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RESEARCH ARTICLE

How Regulatory Modes Shape Grit and Affect General Health: A Moderated Mediation Approach

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Introduction: Regulatory Mode Theory posits two orientations: locomotion, reflecting a tendency toward action and goal-directed progress, and assessment, reflecting a tendency to evaluate means and outcomes.
Aim: Although previous research has linked regulatory mode to mental health indicators, the psychological processes underlying this relationship remain insufficiently explored. To our knowledge, this study is the first to examine the combined roles of locomotion, assessment, grit, and general health.
Methods: A final sample of 223 university students completed an online survey including validated measures of regulatory modes, grit, and general health. Participants first answered sociodemographic questions, followed by the Italian versions of the Regulatory Mode Questionnaire, the GRIT scale, and the GHQ-12. Reliability indices for all measures were satisfactory. Moderated mediation analyses were conducted to examine whether grit mediated the association between regulatory modes and general health and whether this mediation varied as a function of locomotion and assessment levels.
Results: As hypothesized, assessment showed a negative association with grit and a positive association with general health problems, whereas locomotion showed the opposite pattern. Analyses further indicated that a profile characterized by high assessment and low locomotion predicted the highest levels of general health problems. Grit significantly mediated these relationships, and individuals with higher grit scores reported higher locomotion and lower assessment.
Conclusions: The findings highlight the psychological relevance of regulatory modes for mental health and identify grit as a key factor linking self-regulation to psychological well-being. We discuss the theoretical and clinical implications of these results and outline limitations and future research directions aimed at improving prevention and intervention strategies in the field of mental health.

Keywords: assessment, locomotion, regulatory modes, grit, psychological health

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Introduction

Regulatory Mode Theory (RMT) posits that individuals navigate their environment and pursue goals using two distinct self-regulatory strategies: locomotion and assessment (Kruglanski et al., 2020). The dual-pathway framework of RMT offers a robust lens through which to examine personal and motivational drivers of behavior, particularly in relation to well-being.

Despite the significant progress in elucidating the effects of regulatory mode on motivation and performance, there is still a literature gap regarding how these orientations intersect with well-being, particularly in relation to the role of grit. The present study seeks to bridge this gap by exploring the interplay between locomotion, assessment, and their combined effect on general health via grit. By recruiting a student sample and employing a moderated mediation analysis, this investigation aims to provide a comprehensive understanding of how regulatory modes influence well-being, both directly and through the lens of grit.

Regulatory Mode Theory

Grounded in Regulatory Mode Theory (RMT) as proposed by Kruglanski et al. (2000), this study is anchored in a theoretical framework that delineates two principal regulatory modalities: locomotion and assessment. The locomotion orientation emphasizes change and movement from one state to another, fostering a dynamic approach towards goal pursuit without undue preoccupation with details or alternatives. Conversely, assessment orientation prioritizes critical evaluation of behaviors, goals, and means, engendering a thorough and comparative approach that seeks the optimal path forward. Individuals with pronounced locomotion modality tend to prioritize rapid and uninterrupted progression, eschewing extensive critical analysis. In contrast, those with a marked assessment orientation display a tendency towards thorough and meticulous evaluation, carefully considering the gamut of available options (Higgins et al., 2003). However, assessment also supports adaptive reflection, learning from past experiences, and strategic goal evaluation, which can enhance long-term outcomes when effectively balanced with locomotion. In fact, these two orientations are assumed to operate independently, such that individuals may exhibit varying combinations of locomotion and assessment tendencies, rather than falling along a single continuum (Kruglanski et al., 2000; Kruglanski et al., 2010). Prior research has established a significant relationship between regulatory modes and a range of negative psychological outcomes. The nexus between assessment orientation and detrimental emotional states is likely attributable to assessors' proclivity for critical self- and interpersonal appraisals, a practice that is generally inimical to psychological well-being (Liu et al., 2021). Moreover, assessors' tendencies to obsess over the gap between their actual and ideal self-concepts can greatly amplify negative emotions (Higgins, 1987). On the other hand, high locomotors for their nature tend to report increased internal resources; they tend to be proactive and to uphold a persistent focus on their objectives. Such individuals display a proclivity to prioritize advancement and momentum, thereby diminishing their tendency to engage in contemplation regarding negative facets of their past or current circumstances. Aligned with such notions, research has recognized a positive link between locomotion and different positive psychological states, comprising increased self-esteem, positive affect, and optimism (Kruglanski et al., 2000). Coherently, individuals with high locomotion have reported lower levels of depression and social anxiety. Furthermore, locomotion orientation is associated with greater well-being and reduced hopelessness, which mediates this relationship (Di Santo et al., 2018). More recently, Di Santo et al. (2021) found that locomotion orientation is associated with enhanced hope capabilities, which in turn are associated with increased subjective well-being.

