wortley, 1990). Following this widely used operationalisation ensures that the relational meaning of "friendship" reflects the respondents' subjective experience within their professional networks. Based on these responses, a variable was computed as the proportion of named pCDN members who were identified as friends.

Data Analysis

Based on cross-tabulating the number of pCDNs and the ratio of friends among them, we created six groups (see Table 1). The new grouping variable was referred to as pCDN-Groups in all subsequent analyses. One group was formed by those who indicated that they did not have any pCDNs (hereafter referred to as the "no-pCDN" group). The proportion of friends in this group was obviously not meaningful. One group consisted of people who mentioned one pCDN who was not considered a friend (referred to as "one-non-friend-pCDN" group), and another group consisted of people who also mentioned only one pCDN whom they considered a friend (referred to as "one-friend-pCDN" group). Those who listed more than one pCDN were classified into three additional groups. One group consisted of those for whom none of the pCDNs were friends (referred to as the "multi-non-friend-pCDNs" group), a second group consisted of those for whom all of the listed pCDNs were friends (referred to as the "multi-all-friend-pCDNs" group), and the last group consisted of those for whom there was a mixture of friends and non-friends among their pCDNs (referred to as the "multi-mixed-pCDNs" group). The distribution of the sample among the groups is reported in the Results section using frequency and ratio indicators.

Before comparing the groups on Burnout, Quantitative demands, and Emotional demands, we checked whether there were any differences between the groups on demographic indicators that could influence the results as cofounder variables (Appendix Table 1). No gender difference was detected between the groups. On the other

hand, a slight age difference was found. Post hoc analysis revealed that this resulted from the fact that the no-pCDN group was slightly older compared to the other groups ($M = 47.8$, $SD = 6.8$, compared to $M = 43.6$ – 46.9 , $SD = 5.8$ – 7.5). Consequently, they had also slightly more work experience ($M = 23.6$, $SD = 9.0$, compared to $M = 19.0$ – 23.1 , $SD = 7.7$ – 9.4). Still, there was no significant difference in the managerial experience or in the number of subordinates. We found no difference in education or workplace location. Accordingly, analyses were controlled for age when comparing groups along the dimensions of Burnout, Quantitative demands, and Emotional demands.

The differences between the six groups in Burnout, perceived Quantitative demands, and Emotional demands were examined using ANCOVA models, where age was included as a control covariate. Holm's procedure was used as a post hoc test. Normal distribution was assumed for all three variables ($S = -0.18$ to 0.19 and $K = -0.19$ to 0.13). Homogeneity of variance was tested using Levene's test, and the assumption was met for all analyses.

We used an additional ANCOVA model to test the effect of perceived Quantitative and Emotional demands on Burnout, and we also analysed whether the pCDN-Groups moderated these effects. When building the model, we included the pCDN-Groups and the Quantitative and Emotional demands as predictor variables, as well as the interaction terms between the pCDN-Groups and the two demand variables (pCDN-Groups \times Quantitative demands and pCDN-Groups \times Emotional demands). To explore the nature of the significant interaction between Emotional demands and the pCDN-Groups, we used simple slopes and a series of Johnson-Neyman analyses. In the simple slope analysis, we estimated the relationship between Emotional demands and Burnout separately for each group. For the series of Johnson-Neyman analyses, we continually compared two groups and looked for the range of values of Emotional demands over which the difference in Burnout between the two groups was significant. The differences were estimated only within the range where both groups had data: that is, the range encompassing the 5th and 95th percentiles of both groups. The nature of the interaction between the pCDN-Groups and the Emotional demands was interpreted by combining the results of the simple slope analysis and the Johnson-Neyman analysis. All analyses were carried out using JASP 0.19.3. (JASP Team, 2025).

Results

Forming the Friendship-Based Structural Composition of Professional Core Discussion Networks

Participants listed an average of 2.3 ($SD = 1.6$) pCDNs. Of these pCDNs, an average of 1.1 ($SD = 1.1$) people were marked as friends, representing an average of 42.9% ($SD = 41.0\%$) of their listed pCDNs. Table 1 contains the frequency data distributed along the cross-tabulation of these two variables with the primary analytical group names. In the sample, 83 people (15.2%) did not mark any pCDNs at all; as mentioned in the Methods section, in further analyses, we refer to them as the no-pCDN group. 180 people (32.9%) only listed pCDNs that they did not consider friends. Among these 180 people, 57 (10.4%) mentioned one such pCDN, referred to as the one-non-friend-pCDN group, and 123 (22.5%) listed several non-friend pCDNs, referred to as the multi-non-friend-pCDN group. 165 people (30.2%) listed a mixture of friend and non-friend ties, referred to in further analysis as the multi-mixed-friend-pCDN group. 119 people (21.8%) listed only pCDNs they considered friends; of these 119 people, 51 people (9.3%) mentioned one such friend, referred to as the one-friend-pCDN group, and 68 people (12.4%) mentioned more than one, referred to as the multi-all-friend-pCDN group.

Table 1. Frequency Data Across the Contingency Table of the Number of Mentioned pCDNs and the Ratio of Friends

Number of pCDNs	Ratio of friends among pCDN												
	NA	0%	20%	25%	33.3%	40%	50%	60%	66.6%	75%	80%	100%	
0	83 [I.]												
1		57 [II.]											51 [V.]
2		60 [III.]					30					[IV.]	40 [VI.]
3		34			26				25				23
4		13		15			9			10			5
5		16	12				17		10			11	0

Note. $N = 547$. Some cells are blank because such combinations are not possible.

Block I represents the no-pCDN group. Block II represents the one-non-friend-pCDN group. Block III represents the multi-non-friend-pCDN group. Block IV represents the multi-mixed-pCDN group. Block V represents the one-friend-pCDN group. Block VI represents a multi-all-friend-pCDN group.

