The influence of perfectionism on the relationship between self-regulation of eating behaviour and well-being

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Abstract

Self-regulation is a topic of interest in many areas of well-being, including eating pathology. In previous research, both positive and negative relationships between self-regulation of eating behaviour (SRoEB) and well-being have been found. A factor that could give more insight into these conflicting results is perfectionism. Perfectionism is a personality trait that has been found to be correlated with both SRoEB and well-being. In this study, it was researched whether and how SRoEB influences well-being, and whether perfectionism moderates this relationship. A quantitative cross-sectional survey was executed to measure the three variables. Participants were students with mainly Dutch or German nationalities aged 18-26 (N=132). After analysing the data, a positive linear effect of SRoEB on well-being was found. However, no significant moderation was found for perfectionism on the relationship between SRoEB and well-being. In future research, it is of importance to gain more knowledge about factors that underly the dysfunctional properties of high SRoEB, in order to better understand and help individuals with disordered eating or eating disorders.

Keywords: perfectionism, self-regulation, eating behaviour, well-being

Table of Contents

Introduction

In recent years, social media has become an important topic of interest in research. Especially due to the COVID-19 pandemic, social media usage increased in the Netherlands (Bremmer, 2021). Social media usage has shown to significantly influence well-being through social comparison, which can lead to disordered eating, such as strict self-regulation of eating behaviour (Arigo et al., 2013; Brooks, 2015; Meier & Johnson, 2022). One facet that can significantly influence eating behaviour and well-being is perfectionism (Ballesio & Lombardo, 2020; Gaudreau & Verner-Filion, 2012). Perfectionism has been shown as a factor that can influence well-being both positively and negatively (Moate et al., 2019). Furthermore, perfectionism has been found to be a risk factor in the development of disordered eating (Bardone-Cone et al., 2017). In order to investigate the manner in which well-being, perfectionism and disordered eating are related, this paper focused on investigating the influence of the trait perfectionism on the relationship between self-regulation of eating behaviour and well-being amongst university students.

Well-being

Well-being can be described as feeling healthy, happy, and judging life positively (Diener et al., 1997; Veenhoven, 2008, as cited in Centers for Disease Control and Prevention (CDC), 2018). Individuals with high well-being experience positive emotions, lack of negative emotions, satisfaction with life, positive functioning, and fulfilment (Andrews & Withey, 1976; Diener, 2000; Ryff & Keyes, 1995, as cited in CDC, 2018). Due to the increase of social media usage and decrease of social contact during the COVID-19 pandemic, subjective well-being (SWB) has decreased among college students (Brooks, 2015; Zolopa et al., 2022). SWB is a person's evaluation of their life (Diener, 2009). High SWB consists of three facets; being satisfied with one's life, experiencing high levels of positive emotions, and experiencing low levels of negative emotions (Diener, 2009). The increased social media

usage over the last few years can result in lowered SWB, with positive emotions (happiness) decreasing and negative emotions increasing. Phenomena involving negative emotions experienced through social media are social comparison and envy, which is also linked to lowered well-being (Meier & Johnson, 2022). In college, social comparison among students especially arises from their perceived body image and comparing their body with those perceived as more attractive (Arigo et al., 2013). These comparisons contribute to body dissatisfaction, which can lead to disordered eating behaviours, such as restrictive eating (Arigo et al., 2013).

Self-regulation of eating behaviour

Over the past years, self-regulation has become a topic of great interest due to its implications for health and well-being (McClelland et al., 2017). Furthermore, it has been argued that one of the key concepts for improving our comprehension of development and psychopathology is self-regulation (Posner & Rothbart, 2000, as cited in Laceulle et al., 2017). A definition for self-regulation is a person's ability to control and alter their emotions, thoughts, and behaviours while disregarding default responses, in order to achieve higher goals (Singh & Sharma, 2018; Vohs & Baumeister, 2004). Regulating oneself refers to controlling oneself to be in line with preferred personal standards. In psychology, self-regulation also implies the efforts of the psychological self to resist temptation and overcome anxiety (Vohs & Baumeister, 2004).

The level of self-regulation one possesses can influence well-being. Research indicates a positive linear relationship between self-regulation and well-being (Gagnon et al., 2016; Garzón-Umerenkova et al., 2018). This expresses itself by self-regulation leading to increased feelings of autonomy, fulfilment, sense of meaning and competence (Van Genugten et al., 2016). Additionally, a lack of self-regulation skills can lead to poor psychological well-being due to not reaching a desired goal (Van Genugten et al., 2016).

A field in which reaching goals is an important characteristic is in the field of eating behaviour and eating disorders (EDs). Self-regulation of eating behaviour (SRoEB) has also become a central topic in many pathologies. A definition of SRoEB is suppressing one's impulse to consume food in order to adhere to certain weight goals (Johnson et al., 2012). For example, people suffering from obesity lack SRoEB, leading to an unhealthy eating pattern (De Ridder et al., 2012). Furthermore, using self-regulation skills in obesity interventions has led to successful outcomes (Teixeira et al., 2015).

However, SRoEB does not always result in positive outcomes. Disordered eating, including forms strict SRoEB, is associated with lowered psychological well-being (Verstuyf et al., 2012). For example, students with EDs report using more self-regulated strategies, while having a relatively low level of life satisfaction and a relatively high level of negative affect (Kitsantas et al., 2003). This decrease in well-being can in part be explained by the Dietary Restraint Theory proposed by Polivy and Herman (as cited in Verstuyf et al., 2012). According to this theory, restraining what you eat creates a heightened attention to food intake. This can result in an excessive cognitive emphasis instead of an intuitive emphasis on food regulation, decreasing sensitivity to physiological signals of satiety and hunger (Verstuyf et al., 2012). Strong emotional challenges, such as not receiving information on when to consume food, can defeat homeostasis, which in turn can lead to lowered SWB (Land et al., 2012). In sum, the relationship between SRoEB and well-being can be either positive or negative. The question remaining is what makes SRoEB functional behaviour, and what makes SRoEB dysfunctional behaviour.