Many scholarly works have investigated the regulatory modes and well-being of individuals across various domains. In particular, research conducted in educational environments has substantiated the negative association between assessment and subjective well-being, while locomotion has been found to be positively correlated with subjective well-being (Garcia et al., 2015). Furthermore, a study involving Chinese university students demonstrated a negative association between locomotion and academic burnout, while a positive association was identified between assessment and academic burnout (Zhang et al., 2015).

In the organizational realm, regulatory mode has been consistently linked to employee well-being and work-related stress, with locomotion generally associated with more adaptive outcomes and assessment with less favorable ones. De Carlo et al. (2014) found that locomotion negatively predicted burnout, whereas assessment showed a positive association, with these effects mediated by work engagement and workaholism; assessment also exerted a direct positive effect on psychological strain. Similarly, Bélanger et al. (2015) reported that locomotion was as-

sociated with lower work-related stress, while assessment showed the opposite pattern, with both orientations also exerting indirect effects through obsessive and harmonious passion.

These findings have been corroborated within the domain of sports, substantiating the assertion that regulatory modes exert both direct and indirect influences (mediated through obsessive and harmonious passion) on athletes' stress levels (Lucidi et al., 2016). In a similar vein, recent results have indicated that locomotion is a positive predictor of stress associated with career termination, partially mediated by harmonious passion, whereas assessment serves as negative predictor of stress mediated by obsessive passion (Pica et al., 2019).

Consistent with these perspectives, the combined effect of regulatory modes on individuals' well-being has been explored. More specifically, a heightened propensity for severe depressive states has been reported by individuals exhibiting low locomotion tendencies, particularly when they concurrently possessed high assessment traits. Conversely, those characterized as high locomotors yet displaying low levels of assessment reported markedly elevated levels of life satisfaction (Hong et al., 2004).

Similarly, it has been reported that employees characterized by low locomotion and high assessment tendencies demonstrated increased stress levels and a marked inclination towards job turnover (Lo Destro et al., 2017). Additionally, individuals characterized by high assessment coupled with concurrently low locomotion exhibited lower levels of positivity and job satisfaction (Lo Destro et al., 2021). In a longitudinal study spanning two data collection points, the prevalence of regulatory modes, as determined by the discrepancy between locomotion and assessment scores, has been found to be predictive of work stress (Lo Destro et al., 2018).

More recently, in the context of the COVID-19, current research has revealed that the indirect negative effects of locomotion regulatory mode on COVID-19-related anxiety were significantly mediated by individuals' resilience (Lo Destro & Costa, 2023). Furthermore, Jansen et al. (2022) suggested that a strong assessment orientation may have been linked to increased rumination and decision-making paralysis during the pandemic. This heightened state, combined with a tendency toward Fear of Missing Out (FOMO) and greater engagement in activities perceived as negative or frustrating, contributes to elevated distress levels. Notably, in this context, locomotion showed no significant effect.

Therefore, a significant body of scholarly literature has consistently confirmed that heightened levels of assessment are consistently linked to diminished well-being, whereas elevated levels of locomotion are associated with increased levels of well-being. Moreover, the optimal combination for positive well-being outcomes appears to be characterized by high locomotion coupled with low assessment, whereas the least favorable combination is represented by high levels of assessment paired with low levels of locomotion.

Grit

Grit has been conceptualized as a personal trait and can be defined as the capacity for perseverance, adaptability, consistency, and passion in the pursuit of long-term objectives (Duckworth et al., 2007). This construct has garnered particular attention for its potential in predicting success and resilience.

The literature on the relationship between grit and well-being is extensive and comprises numerous works. Many of these studies have focused on exploring this relationship in the education domain. For instance, Vinothkumar and Prasad (2016) found that grit has a beneficial effect on undergraduate students' well-being. These results have been corroborated in a sample of both undergraduate and post-graduate students, with grit levels positively associated with mental well-being (Kannangara et al., 2018).