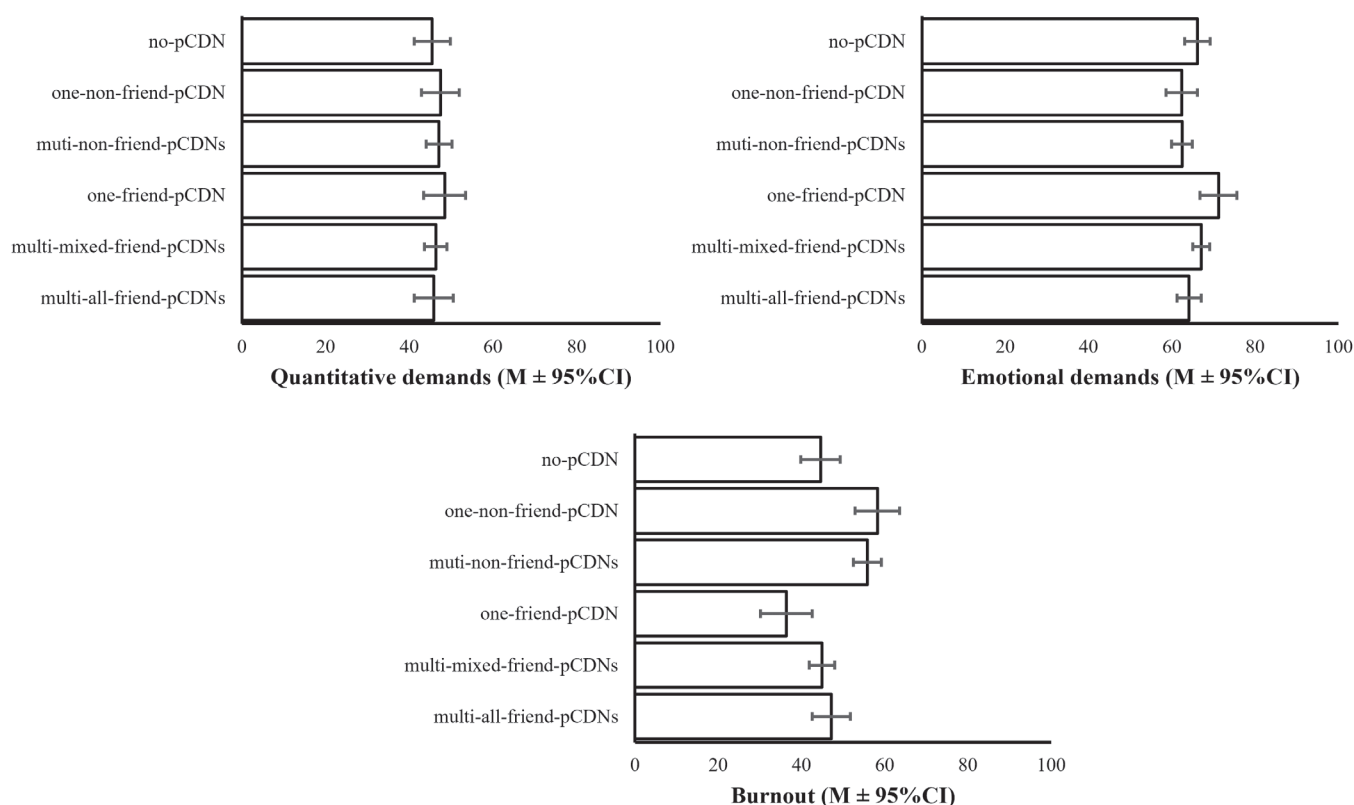
To explore the differences between these six distinct pCDN groups, a comparative descriptive analysis was conducted. The means and standard deviations for Quantitative Demands, Emotional Demands, and Burnout were calculated separately for each of the groups. These detailed results are presented in Table 2, and a visual summary of the group means is provided in Figure 1.

Table 2. Means and Standard Deviations of the Burnout and the Quantitative and Emotional Demands by Groups

pCDN-Groups	n	Burnout		Emotional demands		Quantitative demands	
		M	SD	M	SD	M	SD
no-pCDN		44.59	21.61	66.11	13.88	45.48	19.79
one-non-friend-pCDN	83	58.26	20.15	62.35	14.34	47.44	17.00
multi-non-friend-pCDNs	57	55.84	19.00	62.43	14.15	47.10	17.22
one-friend-pCDN	123	36.40	22.07	71.20	15.82	48.45	17.77
multi-mixed-friend-pCDNs	51	44.94	19.94	67.02	13.36	46.33	17.42
multi-all-friend-pCDNs	165	47.15	19.00	64.15	11.81	45.86	19.28

Note. N = 547.

Figure 1. Degree of Burnout and Quantitative and Emotional Demands by pCDN-Groups.



Burnout by pCDN Composition (H1a, H1b)

Using ANCOVA, we analysed the differences between the pCDN-Groups in Burnout while controlling for age. The difference between the groups was significant ($F(5, 528) = 11.94, p < .001, \text{part. } \eta^2 = .10$). Using the Holm procedure for post hoc analysis (Table 3), we found the following differences to be significant. The one- and the multi-non-friend-pCDN groups reported the highest level of burnout. It was significantly higher than any of the other groups. Lower levels of burnout were observed in the multi-mixed- and all-friend-pCDNs groups, as

well as in the no-pCDN group. The lowest burnout was observed in the one-friend-pCDN group, which was significantly lower than the multi-mixed- and all-friend-pCDN groups, and marginally significantly lower than the no-pCDN group.

Emotional Demands by pCDN Composition (H2a, H2b)

The second ANCOVA was used to test the differences between the groups in perceived Emotional demands, controlled for age. The effect of the pCDN-Groups was significant, $F(5, 540) = 4.13, p = .001$, part. $\eta^2 = .04$. Based on the descriptive statistics and the post hoc analysis (Table 2, Table 3, and Figure 1), the one-friend-pCDN group experienced the highest Emotional demands, and the lowest values were reported by the one- and the multi-non-friend-pCDN groups. The difference between these groups was significant. All other groups were located between these and were not significantly different from any of them.

Quantitative Demands by pCDN Composition (H3)

The third ANCOVA tested the differences between the groups in the Quantitative demands, controlling for age. The main effect of the pCDN-Groups was not significant, $F(5, 540) = 0.29, p = .916$, part. $\eta^2 = .003$.