Perfectionism

One personality trait with both functional and dysfunctional effects on well-being is perfectionism. Perfectionism can be defined as a personality trait involving a desire to be flawless and having extremely high standards, accompanied by excessive critical evaluation

of one's ability to reach these standards (Flett & Hewitt, 2002, as cited in Stoeber et al., 2020). The relationship between well-being and perfectionism can be both negative and positive, depending on different types of perfectionists. Moate et al. (2019) studied the relation between these different types of perfectionists and emotional well-being. Adaptive perfectionists, individuals who set high standards for themselves but can accept not reaching these standards, were found to perceive less stress and negative emotions compared to non-perfectionists (Moate et al., 2019). Maladaptive perfectionists, individuals who set high standards for themselves and are critical of themselves when they cannot meet these standards, were found to perceive more stress and negative emotions compared to non-perfectionists (Moate et al., 2019). Furthermore, the self-discrepancy theory by Higgins suggest that one's actual self can be either consistent or discrepant from one's ideal self (Lo & Abbott, 2019). According to this theory, maladaptive perfectionists are uncertain in their capacity to meet their standards because of potentially larger discrepancies between how they actually are and how they desire to be, whereas adaptive perfectionists have more realistic pursuits for success because of smaller discrepancies (Lo & Abbott, 2019). Consequently, these large discrepancies in maladaptive perfectionists lead to poorer psychological well-being, compared to adaptive perfectionists (Hanley & Garland, 2017, Lo & Abbott, 2019).

Self-regulation of eating behaviour and perfectionism

Perfectionism is also an important factor in disordered eating. Brown et al., (2012) state that the trait perfectionism often is an important characteristic of symptoms of disordered eating. Perfectionism can lead individuals to adhere to certain rules attached to eating, which can successively increase vulnerability to symptoms of disordered eating (Brown et al., 2012). A study by Forbush et al. showed that students with disordered eating patterns show higher levels of perfectionism than those without disordered eating patterns, in which the strongest positive correlation was between perfectionism and extreme SRoEB (2007). Furthermore, a

study among college women has shown that maladaptive perfectionism has a positive effect on disordered eating (Barnett & Sharp, 2016). One form of perfectionism that can be viewed as maladaptive perfectionism is Self-Critical Perfectionism (SCP). SCP is described by Dunkley as a trait involving self-criticism when goals are not reached, worries about making mistakes, and fears concerning failing to meet expectations of others (as cited in Solomon-Krakus et al., 2022). Research found the trait SCP is related to strict SRoEB (Solomon-Krakus et al., 2022). This behaviour is again associated with lowered well-being (Verstuyf et al., 2012).

A possible explanation for negative effects of maladaptive perfectionism as opposed to adaptive perfectionism on well-being and SRoEB is that perfectionism interacts with the relation between SRoEB and well-being. According to Cummins et al. (2002), personality moderates the relationship between external experiences, such as eating, and SWB in different directions. If a challenge occurs, it depends on one's personality how this affects their SWB. Neuroticism is one personality trait that negatively moderates this challenge between an external experience and SWB, leading to lowered well-being (Cummins et al., 2002). Perfectionism and neuroticism have been found to be positively correlated (Stricker et al., 2019). Therefore, it is possible that perfectionism also negatively moderates this challenge, and hence perfectionism could also negatively moderate the relation between SRoEB and well-being. Furthermore, personality has also been shown to have a moderating role in the relationship between social comparison and well-being (Gerson et al., 2016). As social comparison can lead to SRoEB (Arigo et al., 2013), it is possible that personality, and therefore perfectionism, also has a moderating role between SRoEB and well-being. Additionally, it was found that maladaptive personality traits may be crucial in the experience of low well-being in individuals with EDs (de Vos et al., 2021). As mentioned previously,

perfectionism is a personality trait that has maladaptive properties, and therefore it could play a crucial, negative role in the relationship between SRoEB and well-being.

Target group

To investigate the role of perfectionism in SRoEB and well-being, a fitting target group had to be established. Disordered eating is most common in young adults, with the age 21 being the most common age for developing an ED (Ward et al., 2019). Moreover, academic examination stress has been shown to increase symptoms of disordered eating, such as strict SRoEB, in female university students (Costarelli & Patsai, 2012). Furthermore, psychological well-being among students has become a concern and therefore of great interest in research (Lee & Anderman, 2020). On top of this, it has been shown that perfectionism should be considered in increasing well-being among students, as students are more likely to be maladaptive perfectionists than other population groups (Christman, 2012; Lee & Anderman, 2020). Hence, students were the focus of the current study. Additionally, disordered eating is more common in females than in males (National Institute of Mental Health, n.d.). However, research also indicated that males are often overlooked in research on EDs, as the current classifications of EDs are female-centred (Murray et al., 2017). EDs or disordered eating often expresses itself differently in males than in females, leading to men not seeking treatment and being underdiagnosed (Spratt et al., 2022). Thus, focusing merely on women might overlook an important part of the target population. Therefore, university students were the target group of this research, in which both females and males were included.