Along these lines, it has been found that grit positively predicts university students' well-being, and this relationship has been found to be mediated by a sense of coherence (Arya & Lal, 2018). Similarly, in samples of both students and non-students, grit has been found to predict individuals' well-being both directly and through a sense of coherence and authenticity (Vainio & Daukantaitė, 2016). Furthermore, higher levels of grit have been linked to lower levels of depression among undergraduates and to reduced symptoms of both depression and anxiety in university students (Datu et al., 2019; Musumari et al., 2018). Within the education setting, Nazari and Alizadeh Oghyanous (2021) found that grit may affect the well-being of both novice and experienced teachers, although this relationship was stronger for novices.

Furthermore, in a sample of residents in general surgery (Salles et al., 2014), a strong and negative relationship between grit and psychological well-being has been reported. Similarly, emergency medicine residents reporting higher levels of grit were less likely to experience low well-being (Dam et al., 2019). Cross-cultural research has also shown that grit is positively associated with both eudemonic and hedonic well-being (Disabato et al., 2016). In further research analyzing marine recruits' characteristics, it has been reported that they tend to

report higher levels of grit, which is associated with better physical and mental health (Lovering et al., 2015). In a more recent study, it has been demonstrated that grit positively predicts university students' well-being, particularly showing greater resilience in response to the COVID-19 pandemic and lower reported psychological impact (Bono et al., 2020).

In a similar vein, grit has been found to be directly associated with lower depression, with this relationship influenced by autonomy needs (Jin & Kim, 2017). High levels of grit, in association with high levels of gratitude, have also been found to predict a significant reduction in suicide ideation; this relationship is partially mediated by a greater sense of meaning in life (Kleiman et al., 2013). In line with this, low levels of grit have been found to predict suicide ideation when combined with high brooding (White et al., 2017). Likewise, in the presence of lower levels of grit, negative events can lead to increased suicidal ideation (Blalock et al., 2015). Additionally, higher levels of grit reduce the strength of the association between hopelessness and suicidal ideation (Pennings et al., 2015). Therefore, grit seems well-suited to function as a mediator between regulatory modes and well-being as it represents the sustained effort and commitment necessary to translate motivational orientations into tangible outcomes. Specifically, locomotion orientation facilitates momentum, goal-directed action, and persistence in pursuing objectives, thereby enhancing the perseverance component of grit. Assessment orientation, through careful evaluation, planning, and reflection, can further strengthen grit by ensuring that effort is strategically directed toward meaningful goals, although excessive assessment may sometimes undermine persistence through overcritical self-evaluation. In this way, grit serves as the mechanism through which both locomotion and assessment influence long-term engagement and goal attainment, ultimately shaping individuals' psychological well-being.

Present Research

To the best of our knowledge, few attempts have been made to analyze the relationship between regulatory modes and grit. In particular, Pierro and colleagues (2011) found that locomotion positively predicted both grit subdimensions, perseverance of effort, and consistency of interests. Conversely, assessment showed a negative association with these dimensions, although the link between assessment and perseverance was found to be insignificant. In another study, it was reported that the relationship between developer passion and grit is influenced by both locomotion and assessment regulatory modes. More specifically, the study revealed a positive association between locomotion and grit, and conversely, a negative association between assessment and grit (Mueller et al., 2017).

In line with these notions, the relationship of grit with locomotion and assessment orientations presents a novel area of inquiry, particularly in how it might mediate the relationship between regulatory modes and general health. More specifically, in the present research it is hypothesized that

1. Assessment should negatively predict grit, whereas locomotion should positively predict grit.
2a. Individuals high in locomotion and low in assessment should exhibit increased grit.
2b. Individuals high in assessment and low in locomotion should exhibit increased general health problems.
3. High levels of locomotion combined with low levels of assessment will predict increased grit, which in turn will be associated with fewer general health problems.

Methods

Research Design

The present study employed a cross-sectional correlational design, with data collected at a single time point. The relationships among variables were examined using correlational analyses, and a moderated mediation model (PROCESS macro, Model 8; Hayes, 2013) was tested to evaluate the hypothesized indirect and conditional effects.