Table 3. Post Hoc Analysis of the ANCOVA Models

pCDN-Groups		Burnout				Emotional demands			
		Mean Diff.	SE	pHolm	Cohen's d	Mean Diff.	SE	pHolm	Cohen's d
no-pCDN	one-non-friend	-12.94	3.48	.002	-0.64	3.65	2.39	.897	0.26
	multi-non-friend	-11.05	2.86	.001	-0.55	3.65	1.96	.506	0.26
	one-friend	9.06	3.61	.062	0.45	-5.22	2.48	.359	-0.38
	multi-mixed-friend	0.13	2.72	> .999	0.01	-0.98	1.87	> .999	-0.07
	multi-all-friend	-1.84	3.31	> .999	-0.09	1.85	2.28	> .999	0.13
one-non-friend	multi-non-friend	1.89	3.23	> .999	0.09	0.00	2.22	> .999	0.00
	one-friend	22.01	3.87	< .001	1.10	-8.87	2.66	.013	-0.64
	multi-mixed-friend	13.07	3.09	< .001	0.65	-4.63	2.12	.327	-0.34
	multi-all-friend	11.10	3.61	.020	0.55	-1.80	2.48	> .999	-0.13
multi-non-friend	one-friend	20.11	3.37	< .001	1.00	-8.87	2.32	.002	-0.64
	multi-mixed-friend	11.18	2.40	< .001	0.56	-4.63	1.65	.067	-0.34
	multi-all-friend	9.21	3.05	.021	0.46	-1.80	2.10	> .999	-0.13
one-friend	multi-mixed-friend	-8.93	3.23	.035	-0.44	4.24	2.22	.506	0.31
	multi-all-friend	-10.91	3.72	.025	-0.54	7.07	2.56	.071	0.51
multi-mixed-friend	multi-all-friend	-1.97	2.90	> .999	-0.10	2.83	1.99	.936	0.21

Note. $N = 547$. Post hoc analysis was carried out using Holm procedure. Bold indicates significance at $p < .05$.

Moderation Effects of pCDN Composition (H4a-d)

We used an ANCOVA model to test the extent to which Emotional and Quantitative demands explain Burnout and whether the grouping variable moderates these effects. The main effect of the pCDN-Groups was significant, as reported previously, $F(5, 529) = 3.49, p = .004$, part. $\eta^2 = .03$. The main effect of the Quantitative demands was significant, $F(1, 529) = 7.28, p = .007$, part. $\eta^2 = .01$, and the interaction between the pCDN-Groups and the Quantitative demands was not significant, $F(1, 529) = 0.34, p = .891$, part. $\eta^2 = .003$. Quantitative demands increase burnout regardless of the number or composition of pCDNs.

The main effect of Emotional demands was significant, $F(1, 529) = 6.01, p = .015$, part. $\eta^2 = .01$. Additionally, the interaction between the grouping variable and the Emotional demands was also found to be significant, $F(1, 529) = 2.34, p = .041$, part. $\eta^2 = .02$. Using simple slope analysis, we determined that the Emotional demands

significantly increased burnout among the no-pCDN group ($B = .68, SE = .16, p < .001$). Its effect was marginally significant among the multi-mixed and the all-friend-pCDN groups ($B = .18, SE = .11, p = .052$ and $B = .33, SE = .20, p = .098$). Emotional demands did not have any significant effect on burnout among the one-friend-pCDN group ($B = .04, SE = .18, p = .825$), nor was it significant among the one- and multi-non-friend-pCDN groups ($B = .12, SE = .18, p = .526$ and $B = .01, SE = .13, p = .921$). Using Johnson-Neyman analysis, we determined the ranges of Emotional demands at which there is a significant difference in burnout between the groups. Summary results are presented in [Table 4](#), while detailed analysis is included in [Appendix Table 2](#).

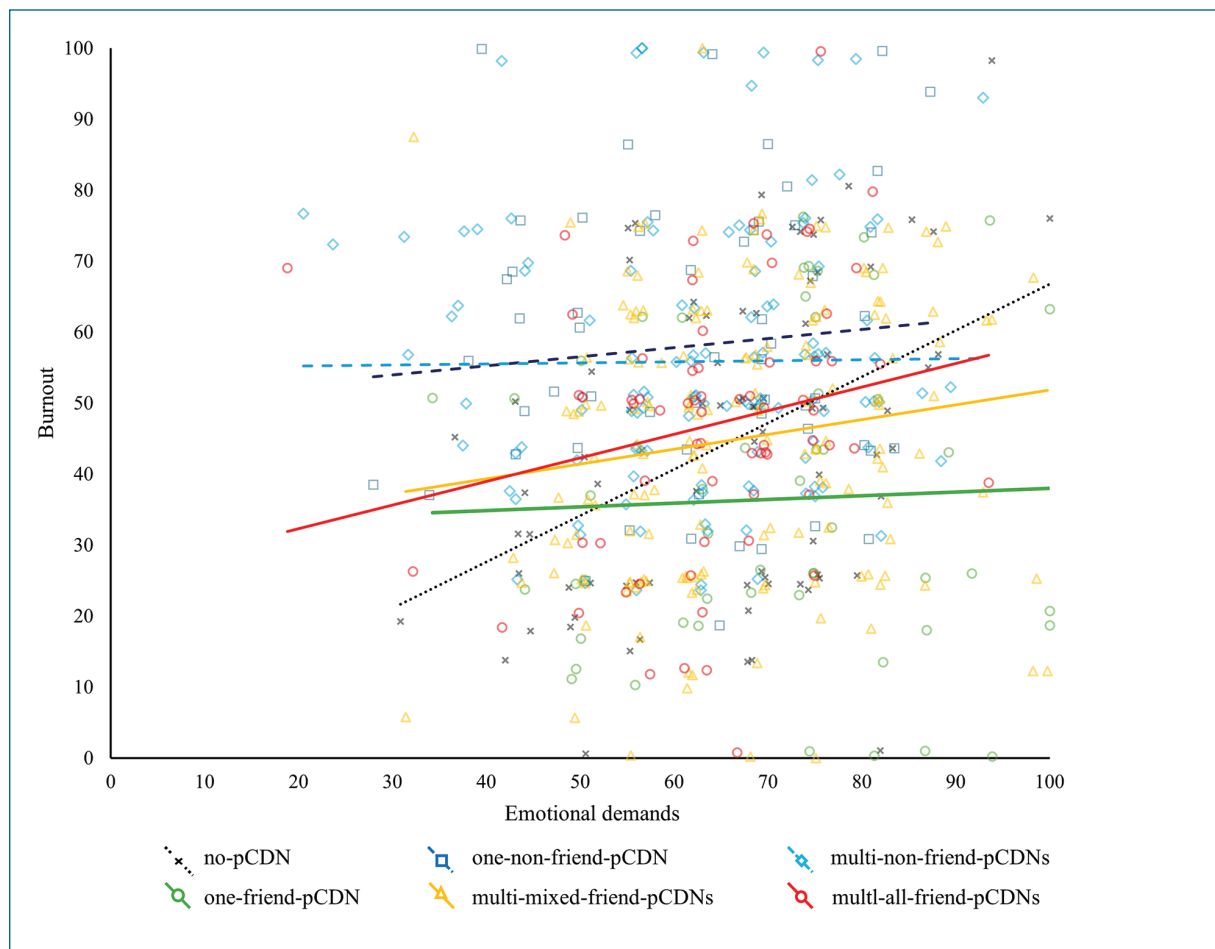
Table 4. Summary Results of the Johnson-Neyman Analysis Determining the Ranges of Emotional Demands Where the Difference in Burnout is Significant Between the Groups