Current research

In the current study, the goal is to get a greater insight into whether and how the trait perfectionism influences the relationship between SRoEB and well-being, making SRoEB dysfunctional. In the current Western society, difficulties in regulation of eating behaviour are

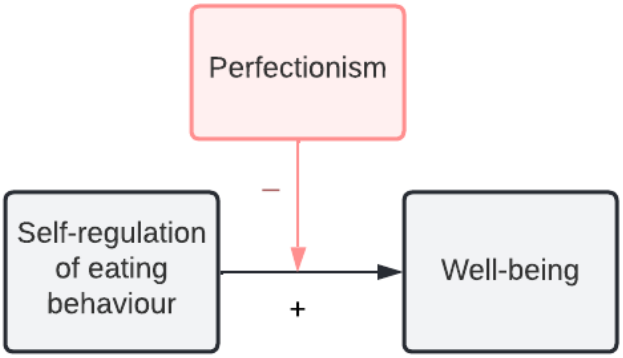
prevalent, leading to significant psychological problems (Thompson & Stice, 2001; Verstuyf et al., 2012). Additionally, well-being among students has decreased over the last years (Zolopa et al., 2022). Therefore, uncovering the underlying mechanisms behind SRoEB and how it affects well-being among students are of great importance. As mentioned previously, personality traits can moderate the relationship between external experiences, such as eating, and well-being. Thus, it was proposed that perfectionism moderates the relationship between SRoEB and well-being. Furthermore, students with disordered eating patterns, which is associated with lowered well-being, show higher levels of, especially maladaptive, perfectionism than those without disordered eating patterns (Christman, 2012; Forbush et al., 2007, Verstuyf et al., 2012). Hence, it was proposed that the perfectionism could be what makes the relationship between eating behaviour and well-being disordered and negative, making SRoEB dysfunctional. Therefore, perfectionism is expected to negatively moderate the relationship between SRoEB and well-being (see Figure 1). The central question of this study was: *How does the trait perfectionism influence the relationship between self-regulation of eating behaviour and well-being amongst university students?* To answer this question, two hypotheses were formulated:

H1: Students with higher levels of SRoEB experience higher levels of well-being.

H2: Perfectionism negatively moderates the relationship between SRoEB and well-being.

Figure 1

Model of the moderation



Methods

Design

The design of this study consisted of a quantitative cross-sectional survey. Data was collected on students, with all participants being in the same group. The survey measured three variables, two independent variables and one dependent variable. The independent variables were SRoEB and perfectionism. The dependent variable was well-being.

Participants

Individuals who could participate in the survey were young adults (age 18-26) who were studying at a university of college at the time of taking part in the study. To recruit the participants, convenience sampling was used. Participants were recruited using the test subject pool called SONA from the University of Twente, as well as the social media platform WhatsApp and the website SurveyCircle. Students studying at the BMS faculty of the University of Twente could obtain so called ‘SONA points’ needed for their studies by partaking in the study. Participants from other universities and colleges did not receive a reward for filling in the survey. In total, 143 participants took part in the survey. 1 participant had to be excluded because they indicated not to be a student currently, and 1 participant had

to be excluded due to their age. From these participants, 94 (66.7%) were female, 45 (31.9%) were male, and 2 (1.4%) were non-binary or a third gender. The mean age of the participants was 21.73 (SD=2.25), with a minimum age of 18 and a maximum age of 26. Furthermore, 73 (51.8%) participants were from the Netherlands, 52 (36.9%) participants were from Germany and 16 (11.3%) participants had another nationality.

Materials

In order to measure the model, a survey was created. Besides demographical questions, the survey consisted of three existing measurement scales, with each scale measuring a separate variable. To see the complete survey, see Appendix A.

Mental Health Continuum - Short Form (MHC-SF)

The first questionnaire used was the Mental Health Continuum – Short Form (MHC-SF) (Keyes et al., 2008). This measurement scale was used to measure the dependent variable well-being. The MHC-SF measures three dimensions of well-being using 14 items. The first three items measure emotional well-being, the next five items measure social well-being and the last six items measure psychological well-being. Each item measures a specific dimension of well-being. Emotional well-being consists of happiness, interest in life and satisfaction with life. One such item is ‘During the past month, how often did you feel happy’. Social well-being includes social contribution, social integration, social actualization, social acceptance, and social coherence. One item in this subscale is ‘During the past month, how often did you feel that people are basically good’. Lastly, psychological well-being contains self-acceptance, environmental mastery, positive relations with others, personal growth, autonomy, and purpose in life. An example of this subscale is the item ‘During the past month, how often did you feel confident to think or express your own ideas and opinions’ (Lamers et al., 2011).

Participants responded based on how often they felt or experiened an item in the past

month using a 6-point Likert scale, ranging from ‘never’ to ‘every day’ (Lamers et al., 2011). The questionnaire can be assessed by summing the scores, with a total score ranging from 0 to 70. In a study concerning a normal student population, a total score with a mean of 41.9 (SD = 13,9) was found (Yeo & Suárez, 2022). The subscale emotional well-being ranged from from 0 to 15, the subscale social well-being from 0 to 25, and the subscale psychological well-being from 0 to 30. Participants who answer with ‘every day’ or ‘almost every day’ to at least 1 of the 3 items from the emotional well-being subscale and 6 of the 11 items from the other two scales combined, could be categorized as ‘flourishing’. When participants indicate to feel at least 1 of the 3 items of the emotional well-being scale and 6 out of 11 items from the other two scales combined as ‘never’ or ‘once or twice’, they would be categorized as ‘languishing’. All participants that score differently were categorized as ‘moderately mentally healthy’ (Keyes, 2009).

