The Relationship Between Self-regulation and External Eating in the Absence of Hunger: The Moderating Role of Presence of Meaning in Life

Tessa M. van de Poel

S3976297

Department of Psychology, University of Groningen

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Supervisor: dr. Nienke Jonker

Second evaluator: dr. Sjoukje van Dellen

In collaboration with: Antonia Noldt, Ilse Berends, Sabien ten Have, Maaike Nagtegaal and Kiek van der Zee

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Abstract

This study investigated the relationship between self-regulation and external eating in the absence of hunger (EEAH), testing two hypotheses: (1) a negative relationship exists between self-regulation and EEAH, and (2) this relationship is moderated by presence of meaning in life (MIL-P), with the effect being stronger when there is more MIL-P and weaker or non-significant when there is less MIL-P. A cross-sectional study with 346 native Dutch-speaking adults (51% female, 48% male, aged between 18 and 70; BMI between 14.01 and 46.97) was conducted. Participants completed the external eating subscale of the Eating in the Absence of Hunger Questionnaire (EAH-EE), the presence subscale of the Meaning in Life Questionnaire (MLQ-P), and the Perceived Self-Regulatory Success scale (PSRS). Correlation and regression analyses revealed a significant negative relationship between self-regulation and EEAH with a small effect size, but no evidence for MIL-P as a moderator. The findings contribute to the understanding of EEAH, while suggesting that additional psychological factors, including MIL-P, need further examination. Future research could examine the causal relationship between self-regulation and EEAH, investigate how variations in self-regulation over time and contexts affect this relationship, and examine differences between populations, such as restrained and non-restrained eaters.

Keywords: obesity, external eating in the absence of hunger, self-regulation, presence of meaning in life

The Relationship Between Self-regulation and External Eating in the Absence of Hunger: The Moderating Role of Presence of Meaning in Life

In 1997, the *World Health Organization* (WHO) declared obesity as an epidemic, signaling it's rise as a critical public health concern (Koliaki et al., 2023). Recognized as a chronic disease defined by excessive fat deposits (World Health Organization: WHO, 2024), obesity poses significant risks to overall health and quality of life. It contributes to numerous severe health problems, including diabetes, cardiovascular disease and various cancers, which may adversely affect life expectancy and reduce quality of life (Koliaki et al., 2023). Diagnosis of obesity commonly relies on Body Mass Index (BMI). A BMI of 25 or higher indicates overweight, while 30 or above indicates obesity (World Health Organization: WHO, 2024). By using BMI as a standardized classification for overweight and obesity, comparative analysis of global obesity prevalence becomes possible (James et al., 2001). This revealed that by 2023, 38% of the global population was classified as either overweight or obese (Koliaki et al., 2023). Projections from the *World Obesity Atlas 2024* indicate an even more alarming trend, with the number of adults with overweight or obesity expected to rise from 2.2 billion in 2020 to 3.3 billion by 2035, increasing the prevalence to over 54% (Lobstein et al., 2024). Alongside psychosocial factors and genetic predispositions, obesogenic environments also contribute to the growing prevalence of obesity (World Health Organization: WHO, 2024). In today's society, highly palatable, calorie-dense, and inexpensive foods are readily accessible, making it easier for people to give in to external cues like the sight, smell or availability of food. This widespread accessibility to unhealthy food increases the likelihood of overeating, even in the absence of hunger (Shomaker et al., 2010, 2013; Tanofsky-Kraff et al., 2008). Such patterns of overeating, driven by external food cues rather than internal hunger signals, are referred to as external eating in the absence of hunger (EEAH). EEAH occurs when people eat due to triggers like the sight, smell, or taste of food, or the presence of others

eating, rather than because they feel hungry (Jeune et al., 2024; Tanofsky-Kraff et al., 2008). As EEAH contributes to overeating in an environment filled with external food triggers, this thesis aims to gain a better understanding of EEAH by examining the potential associations with psychological factors. By improving our understanding of EEAH, this research seeks to provide valuable insights that may help address one of the contributors to the growing obesity epidemic, supporting individuals struggling to resist tempting food cues in the absence of hunger.

With the growing proportion of adults classified as overweight or obese, an increasing number of individuals are engaging in dieting behaviors (Meule et al., 2012). Successful weight management is often attributed to strong self-regulatory abilities, whereas difficulties in weight control are linked to weaker self-regulatory abilities (Nguyen & Polivy, 2014). Self-regulation is a fundamental process through which individuals aim to manage their thoughts, emotions, impulses and appetite (Baumeister et al., 2006). It encompasses a range of mental and behavioral processes, such as goal setting and execution, that support the pursuit and achievement of aspired goals (Carver & Scheier, 2001; Kuhl, 2018; Sorys et al., 2023). This raises the question of whether self-regulation could be a psychological factor associated with EEAH. The *Goal Conflict Theory of Eating* (GCTE; Stroebe, 2022a; Stroebe et al., 2007) provides a theoretical framework to understand this potential relationship. Integrating principles from self-regulation theories (e.g., Carver & Scheier, 2001; Vohs & Baumeister, 2016), the GCTE proposes that eating behavior is dominated by a conflict between the mental representations of two incompatible goals. Specifically, it highlights the tension between the long-term goal of maintaining a healthy diet (e.g., by reducing or avoiding EEAH) and the short-term goal of enjoying palatable food. The long-term goal typically suppresses the desire for food enjoyment, helping regulate eating behavior. However, this balance is fragile and can easily be disrupted by exposure to external cues, such as the sight or smell of palatable foods.