Compared groups		Meaningful range of ED	Range of significance	Differences in burnout
no-pCDN	one-non-friend	44–81	ED < 76	no-pCDN < one-non-friend-pCDN
	multi-non-friend	44–81	ED < 74	no-pCDN < multi-non-friend-pCDNs
	one-friend	47–87	ED > 64	no-pCDN > one-friend-pCDN
	multi-mixed-friend	52–87	ED > 81	no-pCDN > multi-mixed-friend-pCDNs
	multi-all-friend	51–81	nowhere	no significant difference in the meaningful range
one-non-friend	multi-non-friend	38–81	nowhere	no significant difference in the meaningful range
	one-friend	47–81	all-over	one-non-friend-pCDN > one-friend-pCDN
	multi-mixed-friend	51–81	all-over	one-non-friend-pCDN > multi-mixed-friend-pCDNs
	multi-all-friend	51–81	ED < 75	one-non-friend-pCDN > multi-all-friend-pCDNs
multi-non-friend	one-friend	47–81	all-over	multi-non-friend-pCDNs > one-friend-pCDN
	multi-mixed-friend	51–81	all-over	multi-non-friend-pCDNs > multi-mixed-friend-pCDNs
	multi-all-friend	51–81	ED < 72	multi-non-friend-pCDNs > multi-all-friend-pCDNs
one-friend	multi-mixed-friend	51–87	ED > 59	one-friend-pCDN < multi-mixed-friend-pCDNs
	multi-all-friend	51–81	ED > 57	one-friend-pCDN < multi-all-friend-pCDNs
multi-mixed-friend	multi-all-friend	51–81	nowhere	no significant difference in the meaningful range

Note. ED represents emotional demands. The meaningful range of ED is determined by the fact that both groups must have data in the given range: That is, the range lies between the 5th and 95th percentiles of both groups. The range of significance is the range of ED where the difference in burnout is significant between the two groups.

Based on the results of the simple slope and Johnson-Neyman analyses, as well as [Figure 2](#), the following statements can be made about the nature of the interaction between Emotional demands and the pCDN-Groups variable. The one- and multi-non-friend-pCDN groups had the highest burnout. Emotional demands in these two groups were unrelated to burnout, with high burnout occurring even in the presence of low Emotional demands. The burnout rates of the two groups did not differ from each other at any level of Emotional demands. The lowest burnout was observed in the one-friend-pCDN group. Emotional demands were not associated with burnout in this group either. The group showed significantly lower burnout compared to the non-friend-pCDN groups at all levels of Emotional demands. In the case of the multi-mixed and all-friend-pCDN groups, we see a marginally significant, positive relationship between Emotional demands and burnout. When Emotional demands are low (<57–59 points), the two groups show low burnout, similar to the one-friend-pCDN group. However, in the case of high Emotional demands (>72–76 points), they show high burnout, similar to the one- and multi-non-friend-pCDN groups. The strongest association between Emotional demands and Burnout was seen in the no-pCDN group. This group's burnout was lowest when Emotional demands were low, but highest when demands were high.

Figure 2. Association Between Emotional Demands and Burnout Presented by pCDN-Groups



Discussion

This study systematically examined how the friendship-based structural composition of professional core discussion networks, emotional and quantitative job demands, and their interplay influence burnout among leaders in the social care sector. Recognising that high emotional and organisational pressures characterise leadership roles in social care, we focused on how different friendship-based structural compositions of professional core discussion networks (pCDNs) relate to leaders' experiences of emotional strain and exhaustion. By examining these group differences and their interactions with job demands, this analysis offers new insights into how social connections and workplace pressures jointly shape mental health in social care leadership.