Participants and Data Collection

Data were collected online through Google Forms. Participants were university psychology students and obtained partial course credit for their participation. They were comprehensively informed about the aims of the investigation and provided their consent for the anonymized use of their data. Participation in the study's online

survey was voluntary. The research protocol conformed to the ethical principles outlined in the Declaration of Helsinki and was approved by the local Institutional Review Board (IRB). The initial sample consisted of 250 participants; however, 27 respondents were excluded post hoc for failing an attention-check item. This item was embedded among the other survey questions and required participants to select a specific extreme value on the response scale, as instructed within the question, to ensure attentive responding. We compared excluded respondents with those retained in the final sample with regard to the available demographic variables (age, gender, and education). Excluded respondents were older on average (M = 33.59, SD = 10.43) than those included in the analyses (M = 28.46, SD = 8.19), whereas no meaningful differences emerged for gender or education level. The final sample included 223 participants (179 women and 44 men). The educational levels among the 223 participants were diverse: 130 (58.3%) had completed secondary education, 82 (36.8%) had obtained a bachelor's degree, and 11 (4.9%) already held a master's degree.

Measurements

The survey was conducted in a sequential format, starting with questions about socio-demographic characteristics. This was followed by regulatory modes and grit scales. The concluding section was dedicated to evaluating psychological symptoms in relation to participants' health status.

Regulatory Mode Questionnaires

The Regulatory Mode Questionnaire, developed by Kruglanski et al. (2000), consists of 24 items designed to assess individual differences in locomotion and assessment orientations. The Italian version, employed in Pierro et al. (2006), preserves the same 24-item structure and has been widely used in subsequent research. An illustrative item for locomotion is "When I decide to do something, I can't wait to get started", while for assessment, an example is "I spend a great deal of time reflecting on my positive and negative characteristics." Responses were rated on a six-point Likert scale extending from "strongly disagree" (1) to "strongly agree" (6). Negative items were reverse scored. The aggregate score was derived from the mean of all item responses. Within the current sample, the locomotion dimension yielded a Cronbach's α of .79 and a McDonald's ω of .78, with a mean score of 4.68 and a standard deviation of 0.62. The assessment dimension returned a Cronbach's α of .73 and a McDonald's ω of .72, with a mean score of 3.52 and a standard deviation of 0.73.

Grit

The construct of grit was assessed using the well-known GRIT scale (Duckworth et al., 2007). The scale was translated into Italian and subsequently back-translated to ensure semantic equivalence with the original version. This scale comprises 12 items, exemplified by statements such as "Setbacks don't discourage me." Respondents rated each item on a 5-point Likert scale, ranging from 1 ("not at all like me") to 5 ("very much like me"). A confirmatory factor analysis tested both the two-factor structure (Perseverance of Effort and Consistency of Interests) and the unidimensional structure implied by the original scoring procedure proposed by Duckworth et al. (2007). However, fit indices indicated that neither the two-factor model (CFI = 0.831; RMSEA = 0.089; SRMR = 0.082) nor the unidimensional model (CFI = 0.5832; RMSEA = 0.139; SRMR = 0.123) achieved an adequate fit to the data. These results suggest that the observed data do not fully conform to either of the commonly used factorial representations of the scale, highlighting a degree of psychometric misfit and contributing to the ongoing debate on the dimensionality of grit. Despite these limitations, we retained the use of a total grit score as originally planned, following the theoretical framework proposed by Duckworth et al. (2007) in line with the majority of subsequent studies. This decision is further supported by adequate internal consistency indices (Cronbach's α = .73; McDonald's ω = .70; M = 3.72; SD = 0.55), which indicate satisfactory reliability even in the absence of a well-fitting factorial model.

General Health Questionnaire

The General Health Questionnaire-12 item (GHQ-12; Italian version by Piccinelli et al., 1993) served as the instrument for screening the severity of psychological symptoms encountered in the preceding two weeks, as well as assessing deviations from the participant's typical psychological state. This questionnaire encompasses 12

items, evenly divided between positive (e.g., "Were you feeling reasonably happy, all things considered?") and negative phrasings (e.g., "Have you felt unhappy or depressed?"), which collectively evaluate states of anxiety/depression, daily functioning, and coping capacities. For scoring purposes, we employed a 4-point Likert scale, where 0 indicates "better than usual" and 3 signifies "much worse than usual". The composite score was derived through the summation of all provided responses (M =16.02, SD = 6.67). Higher scores are indicative of more severe general health issues. Within this sample, the measure demonstrated robust internal consistency, as evidenced by a Cronbach's α of .85 and a McDonald's ω of .68.

Data Analysis

All statistical analyses were conducted using SPSS (Version 24). The analysis proceeded sequentially, beginning with the computation of descriptive statistics (including means, standard deviations) and correlations among the primary study variables to evaluate their distributional properties and preliminary associations.