These cues activate the eating enjoyment goal while inhibiting the mental representation of the long-term goal. As a result, food-related thoughts and behaviors become increasingly driven by the desire for immediate enjoyment of palatable foods, making individuals more likely to engage in EEAH (Papies et al., 2008; Stroebe, 2022a). In this framework, self-regulation refers to the ability to resist short-term temptations, such as responding to external cues of palatable foods, and to align behavior with long-term goals, including reducing or avoiding EEAH. Based on this understanding, individuals with strong self-regulatory abilities are hypothesized to be less prone to EEAH. Their ability to remain focused on long-term goals may help minimize the impact of external food cues on eating without hunger. This understanding aligns with findings in the literature, which highlight the role of self-regulation in managing eating behaviors and resisting external food cues (Papies et al., 2008). Research suggests that individuals with stronger self-regulatory abilities may exhibit more intentional and controlled eating behaviors, which may help them resist external food cues and maintain focus on long-term goals. For instance, studies indicate that individuals with strong self-regulatory abilities are more effective at controlling their consumption of high-calorie food in tempting situations (Van Koningsbruggen et al., 2012). In contrast, individuals with weaker self-regulatory abilities are more likely to lose focus on their long-term goals when presented with attractive food cues (Papies et al., 2008). Weaker self-regulation is also associated with reduced intentional control over eating behaviors and a greater susceptibility to external food cues (Jeune et al., 2024). This heightened responsiveness may contribute to behaviors such as EEAH. This framework highlights the potential role of self-regulation with responses to external food cues and provides a theoretical basis for investigating its association with EEAH.

In addition to self-regulation, it is worthwhile to examine whether broader psychological factors could act as protective mechanisms, enhancing an individuals' ability to

resist temptations. One such psychological factor that has recently gained attention in research on eating behavior is meaning in life (MIL; Brassai et al., 2010; Marco et al., 2019; Wen & Miao, 2021). MIL is considered a fundamental human drive (Heintzelman & King, 2014), reflecting Frankl's (1963) concept of a "will to meaning", an innate need for purpose that, if unmet, can lead to psychological distress. MIL is broadly understood as individuals' coherent comprehension of their identity and life experiences, along with a sense of enduring purpose. MIL fosters feelings of completeness and motivates purposeful behaviors that align with personal goals and enable adaptive responses to the environment (Hadden & Smith, 2017; King et al., 2006; Steger et al., 2014; Wen & Miao, 2021). MIL supported by positive emotions, has been shown to encourage self-regulation (Van Tongeren et al., 2017). Studies have linked MIL to improved emotional and behavioral regulation, as individuals with more MIL are more aware of their life's value and better equipped to manage undesirable behaviors (Liu et al., 2022; Schnell & Krampe, 2020). Prior research suggests that MIL supports more internalized forms of behavioral regulation by helping individuals sustain behaviors aligned with their core values and long-term goals (Hooker et al., 2020; Scheier et al., 2006). For instance, individuals who perceive their lives as meaningful are more likely to engage in health-promoting behaviors, motivated by goals that align with their values and aspirations (Hooker et al., 2020; Hooker & Masters, 2014, 2018). This motivation may extend to resisting external food cues and reducing the likelihood of behaviors such as EEAH. Conversely, an absence of MIL has been associated with reduced self-control, diminished control over food intake, and a tendency for impulsive instincts to dominate (Brassai et al., 2015; Liu et al., 2022; Vötter & Schnell, 2019). This may potentially increase susceptibility to external food cues and maladaptive eating behaviors. By fostering a sense of purpose, MIL may contribute to improved self-regulation by increasing individuals' awareness of their life's value and aligning their behaviors with values and long-term goals (Yek et al., 2017). This alignment

could help resolve internal conflicts between incompatible goals. By reducing the tendency to respond to external food cues, which corresponds to prioritizing the enjoyment goal, MIL may strengthen the motivation to engage in eating behaviors consistent with long-term goals, such as reducing or avoiding EEAH. These insights from the broader literature on MIL suggest its relevance to the possible relationship between self-regulation and EEAH. In this study, we focus specifically on presence of meaning in life (MIL-P), which represents how meaningful individuals perceive their lives to be, to examine its potential role as a moderator in this relationship (Steger et al., 2006). Building on this, the current study will examine the relationship between self-regulation and EEAH, and the potential moderating role of MIL-P. It tests two main hypotheses: (1) a negative relationship exists between self-regulation and EEAH, and (2) MIL-P moderates this relationship, with the effect being stronger when there is more MIL-P and weaker or non-significant when there is less MIL-P.

Methods

Participants

A total of 504 participants took part in the study, comprising 248 men and 251 women. Four participants identified as ‘other’ and one participant preferred not to disclose their gender. The mean age of participants was 28.73 years (*SD* = 8.85), with a range of 18 to 70 years. The mean BMI was 24.53 (*SD* = 4.88), with a range of 14.01 to 46.97. Inclusion criteria required participants to have Dutch as their first language and to be fluent in Dutch. Participants voluntarily took part in the study by signing up through *Prolific*, an online research platform that facilitates participant recruitment and management for online studies. All participants completed the questionnaires and received £7 for their participation upon completion.

Materials

External eating in absence of hunger

The external eating subscale (EAH-EE) of the *Eating in Absence of Hunger Questionnaire* (EAH; Tanofsky-Kraff et al., 2008) was used to assess EEAH. This subscale, based on self-reported responses, assesses eating behavior in response to external cues when individuals are not feeling hungry. It consists of six questions that assess how often participants would continue eating because the food looks, tastes, or smells appealing; because others nearby are eating; or simply because food is available. Participants were instructed to imagine that they are eating, or have just eaten, and have consumed enough to no longer feel hungry. They then rated how frequently they would continue eating in this situation using a five-point Likert scale (1 = *never*, 5 = *always*; Pasquale et al., 2022). Scores for this subscale are determined by calculating the average of items associated with that subscale. Higher scores indicate a stronger tendency for EEAH (Pasquale et al., 2022; Tanofsky-Kraff et al., 2008). The internal consistency of EAH-EE in the current sample was good (Crohnbach's alpha = 0.86).