Regarding the association between the friendship-based structural composition of pCDNs and burnout, *the analysis confirmed H1a: leaders whose pCDNs consist exclusively of non-friend ties experienced the highest levels of burnout*. These findings are consistent with the assumptions of Methot et al. (2016) about the importance of friendships at the workplace. *H1b was partially confirmed; leaders with pCDNs, including at least one friendship tie, showed lower burnout than non-friend groups, but low burnout was observed only in the one-friend group*. Groups with multiple mixed or all-friend ties exhibited intermediate levels of burnout. Leaders without any pCDN ties also exhibited intermediate levels of burnout. This nuanced finding suggests that not all forms of friendship equally reduce burnout; instead, targeted single-friend networks provide the most effective protection against burnout (Schutzmann et al., 2025). All this aligns with social ledger theory (Labianca & Brass, 2006), emphasising that workplace relationships generate both assets and liabilities, and suggests that targeted, high-quality support may be more effective than larger, more complex networks. Our findings regarding the no-friend pCDN group highlight the risks of social isolation and the potential for unhelpful or even harmful forms of social interaction. While our theoretical framework did not set out to measure this specific mechanism, the concept of co-rumination—drawn from related

occupational health research—offers a compelling lens through which to understand precisely how these supportive-seeming interactions can become detrimental. Recent research on co-rumination—the tendency to engage in excessive, repetitive negative problem talk—shows that not all social support is beneficial; in fact, co-ruminative interactions can increase stress and burnout, suppressing the protective effects of workplace support (Boren, 2013). In groups where leaders have no trusted friends or only non-friend discussion partners, problem discussions may be more likely to take the form of co-rumination, which is associated with higher burnout and impaired well-being. This demonstrates the importance of not only the presence of social ties, but also their quality and the nature of the support exchanged.

Concerning the effect of pCDN composition on perceived emotional demands, both H2a and H2b were supported. The one-friend group reported the highest emotional demands, while non-friend groups showed the lowest. The number of friend ties showed a nonlinear association with emotional demands: Non-friend ties corresponded to the lowest emotional demands, whereas the highest demands characterised the one-friend group. This pattern highlights that friendship ties amplify emotional demands due to relational complexities such as loyalty expectations and emotional labour. Our results align with the social ledger theory (Labianca & Brass, 2006), which posits that confidential relationships incur their own emotional and psychological costs. Additionally, they support the concept of Bakker and Demerouti (2007), who suggested that emotional energy is a limited resource, implying that focused, high-quality relationships are emotionally demanding. However, considering that despite the high emotional cost, this group showed the lowest burnout, we can assume that this focused and presumably intensive support may help replenish emotional resources even under strain. Conversely, leaders with non-friend networks were less able to buffer emotional exhaustion, consistent with the idea that social ties do not equally replenish emotional energy (Hobfoll et al., 1990).

Our third line of inquiry addressed whether the composition of pCDN affects perceived quantitative job demands. Hypothesis H3 was confirmed, as no significant differences emerged across the pCDN groups. Quantitative demands were uniformly high across the groups, indicating that network composition does not alter quantitative demand perception. Our results regarding quantitative job demands reinforce the foundational work of Van Veldhoven (2013), who argued that such demands are primarily shaped by organisational and structural factors, such as workload and policies, rather than by social network composition.

Finally, we examined the direct effects of emotional and quantitative demands on burnout and whether pCDN composition moderates these relationships. Consistent with prior research (Aiello & Tesi, 2017; Demerouti et al., 2001; Maslach & Leiter, 2016; Schaufeli et al., 2017), *we found that both emotional and quantitative demands are significant predictors of burnout in leadership roles (H4a, H4b). H4c was also supported, showing that pCDN composition moderated the effect of emotional demands on burnout.* Specifically, non-friend groups experienced high burnout regardless of emotional demand levels. The one-friend group maintained low burnout across all demand levels, and mixed or multiple-friend groups showed increased burnout only under high emotional demands. Additionally, the no-pCDN group showcased a uniquely strong association between emotional demands and burnout. They indicated the lowest burnout rate when emotional demands were low and the highest values when the demands were high. All of this highlights the fact that if the leader has no one with whom to discuss professional concerns, they will likely exhibit pronounced sensitivity to the emotional demands of their current job. The observed link between emotional demands and burnout is in line with burnout theory (Maslach & Leiter, 2016; Schaufeli et al., 2017), which emphasises emotional exhaustion and depersonalisation as core outcomes of sustained emotional strain. This is especially relevant for leaders, who, as Wittmers & Maier (2023) noted, must manage both their own and others' emotions under persistent pressure. The strong association between emotional demands and adverse outcomes, including burnout, is further supported by Burr et al. (2019), Demerouti et al. (2001), and Aiello & Tesi (2017), who documented the health risks associated with high emotional strain in the workplace. In contrast, and consistent with organisational models (Inegbedion et al., 2020; Van Veldhoven, 2013), *the composition of pCDNs did not moderate the relationship between quantitative demands and burnout (H4d).* This finding is consistent with the view that quantitative demands are heavily rooted in structural and organisational factors (Inegbedion et al., 2020; Van Veldhoven, 2013), which may make them less susceptible to buffering by the specific relational resources measured in our study.

These patterns consolidated the original six groups into four distinct profiles based on response homogeneity: the no-pCDN group (no confidential discussions), the non-friend pCDN group (discussions with one or more non-friends), the one-friend pCDN group (exclusive discussions with one friend), and the multiple pCDN group (discussions with multiple friends, whether mixed or exclusively friendly). This consolidation reflects the operational similarity between one and multiple non-friend groups, as well as between mixed and all-friend networks, while preserving the unique profile of the one-friend group.

Overall, the findings suggest that targeted emotional support from a single trusted confidant may be more effective in buffering burnout than larger networks, while discussions with non-friends consistently correlate with high burnout levels, regardless of demand. The vulnerability of the no-pCDN group to high emotional demands highlights the risks of social isolation, and the conditional effectiveness of robust networks under extreme demands illustrates the context-dependent nature of social support.

This study's findings are closely aligned with and extend several key theoretical perspectives introduced in the literature review. The social ledger theory (Labianca & Brass, 2006) frames workplace relationships as inherently dual in nature, offering both support and emotional costs—a dynamic that was evident in how friendship ties within pCDNs both buffered and, in some cases, amplified leaders' risk of burnout. This duality is further elaborated by the relationship multiplexity perspective (Methot et al., 2016), which highlights that workplace friendships can simultaneously serve as resources and liabilities, particularly under high emotional demands.