The reliabilty of the MHC-SF is good, with a high internal reliability of the total MHC-SF ($\alpha = 0.89$) and the subscales of psychological well-being ($\alpha = 0.83$) and emotional well-being ($\alpha = 0.83$), and an adequete internal reliablity for the subscale social well-being ($\alpha = 0.74$). The MHC-SF also seems to be valid, as both the discriminant validity and the convergent validity are good (Lamers et al., 2011).

Almost Perfect Scale-Revised (APS-R)

The second questionnaire used was the Almost Perfect Scale-Revised (APS-R) (Slaney et al., 2001). This measurement scale is a 23-item scale used to measure the independent variable perfectionism. The APS-R contains three subscales: Standards, Order, and Discrepancy. The subscale Standards consists of 7 items, one of which being ‘I have high standards for my performance at work or at school’. The subscale Order entails 4 items, including the item ‘I like to always be organized and disciplined’. Lastly, the subscale Discrepancy has 12 items, with one of them being ‘I often feel frustrated because I can’t meet

my goals'.

Participants could answer the statements using a 7-point Likert scale, ranging from 'strongly disagree' to 'strongly agree'. A higher score indicates a higher level of perfectionism, in which high levels on the subscale Standards best identify perfectionistic tendencies (Rice and Ashby, 2007). In a study concerning a normal student population, Standards had a mean of 38.8 (SD = 6.9), Order had a mean of 23.0 (SD = 4.6), and Discrepancy had a mean of 57.1 (SD = 12.8) (Kira et al., 2018). The classification of different types of perfectionists is based on the subscales Standards and Discrepancy. If the subscale Standards has a score of 42 or higher, a participant is classified as a perfectionist. Additionally, if a participant scores 42 or higher on Discrepancy, they are classified as a maladaptive perfectionist. If the score on this scale is lower than 42, they are classified as an adaptive perfectionist (Rice & Ashby, 2007).

The APS-R has a good reliability, with good to excellent scores for internal consistency on the subscales ($\alpha = 0.82$ to $\alpha = 0.92$). Furthermore, the ASP-R is a valid measure, having a good construct validity (Slaney et al., 2001).

Self-Regulation of Eating Behaviour Questionnaire (SREBQ)

The last questionnaire used was the Self-Regulation of Eating Behaviour Questionnaire (SREBQ) (Kliemann et al., 2016). This measurement scale is a 5-item scale that measured the independent variable SRoEB. The SREBQ assesses the ability of people to control and manage their eating behaviour in order to accomplish and/or maintain their eating goals (Kliemann et al., 2016). The questionnaire starts with questions regarding healthy eating intentions, in order to possibily exclude participants that did not have these. One of these questions is: 'Do you intend to have a healthy diet?'. Subsequently, the 5-items can be answered, with one of the items being 'I give up too easily on my eating intentions'.

The items were answered using a 5-item Likert scale, with answers ranging from

‘never’ to ‘always’. To score the SREBQ, the mean of the 5 items has to be calculated. A mean score lower than 2.8 indicates low ability to self-regulate, a mean score between 2.8 and 3.6 indicates medium ability to self-regulate, and a mean score higher than 3.6 indicates high ability to self-regulate (Kliemann et al., 2016). In a normal student population, a mean of 3.19 (SD = .7) was scored on the SREBQ (Da Cunha Goncalves, 2020).

The SREBQ is reliable measure, with an acceptable internal reliablity ($\alpha = 0.75$). Furthermore, the construct validity of the SREBQ is good, indicating a positive correlation with other, more general measures of self-regulation. Likewise, the SREBQ has a good discriminant validity (Kliemann et al., 2016).

Procedure

Participants were invited to take part in the online survey using Qualtrics (www.qualtrics.com). The survey could be filled in on a laptop, phone, or tablet. By clicking the corresponding link, participants were led to the beginning of the survey. First, participants were briefly explained what the research was about in an opening statement. Afterwards, participants were asked to read the informed consent and indicate whether they agreed. For the opening statement and informed consent, see Appendix B. Subsequently, participants answered demographic questions about their age, gender and nationality. After the demographics, questions from the MHC-SF, the APS-R, and lastly the SREBQ were answered. The time spend filling in the complete survey was 10 to 15 minutes. Once all questions were answered, participants were thanked for their participation.

Data analysis

In order to answer the hypotheses, several analyses were executed. IBM SPSS statistics (Version 28) was used to analyse the data. As participants need to be eligible to fill in the SREBQ, 9 participants that did not meet the requirements had to be excluded. In total, analyses were performed on 132 individuals. Subsequently, total scores for participants on all

measurements were created. As all measurements use different response options, z-scores were created of the total scores. Once this was done, descriptive analyses were performed on the MHC-SF, the APS-R, and the SREBQ to gather a better understanding of the nature of the participants. Pearson's correlations were used to test the correlations between the variables.

After descriptive statistics, inferential statistics were executed. To test H1, a linear regression analysis was executed on the variables well-being and SRoEB. Beforehand, the statistical assumptions for homogeneity of variances and linearity were tested and met. Normality was also tested, but was not met. However, as the sample size is large enough (N=132), parametric tests can still be performed on the data (Ghasemi & Zahediasl, 2012). To test H2, a moderation regression analysis was performed. The PROCESS macro extension (version 4.2) was used for the moderation of perfectionism on the relationship between SRoEB and well-being (Hayes, 2022).