Self-regulation

Self-regulation was measured using the *Perceived Self-Regulatory Success Scale* (PSRS; Meule et al., 2012), a self-report measure designed to assess perceived self-regulatory success in dieting and distinguish between successful and unsuccessful dieters. The PSRS consists of three items in which participants rate themselves on a 7-point Likert scale (1 = *not successful*, 7 = *very successful*, 8 = *not applicable*). Participants who selected 'not applicable' for one or more questions were removed from the sample, as this response option does not provide usable information for assessing their self-regulatory abilities. Participants were asked to evaluate, "How successful are you in watching your weight?", "How successful are you in losing extra weight?", and "How difficult do you find it to stay in shape?". The last item was

revered coded (Meule et al., 2012). The score was calculated as the average of the ratings, with higher scores indicating greater perceived self-regulatory success (Van Koningsbruggen et al., 2012). In the current study, the internal consistency was questionable (Crohnbach's alpha = .63), but comparable to values reported in similar studies, ranging from .65 to .72 (Meule et al., 2012).

Presence of Meaning in Life

The presence of meaning (MLQ-P) subscale of the *Meaning in Life Questionnaire* (MLQ; Steger et al., 2006) was used to asses MIL-P. This subscale consists of five items designed to measure the extent to which individuals perceive their lives meaningful and is based on self-reported measures. Participants were instructed to reflect on what makes life feel significant to them and indicate their level of agreement with each statement on a 7-point Likert scale (1 = *absolutely untrue*, 7 = *absolutely true*). Example items include: "My life has a clear sense of purpose," "I have a good sense of what makes my life meaningful," and "My life has no clear purpose." The last item is reverse-coded. The score is calculated as the sum of the ratings, with higher scores indicating a greater presence of meaning (Van Doornik et al., 2023). In the current sample, the internal consistency of the MLQ-P subscale was good (Crohnbach's alpha = .90).

Procedure

This cross-sectional study forms part of a larger research project on MIL, eating disorders, and alcohol use and received approval from the Ethical Committee Psychology of the University of Groningen (PSY-2223-S-0020). Participants were recruited through *Prolific* and directed to the questionnaires on *Qualtrics*, which required informed consent before participation could proceed. Prolific ensures that only one person per household can participate in a particular study, based on IP address verification. This measure increases the likelihood of independent observations, as it reduces the chances of multiple participants from

the same household and aims to ensure that each participant completes the measures without direct interaction or influence from others participants (*Prolific*, n.d.).

The questionnaires, which took approximately 30-40 minutes to complete, had to be finished in one sitting and included five control questions to ensure participant engagement. An example of such a control question is: "To ensure that you are paying attention, please select 'usually'." Participants who answered one or more attention check questions incorrectly were removed from the sample. The measures were presented in a fixed order: first, the MLQ was administered, followed by the EAH, and finally, the PSRS.

Statistical Analysis

All statistical analyses were conducted in SPSS, version 28. Prior to conducting the analyses, the descriptive statistics and bivariate correlations for all variables were examined, with results considered statistically significant at a threshold of $p < .05$. The assumptions of multicollinearity, linearity, homoscedasticity, normality of residuals, and independent observations were assessed. Several implausible values for height and weight were detected. Due to an error, only periods were recognized as decimal separators, while commas were not. These extreme values were manually corrected. Additionally, the presence of outliers was examined using Cook's Distance. Based on the threshold value calculated as 4/n (4/346 = .01 in this sample), 19 outliers were identified for potential removal. However, after evaluating the assumptions, R^2, regression coefficients (B), and p-values with and without these outliers, minimal differences were observed. Therefore, the outliers were retained in the model.

To test the hypotheses, a hierarchical regression model was constructed. All independent variables were centered before being entered into the regression model. A simple linear regression was conducted with PSRS as the independent variable and EAH-EE as the dependent variable to address the first hypothesis (step 1). For the second hypothesis, a moderated multiple regression analysis was performed by adding the main effect of MLQ-P

and an interaction term between PSRS and MLQ-P to the model to evaluate the moderating effect of MIL-P on the relationship between PSRS and EAH-EE (step 2).

Using G*Power for an a priori power analysis with three predictors, it was determined that a sample size of 77 participants was required to detect a medium effect (f^2 = .15) with a power of .80 and a one-sided significance level of α = .05.

Results

After excluding participants who answered one or more control questions incorrectly (n = 25), participants who answered 'not applicable' on one or more PSRS questions (n = 136), and those who met both exclusion criteria (n = 3), the new sample included 346 participants. Within this sample, 177 identified as female, 166 identified as male, two identified as 'other,' and one preferred not to disclose their gender. The participants had a mean age of 29.69 years (SD = 9.48), with ages ranging from 18 to 70 years. The mean BMI of the participants was 25.75 (SD = 4.69), with a range of 14.86 to 45.11. A sensitivity analysis conducted with the final sample size of 346 participants revealed that this sample is capable of detecting an effect size of f^2 = .03 with a power of .80 and a significance level of α = .05.

The assumptions of linearity, homoscedasticity, normality, and multicollinearity did not appear to be violated in a way that would affect the analyses (see Appendix A). Furthermore, the assumption of independent observations was assumed not to be violated in this study.