Strengths and Limitations

Our study had several limitations. First, the cross-sectional design may not have captured the full dynamics between the investigated phenomena, and we could not analyse reverse or reciprocal relationships. Second, reliance on self-report questionnaires (Network and COPSOQ II) may have introduced common method and social desirability biases (Podsakoff et al., 2012). Third, the unique characteristics of our sample—including gender, age, and the Hungarian context—might have affected the observed correlations and limited generalisability. Fourth, the name generator method for network data could lead to recall bias, potentially underrepresenting weaker or non-friend ties. Fifth, a potential limitation was the subjective nature of the friendship variable. Participants were asked to identify which colleagues they considered friends based on their own personal perception. This approach, while methodologically standard in friendship research, introduced individual variability, as the definition of friend likely differed across respondents. Consequently, the observed relationships between pCDN composition, burnout, and perceived demands were necessarily influenced by this inherent subjectivity, reflecting the impact of perceived social ties rather than a uniform, objective relationship category. Sixth, while we assessed quantitative demands, stress, and burnout with COPSOQ II, incorporating additional demands and alternative measurement tools could provide a more nuanced understanding and broaden the scope of our hypotheses. Seventh, some moderation effects may have gone undetected due to limited subgroup sizes. Finally, we did not examine organisational characteristics—such as culture, structure, or sector—which may significantly influence the formation and impact of workplace friendships.

These limitations highlight the need for future research with longitudinal, multi-source designs and a broader consideration of organisational context to deepen understanding of the impact of leaders' workplace friendships.

A notable strength of this study lies in its large sample size and the sample composition, which uniquely includes social care leaders, thereby enhancing the generalisability and statistical power of the findings.

Furthermore, the research adopted a comprehensive approach to examining workplace relationships, considering not only their structural aspects but also the degree of workplace friendship within these connections. This multifaceted analysis provided a nuanced understanding of how both the presence and the quality of workplace relationships may influence relevant outcomes.

Conclusion, Implications and Future Directions

Our findings demonstrate that the quality and structure of workplace relationships are critical in moderating the link between emotional demands and burnout among social care leaders. Leaders with a single, trusted workplace friend consistently showed low levels of burnout, regardless of emotional strain, highlighting the unique protective value of targeted, high-quality support. In contrast, those relying on non-friends or lacking confidants were more vulnerable to burnout, especially under high emotional demands. Mixed or all-friend networks offered some protection at lower demand levels, but their effectiveness diminished as emotional strain increased.

Both the presence and the composition of pCDNs are important for leaders' well-being. While friendships within pCDNs may offer emotional protection, they can also introduce strain, emphasising the need to consider not only the existence but also the quality of workplace relationships. These results highlight that not only the presence, but also the nature of social support, is crucial for a leader's well-being.

For social care leaders and organisations, this suggests that interventions should prioritise fostering high-quality, trusting relationships over simply expanding networks. Organisations should also address structural factors that drive job demands. By focusing on the configuration and depth of workplace support, organisations can better safeguard leader resilience and mental health.

Furthermore, the quantitative nature of this study, while identifying significant patterns, cannot capture the rich, subjective experiences underlying these network compositions. Future research would greatly benefit from qualitative methodologies to explore the “how” and “why” behind our findings. A phenomenological approach, such as Interpretative Phenomenological Analysis (IPA), could provide deep insights into the lived experience of leaders navigating the dual roles of colleague and friend. Alternatively, a Reflexive Thematic Analysis (RTA) of semi-structured interviews would be invaluable for exploring the nuanced ways leaders subjectively define “friendship” in their professional context and the specific interactional mechanisms that make these ties a resource or, conversely, a demand.

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Author contribution

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Declaration of interest statement

The authors have no conflicts of interest to disclose.

Ethical statement

This manuscript is the authors’ original work.

All participants engaged in the research voluntarily and anonymously.

Their data are stored in coded materials and databases without personal data.

Studies were approved by the Semmelweis University Regional and Institutional Committee of Science and Research Ethics SE RKEB: 61/2019.

Data availability statement

Datasets presented in this article are available from the corresponding author upon reasonable request.

Declaration on using artificial intelligence in research and manuscript preparation

The authors declare that they have used AI technologies (DeepL, Grammarly) for grammar and semantic correction. Each suggestion was reviewed by the authors.

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Appendix

Appendix Table 1. Demographic Differences Between the Groups

Demographic variables	no- pCDN	one-non- friend-pCDN	multi-non- friend-pCDNs	one-friend- pCDN	multi-mixed- friend-pCDNs	multi-all-friend- pCDNs	Comparison
Gender	ratio of females	82.9%	80.4%	84.4%	84.3%	87.7%	$\chi^2(5) = 2.20 p = .821 V = .06$
Age	years	47.8	44.3	46.9	43.6	45.5	$F(5, 541) = 4.35 p < .001 \eta^2 = .04$
Education	vocational qualification based on high school diploma	0%	1.8%	0%	0%	0%	
	higher education	75.6%	80.0%	79.70%	82.0%	77.0%	$\chi^2(5) = 1.39 p = .926$
	further education based on a higher degree	23.2%	18.2%	20.30%	16.0%	21.8%	
Work exp.	Ph.D	1.2%	0%	0%	2.0%	0.6%	
Managerial exp.	years	23.6	20.2	23.1	19.1	21.8	$F(5, 538) = 2.74 p = .019 \eta^2 = .02$
	years	10.4	10.9	10.2	9.4	10.1	$F(5, 538) = 0.31 p = .904 \eta^2 < .01$
Subordinates	person	56.9	45.8	42.5	58.6	54.9	$F(5, 534) = 1.26 p = .280 \eta^2 = .01$
	village	28.9%	17.9%	24.4%	25.5%	30.3%	
	city	38.6%	51.8%	42.3%	51.0%	44.2%	$\chi^2(5) = 4.44 p = .488$
Location	county town/seat	22.9%	14.3%	18.7%	9.8%	17.6%	
	capital	9.6%	16.1%	14.6%	13.7%	7.9%	

Note. Differences in Gender were analysed with Chi-squared test. Differences in Age, Work and Managerial experience, and Number of subordinates were analysed with One-way ANOVA and mean values are presented. Differences in Education and Location of the workplace were analysed using Kruskal-Wallis test.