Results

Descriptive statistics

Descriptive analyses were executed on the MHC-SF, the APS-R and the SREBQ (N=132). Table 1 entails an overview of the means and standard deviations for each variable. Results from the MHC-SF indicated that participants had a moderate to high level of well-being (M = 42.3, SD = 11.3). Descriptives showed 45 participants (34.1%) were flourishing, 15 participants (11.4%) were languishing, and 72 participants (54.5%) were moderately mentally healthy. When looking at the results of the ASP-R, the average participant scored low levels of perfectionism based on the Standards subscale, indicating the average participant was not a perfectionist (M = 37.3, SD = 6.4). In total, 36 participants were perfectionists. From these 36 participants, 25 were maladaptive perfectionists and 11 were adaptive perfectionists. 96 participants were classified as non-perfectionists. Lastly, results of the SREBQ indicated that participants had medium levels of self-regulatory skills (M = 3.3,

SD = .6). Overall, 17 participants had low self-regulatory skills, 84 participants had medium self-regulatory skills, and 31 participants had high self-regulatory skills.

Table 1

Means and standards deviations of variables (N=132)

Variable	*M*	*SD*
Well-being	42.3	11.3
Emotional WB	10.3	2.8
Social WB	12.3	4.7
Psychological WB	19.7	5.4
Perfectionism	105.4	18.8
Standards	37.3	6.4
Discrepancy	47.7	14.0
Order	20.4	4.0
SRoEB	3.3	.6

Correlational analyses were used to test the relationships between the variables. Pearson's correlations of these variables can be found in Table 2. A low, positive correlation was found between well-being and SRoEB ($r(130) = .227$, $p = .009$). Furthermore, well-being had a low, negative correlation with perfectionism ($r(130) = -.205$, $p = .018$). SRoEB and perfectionism were not significantly correlated.

Table 2

Pearson's correlations

N=132	Well-being	SRoEB	Perfectionism
Well-being		.227**	-.205*
SRoEB	.227**		-.087
Perfectionism	-.205*	-.087	

** p<.05

* p<.01

Inferential statistics

A regression analysis was executed, with well-being as the dependent variable and SRoEB as the independent variable (CI = 95%). From the regression analysis, it can be stated that the overall model was significant. Furthermore, a significant effect of SRoEB on well-being was found ($F(1,130) = 7.052$, $p = .009$), with $R^2 = .051$, suggesting that 5,1% of variance is predicted by the model. A low, positive correlation was found between the two variables ($b = .23$). Therefore, H1 can be accepted.

In order to answer whether perfectionism has a moderating effect on the relationship between SRoEB and well-being, a moderation regression analysis was executed (see Table 3). The overall model was significant ($F(3,128) = 4.86$, $p = .003$, $R^2 = .10$). However, the interaction between SRoEB and perfectionism was not significant ($b = -.13$, $t(128) = -1.52$, $p = .13$). Therefore, H2 cannot be accepted.

Table 3

Moderation perfectionism on SRoEB and well-being

	b	*se*	*t*	*p*	*LLCI*	*ULCI*
SRoEB	.21	.08	2.55	.01	.0477	.3776
Perfectionism	-.17	.08	-2.13	.03	-.3364	-.0125
SRoEB* Perfectionism	-.13	.09	-1.52	.13	-.2976	.0394

Discussion

The aim of this study was to find out if and how perfectionism in university students influences the relationship between SRoEB and well-being. Previous research has shown that high self-regulation leads to high well-being. However, when talking about SRoEB, excessive self-regulation can create disordered eating, and thus lowered well-being. Personality has been shown to moderate the relationship between external experiences, such as eating, and SWB. One facet of personality that has been shown to influence both SRoEB and well-being is perfectionism. Therefore, in this study, it is investigated if and how SRoEB influences well-being, and whether this relationship is moderated by perfectionism. To investigate this, a quantitative cross-sectional survey was employed. As disordered eating and EDs are most common among young adults, this study focused on university students. Based on previous research on self-regulation, SRoEB and well-being, it was expected that SRoEB has a positive effect on well-being. Furthermore, it was expected that perfectionism moderates the relationship between SRoEB and well-being. Results indicated that SRoEB did indeed positively relate to well-being. However, perfectionism did not moderate this relationship.

Implications

Descriptive analyses gave an insight into the sample. Participants in this study showed moderate to high levels of well-being. This is in line with other research using the MHC-SF.

A study among mostly students in Singapore and Australia also showed moderate to high levels of well-being among the participants (Yeo & Suárez, 2022). Furthermore, Dutch residents in the age group 16-25 also showed similar scores on the MHC-SF (Santini et al., 2020). When looking at the APS-R, most participants in this study were not perfectionists. In a study among university students, it was also found that the average student was not a perfectionist, with similar scores on the subscales (Kira et al., 2018; Vanstone & Hicks, 2019). However, other studies on university students had significantly more perfectionists in their sample, indicating that the current study had relatively low levels of perfectionism (Alanna et al., 2022; Moate et al., 2019). Lastly, participants had medium levels of SRoEB in this sample. This is in line with other research using the SREBQ, such as a study with a sample of mostly Dutch and German university students, which similarly indicated medium levels of SRoEB among participants (Da Cunha Goncalves, 2020).

The first hypothesis stated that higher levels of SRoEB were expected to be associated with higher levels of well-being. A significant positive linear effect was found between SRoEB and perfectionism, confirming H1. This indicates that high self-regulatory abilities in eating behaviour lead to higher well-being. Similar findings were found in research by Garzón et al., in which a positive linear relationship was found between self-regulation and well-being (2016). Furthermore, the results are also in line with research by Rodríguez et al., who found that poor self-regulatory skills significantly predict future mental health issues (2022).

Results on the second hypothesis, which proposed a moderation of perfectionism on the relationship between SRoEB and well-being, are not in line with previously found literature. No significant moderation of perfectionism on the relationship between SRoEB and well-being was found, hence rejecting H2. This means that perfectionism does not moderate the relationship between SRoEB and well-being. However, the negative non-significant moderation was in the expected direction. This could indicate that in a different or larger

sample, the moderation might be significant.