To test the main hypotheses regarding the direct and indirect effects of regulatory modes (assessment and locomotion) on general health problems through grit, a moderated mediation model was estimated using the PROCESS macro (Model 8; Hayes, 2013). In this model, Assessment was defined as the predictor, Grit as the mediator, General Health Problems as the outcome, and Locomotion as the moderator, which was specified to influence both the predictor-to-mediator and the direct predictor-to-outcome paths. Age, gender, and educational level were included as covariates to control for their potential confounding influence, given that prior research has documented their associations with both grit and psychological health outcomes. Continuous predictors were mean-centered prior to analysis, as recommended in moderation modeling, to facilitate the interpretation of interaction effects and reduce multicollinearity.

Significant interactions were further probed using simple slopes analyses at low (1 SD below the mean) and high (1 SD above the mean) levels of the moderator, following standard methodological recommendations (Aiken et al., 1991). Conditional indirect effects were evaluated using bootstrapping procedures with 5,000 resamples, generating bias-corrected 95% confidence intervals. All statistical outcomes, including main, interaction, and indirect effects, are reported in the Results section.

Results

Inspection of skewness and kurtosis values indicated no substantial deviations from normality, with all variables falling within acceptable ranges. Pearson correlations between variables are delineated in Table 1. Consistent with theoretical predictions, locomotion was found to be significantly and negatively correlated with general health problems (r = -.19, p = .004), while exhibiting a positive, significant correlation with grit (r = .42, p < .001). Conversely, assessment displayed an opposite pattern, manifesting a negative correlation with grit (r = -.28, p < .001) and a positive association with general health problems (r = .20, p = .003). Lastly, a significant negative correlation was identified between grit and general health problems (r = -.25, p < .001).

Table 1. Between Variables Pearson Correlations

	1	2	3	4
1. Locomotion	–			
2. Assessment	.07			
3. Grit	.42**	–.28**		
4. GHQ	–.19**	.20**	–25**	–

Note: **p ≤ .01; *p ≤ .05.

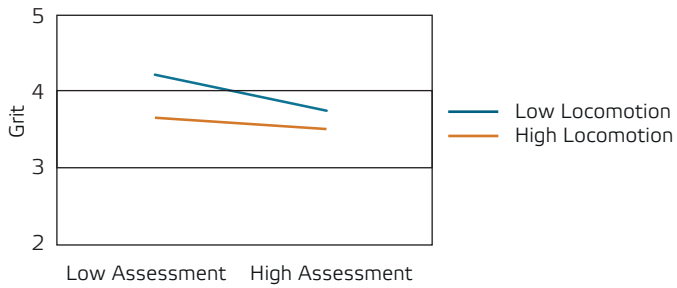
As depicted in Table 2, a significant and positive main effect of locomotion and a significant and negative effect of assessment on grit was found. Importantly, the interaction between assessment and locomotion in predicting grit emerged as significant. To delve deeper into the character of these bidirectional interaction effects, simple slopes analyses were undertaken.

Table 2. Summary of the Regression Models

	Grit (Mediator Model)				GHQ (Outcome Model)			
	B	*SE*	*p*	95% CI	*B*	*SE*	*p*	95% CI
Age	0.004	0.004	.292	[−0.004, 0.01]	0.05	0.06	.398	[−0.06, 0.16]
Gender	−0.12	0.08	.131	[−0.27, 0.04]	−1.06	1.09	.331	[−3.20, 1.08]
Education	0.09	0.06	.105	[−0.02, 0.20]	0.95	0.78	.222	[−0.58, 2.49]
Assessment	−0.22	0.04	.000	−0.30, −0.14]	1.51	0.62	.015	[0.29, 2.72]
Locomotion	0.34	0.05	.000	[0.24, 0.44]	−1.71	0.77	.028	[−3.24, −0.19]
Ass*Loc	−0.20	0.06	.001	[−0.33, −0.08]	−2.13	0.90	.019	[−3.90, −0.36]
Grit					−2.51	0.95	.009	[−4.38, −0.64]
R^2		0.33				0.14		

As illustrated in Figure 1, simple slope analyses revealed that the association between assessment and grit was statistically significant exclusively for participants with relatively high levels of locomotion (B = -0.35, SE = 0.06, p < .001). Conversely, this relationship was not statistically significant for participants with relatively low levels of locomotion (B = -0.09, SE = 0.06, p = .115). Evidently, in contexts where locomotion is heightened, a concomitant lower level of assessment (as opposed to a higher level) significantly bolstered grit. In contrast, in conditions of diminished locomotion, grit levels were reduced irrespective of assessment levels. Consequently, it appears that the co-occurrence of high locomotion and low assessment may augment an individual's grit.