Appendix Table 2. Johnson-Neyman Analysis Testing the Difference Between Groups in Burnout on Different Levels of Emotional Demands

Values of emotional demands	no-pCDN - one-non-friend		no-pCDN - multi-non-friend		no-pCDN - one-friend		no-pCDN - multi-mixed-friend		no-pCDN - multi-all-friend		one-non-friend - multi-mixed-friend		one-non-friend - multi-all-friend		multi-non-friend - multi-mixed-friend		multi-non-friend - multi-all-friend		one-friend - multi-mixed-friend		one-friend - multi-all-friend		multi-mixed-friend - multi-all-friend							
	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p						
0-35																														
36																														
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39																														
40																														
41																														
42																														
43																														
44	26.5	<.001	26	<.001																										
45	25.9	<.001	25.3	<.001																										
46	25.4	<.001	24.6	<.001																										
47	24.8	<.001	24	<.001	3.8	0.56																								
48	24.3	<.001	23.3	<.001	3.1	0.617																								
49	23.7	<.001	22.6	<.001	2.5	0.681																								
50	23.1	<.001	22	<.001	1.9	0.752																								
51	22.6	<.001	21.3	<.001	1.2	0.83																								
52	22	<.001	20.7	<.001	0.6	0.915	7.5	0.052	8.1	0.07	-1.4	0.724	-21.4	<.001	-14.5	<.001	-13.9	0.002	-20.1	<.001	-13.2	<.001	-12.6	0.001	6.9	0.176	7.5	0.184	0.6	0.881
53	21.4	<.001	20	<.001	0	0.993	6.9	0.061	7.7	0.071	-1.5	0.694	-21.5	<.001	-14.5	<.001	-13.7	0.002	-20	<.001	-13	<.001	-12.3	0.001	7	0.155	7.8	0.153	0.8	0.842
54	20.9	<.001	19.3	<.001	-0.7	0.895	6.4	0.072	7.4	0.073	-1.6	0.664	-21.6	<.001	-14.5	<.001	-13.5	0.002	-20	<.001	-12.9	<.001	-11.9	<.001	7.1	0.135	8.1	0.124	1	0.8
55	20.3	<.001	18.7	<.001	-1.3	0.792	5.9	0.086	7	0.075	-1.7	0.633	-21.6	<.001	-14.4	<.001	-13.3	0.001	-20	<.001	-12.7	<.001	-11.6	<.001	7.2	0.116	8.4	0.099	1.1	0.756
56	19.8	<.001	18	<.001	-2	0.686	5.4	0.104	6.7	0.079	-1.8	0.602	-21.7	<.001	-14.4	<.001	-13.1	<.001	-20	<.001	-12.6	<.001	-11.3	<.001	7.4	0.099	8.6	0.077	1.3	0.71
57	19.2	<.001	17.3	<.001	-2.6	0.58	4.9	0.128	6.3	0.084	-1.9	0.571	-21.8	<.001	-14.3	<.001	-12.9	<.001	-19.9	<.001	-12.5	<.001	-11	<.001	7.5	0.083	8.9	0.058	1.5	0.662
58	18.6	<.001	16.7	<.001	-3.2	0.477	4.4	0.159	6	0.09	-2	0.542	-21.9	<.001	-14.3	<.001	-12.6	<.001	-19.9	<.001	-12.3	<.001	-10.7	<.001	7.6	0.069	9.2	0.043	1.6	0.613
59	18.1	<.001	16	<.001	-3.9	0.38	3.9	0.2	5.7	0.099	-2.1	0.513	-22	<.001	-14.2	<.001	-12.4	<.001	-19.9	<.001	-12.2	<.001	-10.4	<.001	7.7	0.056	9.5	0.031	1.8	0.563
60	17.5	<.001	15.4	<.001	-4.5	0.292	3.3	0.252	5.3	0.111	-2.2	0.487	-22	<.001	-14.2	<.001	-12.2	<.001	-19.9	<.001	-12	<.001	-10	<.001	7.8	0.045	9.8	0.022	2	0.515
61	17	<.001	14.7	<.001	-5.1	0.216	2.8	0.32	5	0.127	-2.3	0.462	-22.1	<.001	-14.1	<.001	-12	<.001	-19.8	<.001	-11.9	<.001	-9.7	<.001	8	0.036	10.1	0.016	2.1	0.467
62	16.4	<.001	14	<.001	-5.8	0.153	2.3	0.405	4.6	0.147	-2.4	0.44	-22.2	<.001	-14.1	<.001	-11.8	<.001	-19.8	<.001	-11.7	<.001	-9.4	0.001	8.1	0.029	10.4	0.011	2.3	0.423
63	15.8	<.001	13.4	<.001	-6.4	0.104	1.8	0.509	4.3	0.173	-2.5	0.421	-22.3	<.001	-14	<.001	-11.6	<.001	-19.8	<.001	-11.6	<.001	-9.1	0.001	8.2	0.023	10.7	0.007	2.5	0.393
64	15.3	<.001	12.7	<.001	-7	0.068	1.3	0.632	3.9	0.207	-2.6	0.404	-22.3	<.001	-14	<.001	-11.4	<.001	-19.7	<.001	-11.4	<.001	-8.8	0.002	8.3	0.018	11	0.005	2.6	0.347

(continued on the next page)