Several possible explanations can clarify why perfectionism does not moderate the relationship between SRoEB and well-being. Firstly, SRoEB and well-being are complex, multidimensional concepts, and therefore it could be that perfectionism influences its relationship in a different manner. Both perfectionism and SRoEB have a small, significant correlation with well-being. Therefore, it could be that both SRoEB and perfectionism separately and directly influence well-being. Additionally, as both perfectionism and SRoEB show almost equal correlations with well-being, it could be that SRoEB is the moderator in the relationship between perfectionism and well-being. Furthermore, it could be that perfectionism does influence the relationship between SRoEB and well-being, but through mediation instead of moderation.

Secondly, as previously mentioned, individual differences in personality have been shown to be connected to SRoEB and well-being and its relationship. Therefore, there might be other personality facets instead of perfectionism that can explain how SRoEB and well-being are related. One example is the personality trait neuroticism. Neuroticism has been shown to be negatively associated with well-being and positively associated with perfectionism (Cummins et al., 2002; Stricker et al., 2019). Likewise, neuroticism has been found as a predictor of restrictive eating behaviours (Heaven et al., 2001). Another factor that is intertwined with SRoEB and well-being is self-esteem. Low self-esteem has been found to be a risk factor for the development of EDs (Colmsee et al., 2021). Additionally, literature implies a strong link between well-being and self-esteem (Du et al., 2017). Thus, it could be that either self-esteem or the personality trait neuroticism moderates the relationship between SRoEB and well-being.

A third possible explanation for the lack of a moderation in the current study is the environment in which data was collected. When looking at previous research, the focus in the

field of SRoEB was mainly on pathology (Colmsee et al., 2021; Kitsantas et al., 2003; Teixeira et al., 2015). In the current study, most participants score medium to high scores on well-being, indicating low pathology. Furthermore, this sample included relatively little perfectionists compared to other studies among students (Alanna et al., 2022; Moate et al., 2019). It is possible that the moderating effect of perfectionism merely exists in a population with high pathology and high perfectionism, and therefore no moderation exists in the current setting.

Strengths and limitations

This study entails several strengths. Firstly, the current study added to a gap in research about the topic. Current research focuses on SRoEB and well-being and its relationship, but research on the influence of personality, especially perfectionism, on this relationship is limited. Even though much research can be found on the three variables by itself or on each other, there is little information on all three variables together. Additionally, as SRoEB and its often negative consequences to well-being are prevalent, this study adds to a current issue. Furthermore, the measurement scales used have been assessed as valid and reliable. All scales have been widely used and shown to measure well-being, SRoEB and perfectionism accordingly. Lastly, participants were not exposed to any harmful conditions, making this an ethical study.

When evaluating this study, certain limitations have to be taken into account as well. Firstly, the cross-sectional research design cannot establish causal inferences (Wang & Cheng, 2020). Furthermore, all variables are measured once at the same time, and therefore transient situational factors, such as affective state, cannot be ruled out (Spector, 2019).

Secondly, self-report data is susceptible to several biases. One of which is social desirability bias: the propensity of participants to select answers that they perceive to be more socially desirable or acceptable as opposed to selecting those that reflect their actual thoughts

or feelings (Latkin et al., 2017; Grimm, 2010). This can become an issue when collecting personal and/ or sensitive data, which is the case in the current study. Especially eating behaviour can be viewed as a sensitive topic, and therefore socially desirable answers have to be taken into account. Another bias that is prevalent in self-report questionnaires is reference bias: a systematic error that arises from differences in standards used to evaluate one's own behaviour (Lira et al., 2022). For example, it is possible that one participant finds they are good at resisting food only when never eating unhealthy, while another participant already finds this when eating healthy a few times a week.

Lastly, the current study had a small sample size. If the sample would have been larger, the effect of the moderation might have also been larger. As the moderation was in the expected direction, a larger sample could have yielded a significant moderation.

Future directions

Several steps have to be taken to improve knowledge about the mechanism between SRoEB and well-being. First, it is important to get greater insight into what possible factors influence the relationship between SRoEB and well-being. It might be interesting to perform an interview study on participants who show patterns of disordered eating in order to find out what factors and/ or traits affect their thought processes. By covering this, it will be possible to identify new factors that might, in part, explain how SRoEB becomes dysfunctional.

Another important pathway in future research is to investigate the role of other factors in the relationship between SRoEB and well-being, such as neuroticism and self-esteem. As mentioned previously, self-esteem and neuroticism are factors that are intertwined in both variables. Moreover, research has indicated that self-esteem mediates the relationship between mindfulness and well-being (Bajaj et al., 2016). As mindfulness is involved in self-regulatory behaviour, investigating the role of self-esteem in the current context might produce interesting results. Therefore, it might be that self-esteem can be identified as a moderator or

mediator in the model of SRoEB and well-being.

Lastly, future research should investigate the current topic in a clinical setting. The lack of research in a non-clinical setting, as previously described, might indicate that the expected dysfunctional properties of SRoEB merely occur in pathological behaviour. Therefore, research in a clinical setting could yield different findings. An interesting approach to this might be to compare a clinical group to a control group, in order to find out when SRoEB becomes dysfunctional for one's well-being.