Bivariate correlation analyses (see Table 1) showed a significant but weak negative relationship between PSRS and EAH-EE. Higher scores of PSRS are slightly associated with lower scores of EAH-EE. The relationship between PSRS and MLQ-P was found to be weakly positive and significant, indicating higher scores of PSRS are slightly associated with higher scores of MLQ-P. Furthermore, the correlation between EAH-EE and MLQ-P was

weak and not significant, thus indicating no evidence of a meaningful linear relationship between these variables in the current sample.

Table 1

Bivariate Pearson's Correlations and Descriptive Statistics for all Continuous Variables

	1.	2.	M	SD
1. PSRS	-	-	3.80	1.24
2. EAH-EE	-.19*	-	2.59	.85
3. MLQ-P	.23*	-.05	21.18	6.62

Note. $*p < .001$ (two-tailed).

To answer the hypotheses, a hierarchical regression model was constructed (see Table 2). Step 1 of the hierarchical regression model revealed a small but significant negative association between PSRS and EAH-EE ($B = -.13$, F (1, 344) = 12.17, $p < .001$).

In the second step of the hierarchical regression model, the main effect of MLQ-P was included in the model but was not significant ($B = -.001$, $p = .90$). Additionally, the interaction term (PSRS x MLQ-P) did not significantly improve the model (F_{change} (2, 342) = .20, $p = .82$), explaining less than 1% additional variance ($R^2_{change} = .001$). Furthermore, the interaction term itself did not show a significant association with EAH-EE ($B = .003$, $p = .54$). Overall, the full model explained only 2.7% of the variance ($R^2_{adj} = .03$). Thus, MLQ-P did not moderate the relationship between PSRS and EAH-EE.

Table 2

Regression Coefficients and Statistical Summary (N = 346)

Dependent variable	Step	Variable	SEB	β	*t*	95% CI	
						Low	Up
EAH-EE	1	PSRS	.04	-.19	-3.49	-.20	-.06
	2	MLQ-P	.01	-.01	-.13	-.02	.01
		PSRS x MLQ-P	.01	.03	.62	-.01	.01

In summary, the results showed a significant association between PSRS and EAH-EE, although the effect size was small. MLQ-P did not appear to moderate the relationship between PSRS and EAH-EE.

Discussion

The current study aimed to enhance the understanding of EEAH by investigating its potential association with self-regulation and examine whether MIL-P moderates this relationship. The key findings of this study can be summarized as follows: (1) self-regulation was found to be negatively associated with EEAH and (2) MIL-P did not moderate the relationship between self-regulation and EEAH.

The first hypothesis states that a negative relationship exists between self-regulation and EEAH. Consistent with this hypothesis, this study observed a significant negative association between these variables. Individuals with stronger self-regulation exhibit less EEAH. This association may indicate that self-regulation may be related to an individuals' ability to resist external food cues in absence of hunger. These findings can be cautiously interpreted within the framework of the GCTE (Stroebe, 2022a; Stroebe et al., 2007), which highlights the conflict between long-term goals and the short-term goal of enjoyment of palatable food. Self-regulation, which involves goal setting and execution (Carver & Scheier,

2001; Kuhl, 2018; Sorys et al., 2023), may help individuals stay focused on long-term goals despite external food cues and could help in understanding the observed negative relationship with EEAH. In terms of previous research, the findings of this study align with previous findings emphasizing the role of self-regulation in managing eating behavior and resisting external food cues (Papies et al., 2008). Strong self-regulation has been associated with better control over eating habits, particularly in challenging or tempting situations (Van Koningsbruggen et al., 2012). In contrast, weaker self-regulation is linked to difficulties in maintaining focus on long-term goals and a greater susceptibility to external food cues (Papies et al., 2008; Jeune et al., 2024). While the observed association supports the hypothesis, the effect size was small, indicating that the relationship between self-regulation and EEAH is relatively weak. This suggests that self-regulation may not be the only variable associated with EEAH and that other variables could also play a role. For instance, prior research highlights the potential role of impulsivity, showing that individuals with lower impulsivity tend to consume fewer tempting foods after exposure to food cues (Jansen et al., 2008). Individuals with lower impulsivity may form stronger connections between food cues and long-term goals, which could support their ability to manage external temptations (Van Koningsbruggen et al., 2012). Contextual factors also appear to play a role, as self-regulation has been found to vary throughout the day, being higher at breakfast compared to dinner (Bouwman et al., 2021). Moreover, self-regulation is negatively impacted by boredom and fatigue and tends to be stronger when eating at home rather than in out-of-home settings (Bouwman et al., 2021). These findings highlight the importance of examining additional variables that may be associated with EEAH. Further research could provide a more comprehensive understanding of this complex behavior by identifying such variables. Additionally, it is important to note that prior research on self-regulation and eating behavior in response to external food cues has primarily focused on restrained eaters. These are chronic

dieters focused on weight management and calorie restriction, who exhibit heightened sensitivity to food-related cues (Meule et al., 2012; Polivy & Herman, 2017). These characteristics may strengthen the association between self-regulation and EEAH, as restrained eaters experience a greater conflict between long-term health goals and temptations and might rely more heavily on strong self-regulatory abilities to manage their eating behavior (Nguyen & Polivy, 2014; Papies et al., 2008; Stroebe, 2022b). In contrast, the sample used in this study, which was not limited to restrained eaters, may have diluted the strength of the observed relationship. Nonetheless, the findings suggest that self-regulation plays a broader role in EEAH, extending beyond the specific context of restrained eating. Building on this, future studies could investigate whether the strength of the relationship between self-regulation and EEAH varies between restrained and non-restrained populations.