Figure 1. Grit as a Function of the Interaction Between Assessment and Locomotion Regulatory modes



Furthermore, the primary effects of both assessment and locomotion retained statistical significance when predicting general health problems; however, the directionality of these effects was reversed. Specifically, locomotion exhibited a significant and negative association with general health problems, whereas assessment was found to significantly and positively predict general health problems. Furthermore, grit negatively and significantly predicted general health problems. Lastly, the interaction between assessment and locomotion again emerged as significant.

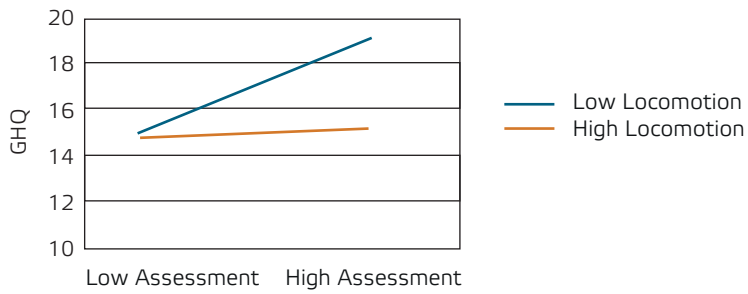
To gain a deeper comprehension of the character of these bidirectional interaction effects, analyses of simple slopes were conducted for both low (1 *SD* below the mean) and high (1 *SD* above the mean) levels of locomotion.

As depicted in Figure 2, simple slope tests indicated that the association between assessment and general health problems was statistically significant solely for participants with relatively low levels of locomotion (B = 2.83, SE = 0.82, p < .001). Conversely, the effect of assessment was not significant for participants with relatively high levels of locomotion (B = 0.19, SE = 0.84, p < .821).

The graphical representation in Figure 2 shows that under conditions of low locomotion, concurrent high assessment (versus low) was associated with an increase in general health problems. In contrast, high locomotion levels appeared to mitigate general health problems irrespective of assessment levels, thereby suggesting that high locomotion may serve as a protective factor against the manifestation of general health problems.

Thus, whereas the first figure indicated that the combination of high locomotion and low assessment was associated with increased grit, the current illustration demonstrates that a compound of low locomotion and high assessment is correlated with an escalation in general health problems.

Figure 2. General Health Problems as a Function of the Interaction Between Assessment and Locomotion Regulatory Modes



Additionally, the results revealed that the indirect effects of assessment on general health problems, as mediated by grit, reached statistical significance exclusively in the context of high locomotion (B = 0.88, BootSE = 0.37, BootLLCI = 0.17, BootULCI = 1.64), whereas they were not significant under conditions of low locomotion (B = 0.23, BootSE = 0.24, BootLLCI = -0.12, BootULCI = 0.80). Following this, the moderated mediation index was determined to be significant as well (B = 0.52, BootSE = 0.28, BootLLCI = 0.03, BootULCI = 1.12). Thus, aligning with previous results and confirming our hypotheses, this finding indicates that the indirect effect of assessment on general health problems through grit varies as a function of locomotion. Specifically, at higher levels of locomotion, assessment is associated with a reduction in grit, which in turn is linked to increased general health problems, making the mediating role of grit more pronounced. In contrast, at lower levels of locomotion, this indirect effect is attenuated or not statistically significant.

Discussion

While understanding the determinants that influence individuals' mental health has previously been considered critically important, in recent years this attention has intensified, particularly due to the significant impact of the COVID-19 pandemic and its repercussions on individual well-being (Zacher & Rudolph, 2021). As such, the aim of the present research was to offer additional insight into these factors contributing to mental health, with a specific focus on the role played by regulatory modes and grit.

The findings of the present study offer compelling evidence for the differential effects of locomotion and assessment orientations on individual mental health problems, as mediated by grit. Consistent with our primary hypotheses, results revealed that locomotion was positively associated with grit, whereas assessment showed a negative association. In particular, the positive association between locomotion and grit aligns with the nature of grit as a construct that involves sustained effort and consistent progress towards long-term objectives (Duckworth et al., 2007).