Conclusion

SRoEB has become a central topic in the field of psychopathology. Research indicates that SRoEB is associated with well-being in both a positive and negative manner. The direction of the relationship between SRoEB and well-being seems to be regulated by individual traits, from which perfectionism is a central factor in both SRoEB and well-being. In this study, the relationship between SRoEB and well-being and whether perfectionism moderates this relationship was researched among university students. The results indicate a positive linear relationship between SRoEB and well-being. However, perfectionism did not moderate this relationship. In the future, more research is needed to identify the underlying mechanisms of SRoEB and its effect on well-being. Nevertheless, the current study gave more insight into the underlying mechanisms of SRoEB and uncovered what the next steps in research should be.

References

Alanna, K., Keddy, S., & Hill, T. (2022). The prevalence of perfectionism and positive mental health in undergraduate students. *Healthy Populations Journal*, *2*(1). https://doi.org/10.15273/hpj.v2i1.10904

Arigo, D., Schumacher, L., & Martin, L. M. (2013). Upward appearance comparison and the development of eating pathology in college women. *International Journal of Eating Disorders*, *47*(5), 467–470. https://doi.org/10.1002/eat.22240

Bajaj, B., Gupta, R., & Pande, N. (2016). Self-esteem mediates the relationship between mindfulness and well-being. *Personality and Individual Differences*, *94*, 96–100. https://doi.org/10.1016/j.paid.2016.01.020

Ballesio, A., & Lombardo, C. (2020, September 25). The relationship between perfectionism and eating-related symptoms in adolescents: A systematic review. *European Eating Disorders Review*, *29*(1), 32–51. https://doi.org/10.1002/erv.2793

Bardone-Cone, A. M., Lin, S. L., & Butler, R. M. (2017). Perfectionism and contingent self-worth in relation to disordered eating and anxiety. *Behavior Therapy*, *48*(3), 380–390. https://doi.org/10.1016/j.beth.2016.05.006

Barnett, M. D., & Sharp, K. J. (2016). Maladaptive perfectionism, body image satisfaction, and disordered eating behaviors among U.S. college women: The mediating role of self-compassion. *Personality and Individual Differences*, *99*, 225–234. https://doi.org/10.1016/j.paid.2016.05.004

Bremmer, D. (2021, January 23). *Gebruik sociale media groeit dankzij corona, TikTok en Pinterest grote winnaars*. AD.nl. Retrieved October 6, 2022, from https://www.ad.nl/tech/gebruik-sociale-media-groeit-dankzij-corona-tiktok-en-pinterest-grote-winnaars~a64e8089/?referrer=https%3A%2F%2Fwww.bing.com%2F

Brooks, S. (2015). Does personal social media usage affect efficiency and well-being? *Computers in Human Behavior*, *46*, 26–37. https://doi.org/10.1016/j.chb.2014.12.053

Brown, A. J., Parman, K. M., Rudat, D. A., & Craighead, L. W. (2012). Disordered eating, perfectionism, and food rules. *Eating Behaviors*, *13*(4), 347–353. https://doi.org/10.1016/j.eatbeh.2012.05.011

Centers for Disease Control and Prevention. (2018, October 31). *Well-Being Concepts | HRQOL | CDC*. https://www.cdc.gov/hrqol/wellbeing.htm

Christman, E. (2012). Understanding Maladaptive Perfectionism in College Students. *Nurse Educator*, *37*(5), 202–205. https://doi.org/10.1097/nne.0b013e318262aba3

Colmsee, I. S. O., Hank, P., & Bošnjak, M. (2021). Low self-esteem as a risk factor for eating disorders. *Zeitschrift Für Psychologie*, *229*(1), 48–69. https://doi.org/10.1027/2151-2604/a000433

Costarelli, V., & Patsai, A. (2012). Academic examination stress increases disordered eating symptomatology in female university students. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity*, *17*(3), e164–e169. https://doi.org/10.1007/bf03325343

Cummins, R. A., Gullone, E., & Lau, A. L. D. (2002). A Model of Subjective Well-Being Homeostasis: The Role of Personality. *Social Indicators Research Series*, 7–46. https://doi.org/10.1007/978-94-010-0271-4_3

Da Cunha Goncalves, K.V. (2020). *How good or bad is Netflix for its users? The relationship between binge-watching and self-regulation of eating behaviour.* [Unpublished bachelor's thesis]. University of Twente.

De Ridder, D., De Vet, E., Stok, M., Adriaanse, M., & De Wit, J. (2012). Obesity, overconsumption, and self-regulation failure: the unsung role of eating

appropriateness standards. *Health Psychology Review*, *7*(2), 146–165. https://doi.org/10.1080/17437199.2012.706987

De Vos, J. A., Radstaak, M., Bohlmeijer, E. T., & Westerhof, G. J. (2021). Exploring associations between personality trait facets and emotional, psychological and social well-being in eating disorder patients. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity*, *27*(1), 379–386. https://doi.org/10.1007/s40519-021-01107-6

Diener, E. (2009). Subjective well-being [E-book]. *The science of well-being*. Springer Science+Business Media. https://doi.org/10.1007/978-90-481-2350-6

Du, H., King, R. B., & Chi, P. (2017). Self-esteem and subjective well-being revisited: The roles of personal, relational, and collective self-esteem. *PLOS ONE*, *12*(8), e0183958. https://doi.org/10.1371/journal.pone.0183958

Forbush, K., Heatherton, T. F., & Keel, P. K. (2007). Relationships between perfectionism and specific disordered eating behaviors. *International Journal of Eating Disorders*, *40*(1), 37–41. https://doi.org/10.1002/eat.20310

Gagnon, M. C. J., Durand-Bush, N., & Young, B. W. (2016). Self-regulation capacity is linked to wellbeing and burnout in physicians and medical students: Implications for nurturing self-help skills. *International Journal of Wellbeing*, *6*(1), 101–116. https://doi.org/10.5502/ijw.v6i1.425