The second hypothesis proposed that MIL-P would moderate the relationship between self-regulation and EEAH, with a stronger negative association when there is more MIL-P and a weaker or non-significant association when there is less MIL-P. Previous research has highlighted the potential of MIL-P as a moderating factor associated with stronger self-regulation and in turn lower EEAH. However, his study did not provide evidence for MIL-P moderating the negative association between self-regulation and EEAH. It is possible that MIL-P does not play a moderating role in the relationship between self-regulation and EEAH. While previous research has suggested that MIL-P can act as a psychological resource supporting self-regulation, this effect may simply not apply to the context of EEAH. Moreover, no direct association between MIL-P and EEAH was observed. This contrasts with previous research that has linked MIL to healthier behavioral patterns, including reduced susceptibility to impulsive behaviors, such as giving in to external food cues (Liu et al., 2022; Vötter & Schnell, 2019), and increased engagement in health-promoting activities (Hooker et al., 2020). The absence of a direct effect suggests that MIL-P may not have a strong enough

association on its own with behaviors like EEAH, making it less likely that MIL-P interacts with self-regulation to produce a moderating effect in this context. Several other explanations may account for the absence of a moderating effect of MIL-P. Firstly, differences in sample characteristics and behavioral contexts could have influenced the results. Previous research has often focused on specific subpopulations, such as female Romanian adolescents (Brassai et al., 2015), high school students (Liu et al., 2022), or intellectually gifted individuals (Vötter & Schnell, 2019). These groups may be more likely to rely on MIL-P as a psychological resource due to developmental or cognitive factors, such as heightened impulsivity in adolescents and the greater focus on eating habits observed in female participants (Feraco et al., 2024; Romer, 2010). In contrast, the adult sample in this study may regulate EEAH through mechanisms that are less associated with MIL-P. Additionally, prior research has examined the engagement in health-promoting behaviors, specifically in the context of physical activity (Hooker et al., 2020; Hooker & Masters, 2014, 2018). However, these findings may not generalize to other forms of health-promoting behaviors, such as refraining from EEAH, which may involve different motivational and contextual factors. Secondly, the absence of a moderating effect could lie in the conceptual distinction between self-control and self-regulation. While some literature uses the terms self-control and self-regulation interchangeably, it has also been argued that they are distinct concepts (Fujita et al., 2024). Self-control specifically refers to the ability to manage impulses and resist temptations to achieve meaningful goals (Liu et al., 2022). In contrast, self-regulation is a broader construct that encompasses the monitoring and adjustment of thoughts, feelings, and behaviors to reach desired outcomes. Although self-control is a subset of self-regulation, not all self-regulation involves self-control (Fujita et al., 2024). This conceptual distinction may partly explain the absence of the expected moderating effect of MIL-P in this study. Previous research has primarily examined self-control (Liu et al., 2022; Vötter & Schnell, 2019), whereas this study

focused on self-regulation. Since MIL-P was hypothesized to interact with self-regulation, it is possible that its association is more relevant in contexts specifically focused on self-control and less applicable to the broader and more complex processes of self-regulation. Lastly, the operationalization of MIL-P in the current study differs from that used in previous research, which could partly explain the absence of a moderating effect. While earlier studies often assessed MIL using broader measures, such as the *Multidimensional Existential Meaning Scale* (MEMS; George & Park, 2017), this study specifically focused on the presence subscale of the MLQ. Such differences in measurement methods may affect the comparability of findings and the ability to detect potential moderating effects. Future research could focus on defined populations and further investigate the association of self-control in the context of EEAH, to determine whether MIL-P moderates this relationship or shows a different association. Furthermore, using broader measures, such as the MEMS, could improve comparability with previous studies.

The current study offers both theoretical and practical implications. By focusing on EEAH, a distinct and underexplored behavior, it adds to the relatively limited research base on this topic. The findings contribute to the theoretical understanding of EEAH by examining its association with self-regulation, suggesting that individual differences in self-regulation are related to externally triggered eating behaviors in absence of hunger. However, the results also underscore the complexity of EEAH, indicating that it likely involves other psychological factors beyond self-regulation. Furthermore, the study expands the research base by examining MIL-P as a potential moderator in the context of self-regulation and EEAH. While no evidence for a moderating effect was found, this finding encourages further research into the conditions under which MIL-P may relate to EEAH and the psychological mechanisms involved. From a practical perspective, this study suggests that interventions aimed at helping individuals better manage external food cues in the absence of hunger might benefit from

incorporating strategies to enhance self-regulation. While the findings are correlational, they highlight the potential relevance of self-regulation in managing EEAH and the need for a causal approach to inform intervention design.

Several strengths of this study enhance the reliability and validity of its findings. First, it utilized well-validated measures, including the MLQ, EAH, and PSRS, ensuring robust and accurate measurements. Second, the large, well-powered sample increases the generalizability of the results and reduces the risk of statistical errors. Third, reporting confidence intervals and sensitivity analyses strengthens the precision and transparency of the results. Notably, an a priori power analysis indicated that the sample size was sufficient to detect medium effect sizes. A sensitivity analysis showed the ability to detect much smaller effects. Finally, independent data collection via Prolific minimized biases, further supporting the objectivity of the findings. Despite its strengths, some limitations should be considered when interpreting the results of this study. Firstly, the cross-sectional and correlational design of this study does not allow for causal conclusions to be drawn between self-regulation, EEAH, and MIL-P. Experimental designs, such as controlled laboratory studies that manipulate self-regulation, would be necessary to establish a causal relationship in which high self-regulation reduces EEAH. This could be tested by training self-regulatory abilities or by using depletion tasks, where participants perform cognitively demanding activities to temporarily lower self-regulation capacity, followed by measuring EEAH. Secondly, the PSRS is an instrument specifically designed to assess perceived self-regulatory success in a dieting context and was not explicitly developed to measure self-regulation in the context of broader eating behavior. As a result, it may fail to capture important aspects of self-regulation relevant to EEAH, such as sensitivity to external food cues. Future research should consider using measures like the *Self-Regulation of Eating Behavior Questionnaire* (SREBQ; Kliemann et al., 2016). This instrument is a reliable and valid measure that is more tailored to the assessment of self-