Regarding the secondary hypotheses, results also supported the expected interaction pattern. In line with Hypothesis 2a, individuals high in locomotion and low in assessment exhibited higher levels of grit compared to those with other combinations of regulatory orientations. Similarly, as predicted in Hypothesis 2b, individuals characterized by a high level of assessment combined with a low level of locomotion tended to report increased general health problems. This interaction suggests that the detrimental effects of assessment orientation on well-being are magnified when not counterbalanced by locomotion. These findings align with previous research (Lo Destro et al., 2017) demonstrating that individuals characterized by high assessment and low locomotion tend to exhibit lower well-being.

More importantly, confirming the third hypothesis, grit emerged as a mediating factor in this relationship, indicating that the protective effects of grit against psychological health problems are most salient when an individual is characterized by high locomotion and low assessment. Together, these findings reinforce the notion that a locomotion-dominant self-regulatory style, coupled with lower assessment tendencies, contributes to greater persistence and more favorable health outcomes. In fact, grit was found to be negatively related to general health problems, supporting the idea that individuals with higher levels of perseverance and passion for long-term goals tend to experience better overall health.

To summarize, these findings suggest that an overly critical and evaluative stance may hinder the perseverance aspect of grit and exacerbate health-related psychological distress. In stark contrast, locomotion orientation displayed a positive association with grit and a negative relationship with general health problems. This underscores the beneficial aspects of a goal-directed, movement-oriented regulatory style, which appears to bolster an individual's resilience and mitigate psychological distress. However, these findings should not be interpreted as suggesting that assessment is inherently maladaptive or should be eliminated. Rather, they point to the importance of a functional balance between regulatory modes. While excessive assessment may undermine perseverance by fostering overcritical self-evaluation and indecision, a moderate level of assessment remains essential for effective self-regulation, as it supports reflection, comparison of alternatives, and goal evaluation. Thus, mental health outcomes appear to depend on how assessment and locomotion are combined, rather than on the predominance of one mode to the complete exclusion of the other.

Strengths and Limitations

The present study offers several noteworthy strengths that enrich the understanding of how regulatory modes and grit jointly contribute to mental health outcomes. First, from a theoretical standpoint, this research advances the current literature by integrating two conceptual frameworks (Regulatory Mode Theory and the construct of grit) whose interaction had not been empirically explored in depth. Previous studies have identified the combination of high locomotion and low assessment as beneficial for well-being (Hong et al., 2004), yet the mechanisms underlying this relationship remained unclear. By demonstrating that grit mediates the interaction between locomotion and assessment orientations in predicting general health problems, the present study provides a more fine-grained understanding of *how* self-regulatory tendencies translate into psychological outcomes. This constitutes a meaningful theoretical contribution, as it situates grit as a key psychological resource through which regulatory modes exert their influence.

Second, a methodological strength of the study concerns the simultaneous examination of both main and interactive effects of regulatory modes on grit and well-being. Rather than treating locomotion and assessment as independent constructs, the study adopts an interactional perspective that mirrors the complexity of real-life self-regulatory behavior. This design allows for the identification of specific regulatory profiles, such as high locomotion/low assessment or high assessment/low locomotion, thereby capturing the nuanced ways in which individuals differ in their approach to goals and self-evaluation. Such an approach provides richer and more actionable insights compared to analyses focusing solely on isolated predictors.

Third, the study benefits from the use of validated and widely recognized measures for assessing regulatory modes, grit, and general health. Employing established instruments enhances the reliability of the findings and contributes to the comparability of results across existing and future research.

Despite these strengths, several limitations must be acknowledged. First, the study relies exclusively on data collected from participants residing in Italy, which raises concerns regarding the cross-cultural generalizability of the findings. Regulatory modes and grit may be influenced by cultural norms surrounding self-regulation, perseverance, and attitudes toward performance evaluation; therefore, extending this research to more diverse populations would be essential.