Appendix Table 2. continued

Values of emotional demands	no-pCDN - one-non-friend		no-pCDN - multi-non-friend		no-pCDN - one-friend		no-pCDN - multi-mixed-friend		no-pCDN - multi-all-friend		one-non-friend - multi-non-friend		one-non-friend - multi-mixed-friend		one-non-friend - multi-all-friend		multi-non-friend - multi-mixed-friend		multi-non-friend - multi-all-friend		one-friend - multi-mixed-friend		one-friend - multi-all-friend		multi-mixed-friend - multi-all-friend							
	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p	Diff.	p						
64	15.3	<.001	12.7	<.001	-7	0.068	1.3	0.632	3.9	0.207	-2.6	0.404	-22.3	<.001	-14	<.001	-11.4	<.001	-19.7	<.001	-11.4	<.001	-8.8	0.002	8.3	0.018	11	0.005	2.6	0.347		
65	14.7	<.001	12	<.001	-7.7	0.043	0.8	0.771	3.6	0.248	-2.7	0.391	-22.4	<.001	-14	<.001	-11.1	0.001	-19.7	<.001	-11.3	<.001	-8.4	0.003	8.5	0.014	11.3	0.004	2.8	0.315		
66	14.2	<.001	11.4	<.001	-8.3	0.026	0.3	0.923	3.2	0.298	-2.8	0.38	-22.5	<.001	-13.9	<.001	-10.9	0.002	-19.7	<.001	-11.1	<.001	-8.1	0.005	8.6	0.011	11.6	0.003	3	0.289		
67	13.6	<.001	10.7	<.001	-9	0.016	-0.3	0.922	2.9	0.357	-2.9	0.372	-22.6	<.001	-13.9	<.001	-10.7	0.003	-19.7	<.001	-11	<.001	-7.8	0.008	8.7	0.009	11.9	0.002	3.2	0.268		
68	13	<.001	10	<.001	-9.6	0.009	-0.8	0.772	2.6	0.425	-3	0.366	-22.6	<.001	-13.8	<.001	-10.5	0.004	-19.6	<.001	-10.8	<.001	-7.5	0.013	8.8	0.008	12.2	0.002	3.3	0.251		
69	12.5	<.001	9.4	0.001	-10.2	0.005	-1.3	0.632	2.2	0.499	-3.1	0.362	-22.7	<.001	-13.8	<.001	-10.3	0.006	-19.6	<.001	-10.7	<.001	-7.2	0.02	8.9	0.006	12.4	0.001	3.5	0.238		
70	11.9	0.001	8.7	0.003	-10.9	0.003	-1.8	0.509	1.9	0.578	-3.2	0.36	-22.8	<.001	-13.7	<.001	-10.1	0.009	-19.6	<.001	-10.5	<.001	-6.9	0.031	9.1	0.006	12.7	0.001	3.7	0.229		
71	11.4	0.003	8.1	0.007	-11.5	0.002	-2.3	0.406	1.5	0.66	-3.3	0.359	-22.9	<.001	-13.7	<.001	-9.8	0.014	-19.6	<.001	-10.4	<.001	-6.5	0.047	9.2	0.005	13	0.001	3.8	0.222		
72	10.8	0.006	7.4	0.017	-12.1	0.001	-2.8	0.321	1.2	0.742	-3.4	0.36	-22.9	<.001	-13.6	<.001	-9.6	0.02	-19.5	<.001	-10.2	<.001	-6.2	0.069	9.3	0.005	13.3	<.001	4	0.218		
73	10.2	0.011	6.7	0.034	-12.8	<.001	-3.3	0.254	0.8	0.822	-3.5	0.362	-23	<.001	-13.6	<.001	-9.4	0.029	-19.5	<.001	-10.1	<.001	-5.9	0.096	9.4	0.005	13.6	0.001	4.2	0.216		
74	9.7	0.02	6.1	0.065	-13.4	<.001	-3.9	0.201	0.5	0.899	-3.6	0.364	-23.1	<.001	-13.5	<.001	-9.2	0.039	-19.5	<.001	-9.9	<.001	-5.6	0.13	9.6	0.005	13.9	0.001	4.3	0.216		
75	9.1	0.034	5.4	0.112	-14.1	<.001	-4.4	0.161	0.1	0.971	-3.7	0.368	-23.2	<.001	-13.5	<.001	-9	0.053	-19.5	<.001	-9.8	<.001	-5.3	0.171	9.7	0.005	14.2	0.001	4.5	0.216		
76	8.6	0.055	4.7	0.178	-14.7	<.001	-4.9	0.13	-0.2	0.961	-3.8	0.371	-23.3	<.001	-13.5	<.001	-8.8	0.069	-19.4	<.001	-9.6	0.002	-4.9	0.216	9.8	0.006	14.5	0.001	4.7	0.218		
77	8	0.083	4.1	0.263	-15.3	<.001	-5.4	0.106	-0.5	0.899	-3.9	0.375	-23.3	<.001	-13.4	0.002	-8.6	0.088	-19.4	<.001	-9.5	0.003	-4.6	0.266	9.9	0.006	14.8	0.002	4.9	0.22		
78	7.4	0.12	3.4	0.366	-16	<.001	-5.9	0.088	-0.9	0.843	-4	0.38	-23.4	<.001	-13.4	0.002	-8.3	0.109	-19.4	<.001	-9.3	0.004	-4.3	0.32	10	0.007	15.1	0.002	5	0.224		
79	6.9	0.165	2.8	0.482	-16.6	<.001	-6.4	0.073	-1.2	0.792	-4.1	0.384	-23.5	<.001	-13.3	0.003	-8.1	0.133	-19.4	<.001	-9.2	0.007	-4	0.376	10.2	0.008	15.4	0.002	5.2	0.227		
80	6.3	0.218	2.1	0.606	-17.2	<.001	-6.9	0.062	-1.6	0.745	-4.2	0.389	-23.6	<.001	-13.3	0.005	-7.9	0.159	-19.3	<.001	-9	0.01	-3.7	0.433	10.3	0.009	15.7	0.003	5.4	0.231		
81	5.8	0.279	1.4	0.734	-17.9	<.001	-7.5	0.054	-1.9	0.703	-4.3	0.394	-23.6	<.001	-13.2	0.007	-7.7	0.187	-19.3	<.001	-8.9	0.014	-3.4	0.491	10.4	0.01	15.9	0.003	5.5	0.235		
82					-18.5	<.001	-8	0.047																	10.5	0.012						
83					-19.1	<.001	-8.5	0.041																	10.7	0.014						
84					-19.8	<.001	-9	0.037																	10.8	0.016						
85					-20.4	<.001	-9.5	0.033																	10.9	0.018						
86					-21.1	<.001	-10	0.03																	11	0.021						
87					-21.7	<.001	-10.6	0.027																	11.1	0.024						
88-100																																

Note. Comparison between groups are carried out in all possible group-pairs. Results are presented only in those ranges of emotional demands where both groups had enough datapoint, i.e. between the 5th and 95th percentiles of both groups. The difference is calculated between the estimated value of burnout of the two groups at a given emotion demands level.