regulation in eating contexts. Notably, it reflects aspects relevant to EEAH, as higher SREBQ scores were associated with lower food responsiveness and greater automaticity in avoiding tempting food (Kliemann et al., 2016). A third limitation of this study is that self-regulation was treated as a constant factor, whereas existing literature suggests that it may fluctuate across time and context (Bouwman et al., 2021). This static approach may have led to an under- or overestimation of its association with EEAH. To address this limitation, future research could adopt a repeated-measures design, where self-regulation and EAH-EE are assessed at multiple time points and in different contexts. Lastly, this study relied solely on self-reported measures, which may introduce bias and socially desirable responses. Combining self-reported data with objective measures, such as behavioral tasks, could help address these limitations and produce more robust findings.

To conclude, the current study examined the relationship between self-regulation and EEAH, while also examining the potential moderating role of MIL-P. The findings showed that higher self-regulation was associated with less EEAH. However, the relatively small effect size suggests that other factors may also be associated to EEAH. Contrary to expectations, no evidence was found that MIL-P moderates the relationship between self-regulation and EEAH. As a next step it would be interesting to investigate the causal relationship between self-regulation and EEAH. It would also be valuable to examine how fluctuations in self-regulation across time and contexts might influence this relationship, as well as differences between populations, such as restrained and non-restrained eaters.