An additional limitation of the present study concerns the unbalanced gender distribution in the sample, which is common in samples of psychology students. Women are generally at higher risk for internalizing psychological symptoms, such as anxiety and depression (e.g., Piccinelli & Wilkinson, 2000), which may have influenced the levels of symptoms observed in the present sample. Evidence regarding gender differences in grit is less consistent, with some studies finding no significant differences and others reporting small effects depending on the sample and measurement approach (e.g., Credé et al., 2017). These factors highlight the need for future research with more gender-balanced samples to examine whether the observed relationships generalize across gender groups. In addition, the educational level distribution of the sample may represent a limitation of the present study, as it could restrict the generalizability of the findings. Educational attainment is often associated with broader sociodemographic and contextual differences that may be relevant for psychological research. Consequently, the observed relationships may not fully extend to populations with more balanced or higher educational levels. Future research should therefore aim to replicate these findings in more educationally balanced samples. Moreover, the cross-sectional design restricts the ability to infer causal relations between variables. While the mediation model suggests a directional pathway from regulatory modes through grit to general health, longitudinal or experimental designs would be necessary to substantiate these assumptions.

Finally, the exclusive reliance on self-report instruments introduces potential biases, such as social desirability, common-method variance, and inaccuracies in introspection. Future studies could benefit from integrating multimethod assessments, including behavioral tasks or physiological indicators of stress and well-being, to corroborate self-reported data.

Conclusion, Implications, and Future Directions

In conclusion, this study highlights the importance of regulatory modes and grit as psychological factors that play a significant role in mental health. Individuals who show a strong tendency toward action and progress and who avoid excessive self-evaluation appear more capable of maintaining perseverance and protecting themselves from psychological distress. The identification of grit as a mediating factor strengthens the idea that persistence and long-term commitment to goals play a valuable protective role in mental health.

These findings have several implications for clinical practice, prevention, and mental health interventions. Supporting the development of a locomotion orientation may enhance individuals' ability to take action, maintain momentum, and reduce the emotional burden associated with excessive self-criticism. At the same time, helping individuals manage high levels of assessment could reduce tendencies toward rumination and perceived inadequacy, which are known risk factors for mental health problems. Interventions focused on strengthening grit, such as structured goal-setting programs, training in frustration tolerance, or guided reflection on personal values, may be especially effective when combined with strategies that target regulatory orientation.

The results also provide useful insights for professionals working in educational or organizational settings, where perseverance and psychological well-being are essential for long-term functioning and performance. Understanding individuals' regulatory tendencies may help shape tailored programs that support resilience, motivation, and healthier coping strategies.

Several directions for future research arise from this work. Longitudinal studies would help clarify whether regulatory modes and grit exert lasting effects on mental health across time. More diverse samples, including participants from different cultural backgrounds and with more balanced gender distributions, are needed to examine the consistency of these findings. Expanding the set of outcomes to include indicators such as anxiety, depression, emotional regulation, or burnout would also provide a more complete understanding of how these psychological factors influence mental health. Furthermore, it is important to acknowledge that perseverance may not be uniformly adaptive across contexts. Emerging literature suggests that sustained effort, when not accompanied by adequate self-reflection and evaluative processes, can become rigid, obsessive, and potentially maladaptive (e.g., Miller & Wrosch, 2007). In this regard, individuals characterized by high locomotion may indeed display elevated levels of grit; however, in the absence of sufficient assessment, such persistence may translate into inflexible goal pursuit or difficulty disengaging from unattainable objectives.

Future research should adopt longitudinal designs to better capture how locomotion, assessment, and grit evolve over time and to determine whether—and under which conditions—perseverance shifts from adaptive to maladaptive. Such an approach would help clarify whether an optimal balance between action-oriented and evaluative processes is necessary for sustaining mental health outcomes.

Finally, incorporating multiple methods of assessment, such as behavioral indicators, ecological momentary reports, or biological measures of stress, would reduce reliance on self-report data and provide a more comprehensive picture of how regulatory tendencies and grit influence daily functioning and well-being.

Overall, the present study underscores the importance of understanding how self-regulation and perseverance contribute to mental health. Continued research in this area may support the development of more targeted and effective interventions aimed at fostering resilience, improving psychological functioning, and promoting long-term well-being.

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Ethical statement
This manuscript is the author's 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 Board Committee of the Niccolò Cusano University, Protocol number: 1672.

Data availability statement
Datasets presented in this article are available in a publicly accessible repository:
https://osf.io/fczt9/overview

Declaration on using artificial intelligence in research and manuscript preparation
The author has used AI technologies in the preparation of the manuscript, but not in his research. He used ChatGPT-4 for language editing. The authors proofread the final version and cross-checked all AI-generated suggestions. All research processes were fully controlled by the author. ChatGPT was used solely for English language editing and did not contribute to the scientific content or decision-making.

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