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Appendix

Appendix A

Assumption checks

Figure 1

Scatterplot for Assessing Homoscedasticity of Residuals

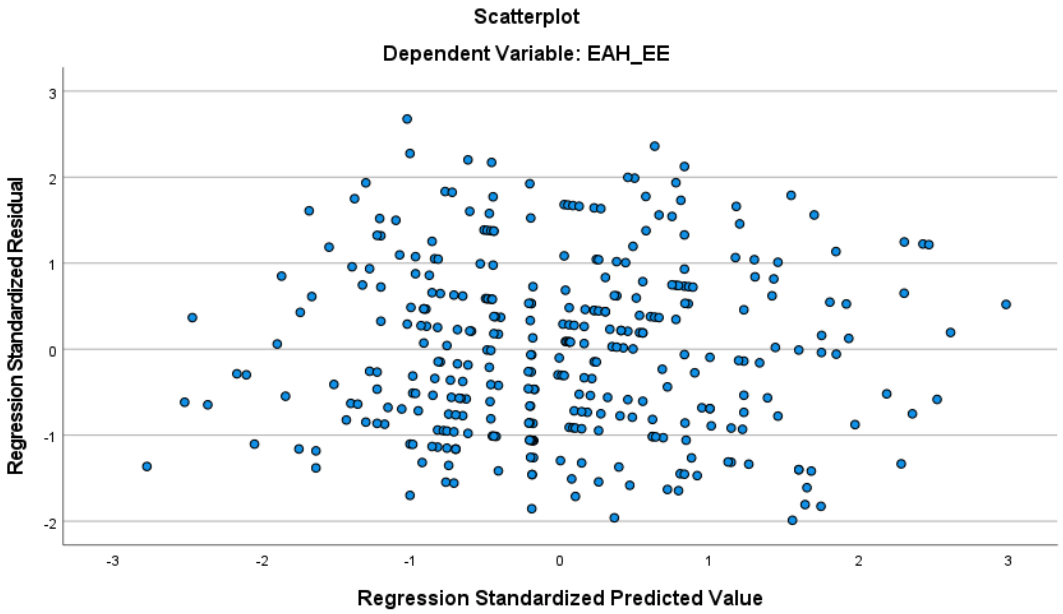

Figure 2

Partial Regression Plot EAH-EE and PSRS for Assessing Linearity

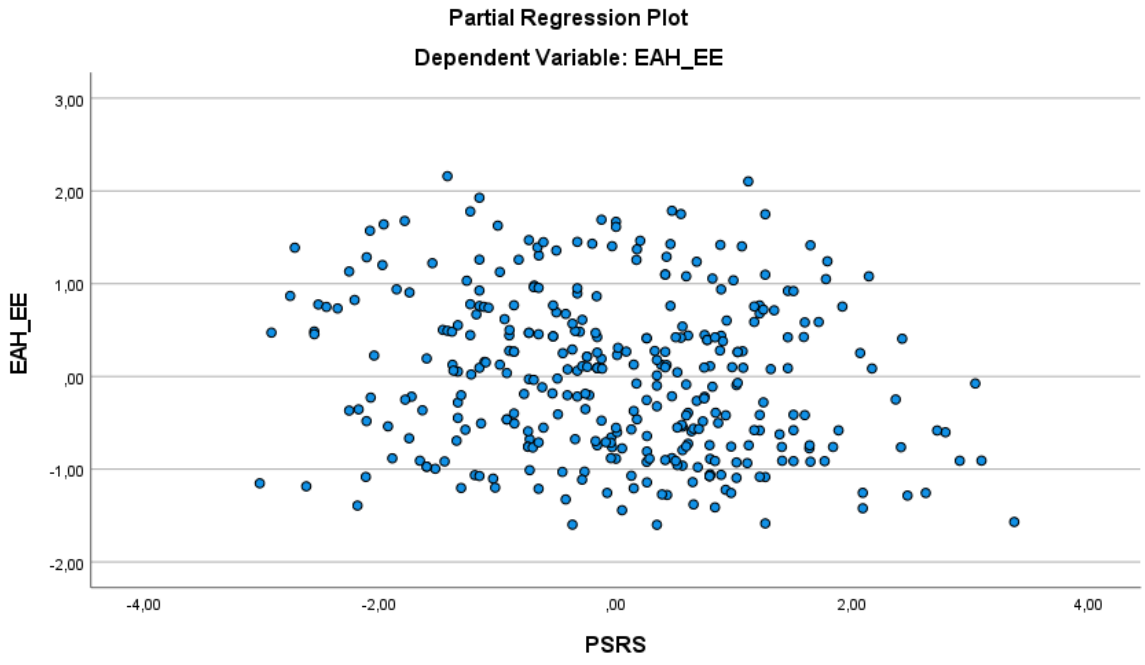

Figure 3

Partial Regression Plot EAH-EE and MLQ-P for Assessing Linearity

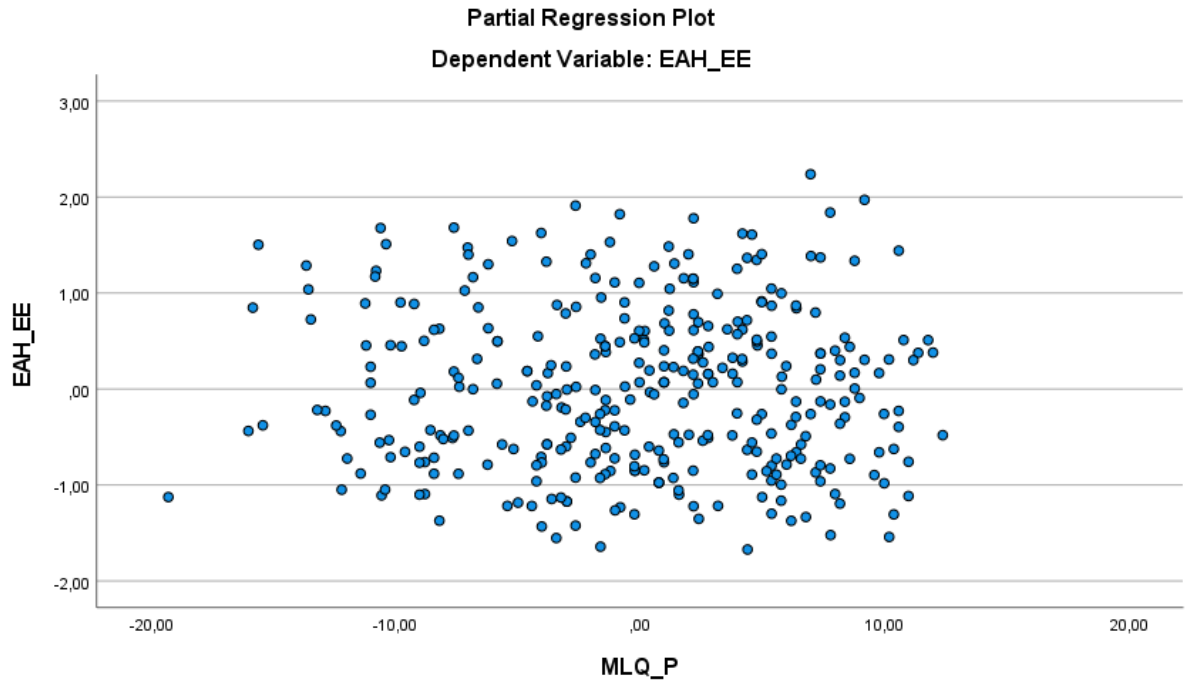

Figure 4

Partial Regression Plot EAH-EE and interaction term (PSRSxMLQ-P) for Assessing Linearity

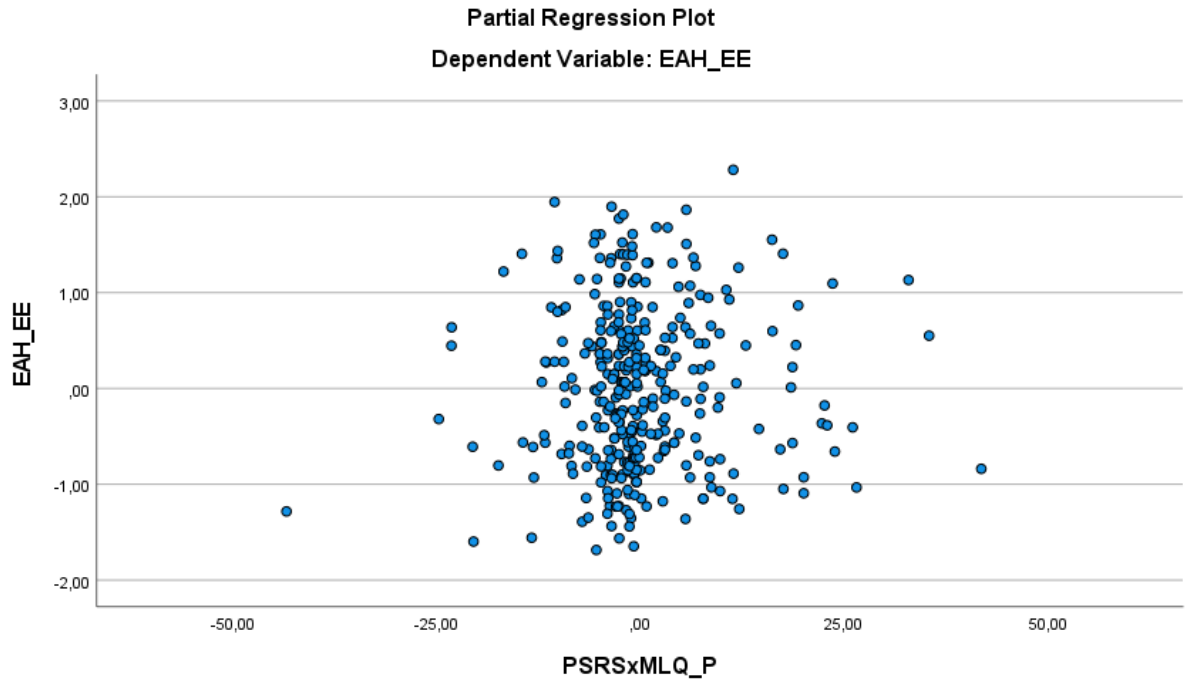

Figure 5

P-P plot for Assessing Normality of Residuals

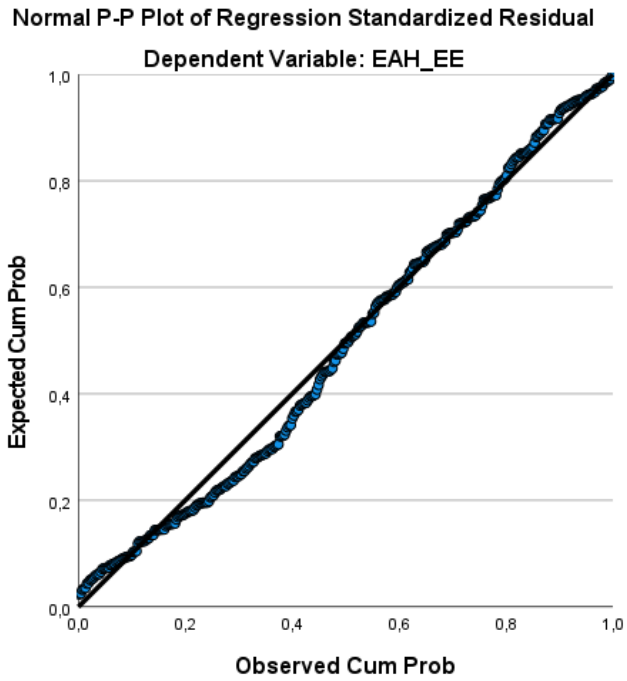

Figure 6

Histogram for Assessing Normality of Residuals

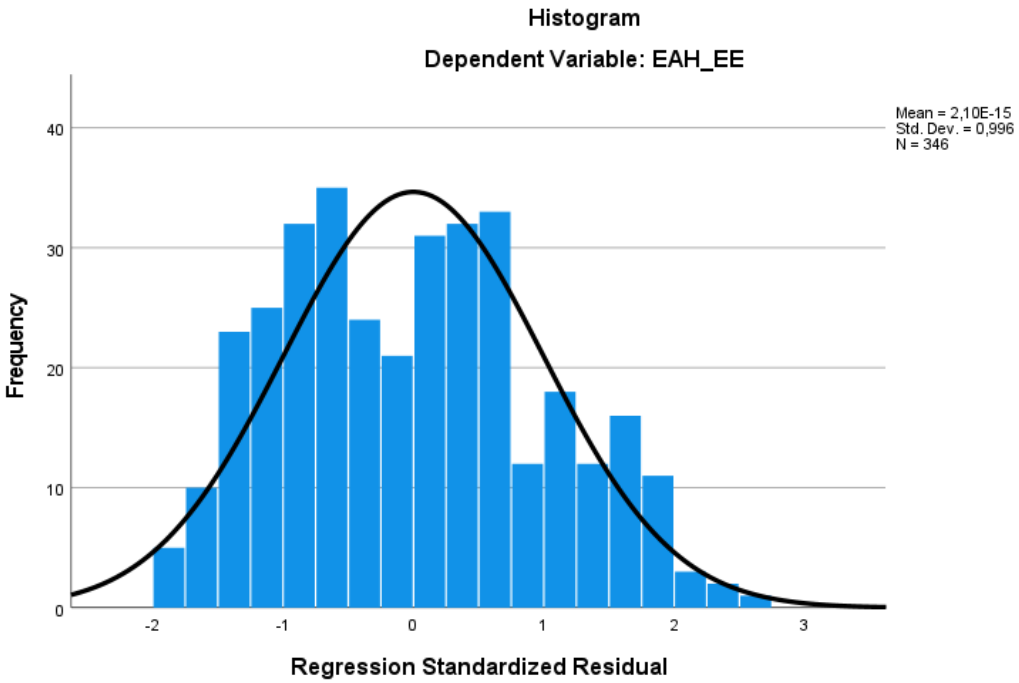

Table 3

Coefficients Table for Assessing Multicollinearity

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	2,580	,046		55,957	<,001		
	Centered_PSRS	-,126	,037	-,184	-3,374	<,001	,948	1,055
	Centered_MLQ_P	-,001	,007	-,007	-,131	,896	,948	1,054
	PSRSxMLQ_P	,003	,005	,033	,621	,535	,999	1,001

a. Dependent Variable: EAH_EEtot

Appendix B

Declaration of AI-Use

Artificial Intelligence (AI) tools were partially employed in the creation of this thesis to support the research and writing process. Specifically, ChatGPT was used to:

1. Enhance the wording and organization of certain sections to improve clarity and readability.
2. Translate Dutch words and sentences into English.
3. Provide guidance on the operation and application of SPSS software.
4. Offer general assistance with writing, including rephrasing and correcting grammar.

All AI-generated suggestions were thoroughly reviewed, evaluated, and adapted by the author to ensure they meet the research objectives and adhere to academic standards. The author takes full responsibility for the accuracy, originality, and integrity of the final document.