Garzón-Umerenkova, A., de la Fuente, J., Amate, J., Paoloni, P. V., Fadda, S., & Pérez, J. F. (2018). A linear empirical model of self-regulation on flourishing, health, procrastination, and achievement, among university students. *Frontiers in Psychology*, *9*. https://doi.org/10.3389/fpsyg.2018.00536

Gaudreau, P., & Verner-Filion, J. (2012). Dispositional perfectionism and well-being: A test of the 2 × 2 model of perfectionism in the sport domain. *Sport, Exercise, and Performance Psychology*, *1*(1), 29–43. https://doi.org/10.1037/a0025747

Gerson, J., Plagnol, A. C., & Corr, P. J. (2016). Subjective well-being and social media use: Do personality traits moderate the impact of social comparison on Facebook? *Computers in Human Behavior*, *63*, 813–822. https://doi.org/10.1016/j.chb.2016.06.023

Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: A guide for non-statisticians. *International Journal of Endocrinology and Metabolism*, *10*(2), 486–489. https://doi.org/10.5812/ijem.3505

Grimm, P. (2010). Social desirability bias. *Wiley International Encyclopedia of Marketing*. https://doi.org/10.1002/9781444316568.wiem02057

Hanley, A. W., & Garland, E. L. (2017). Clarity of mind: Structural equation modeling of associations between dispositional mindfulness, self-concept clarity and psychological well-being. *Personality and Individual Differences*, *106*, 334–339. https://doi.org/10.1016/j.paid.2016.10.028

Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach (Methodology in the Social Sciences)* (3rd ed.). The Guilford Press.

Heaven, P. C., Mulligan, K., Merrilees, R., Woods, T., & Fairooz, Y. (2001). Neuroticism and conscientiousness as predictors of emotional, external, and restrained eating behaviors. *International Journal of Eating Disorders*, *30*(2), 161–166. https://doi.org/10.1002/eat.1068

Johnson, F., Pratt, M., & Wardle, J. (2012). Dietary restraint and self-regulation in eating behavior. *International Journal of Obesity*, *36*(5), 665–674. https://doi.org/10.1038/ijo.2011.156

Keyes, C. L. M. (2009). Atlanta: Brief description of the mental health continuum short form (MHC-SF).

Keyes, C. L. M., Wissing, M., Potgieter, J. P., Temane, M., Kruger, A., & van Rooy, S. (2008). Evaluation of the mental health continuum–short form (MHC–SF) in setswana-speaking South Africans. *Clinical Psychology &Amp; Psychotherapy*, *15*(3), 181–192. https://doi.org/10.1002/cpp.572

Kira, I., Shuwiekh, H., Rice, K., & Ashby, J. (2018). Is the "Almost Perfect Scale" Almost Perfect? The Psychometric Properties of the Arabic Version of APS-R and Its Short Form. *Psychology*, *09*(07), 1875–1897. https://doi.org/10.4236/psych.2018.97109

Kitsantas, A., Gilligan, T. D., & Kamata, A. (2003). College women with eating disorders: self-regulation, life satisfaction, and positive/negative affect. *The Journal of Psychology*, *137*(4), 381–395. https://doi.org/10.1080/00223980309600622

Kliemann, N., Beeken, R. J., Wardle, J., & Johnson, F. (2016). Development and validation of the Self-Regulation of Eating Behaviour Questionnaire for adults. *International Journal of Behavioral Nutrition and Physical Activity*, *13*(1). https://doi.org/10.1186/s12966-016-0414-6

Laceulle, O. M., Veenstra, R., Vollebergh, W. A. M., & Ormel, J. (2017). Sequences of maladaptation: Preadolescent self-regulation, adolescent negative social interactions, and young adult psychopathology. *Development and Psychopathology*, *31*(1), 279–292. https://doi.org/10.1017/s0954579417001808

Lamers, S. M., Westerhof, G. J., Bohlmeijer, E. T., ten Klooster, P. M., & Keyes, C. L. (2011). Evaluating the psychometric properties of the mental health Continuum-Short

Form (MHC-SF). *Journal of Clinical Psychology, 67*(1), 99–110. https://doi.org/10.1002/jclp.20741

Land, K. C., Michalos, A. C., & Sirgy, J. M. (2012). *Handbook of Social Indicators and Quality of Life Research*. Springer.

Latkin, C. A., Edwards, C., Davey-Rothwell, M. A., & Tobin, K. E. (2017). The relationship between social desirability bias and self-reports of health, substance use, and social network factors among urban substance users in Baltimore, Maryland. *Addictive Behaviors, 73*, 133–136. https://doi.org/10.1016/j.addbeh.2017.05.005

Lee, Y. J., & Anderman, E. M. (2020). Profiles of perfectionism and their relations to educational outcomes in college students: The moderating role of achievement goals. *Learning and Individual Differences, 77*, 101813. https://doi.org/10.1016/j.lindif.2019.101813

Lira, B., O'Brien, J. M., Peña, P. A., Galla, B. M., D'Mello, S., Yeager, D. S., Defnet, A., Kautz, T., Munkacsy, K., & Duckworth, A. L. (2022). Large studies reveal how reference bias limits policy applications of self-report measures. *Scientific Reports*, *12*(1). https://doi.org/10.1038/s41598-022-23373-9

Lo, A., & Abbott, M. J. (2019). Self-concept certainty in adaptive and maladaptive perfectionists. *Journal of Experimental Psychopathology, 10*(2), 204380871984345. https://doi.org/10.1177/2043808719843455

McClelland, M., Geldhof, J., Morrison, F., Gestsdóttir, S., Cameron, C., Bowers, E., Duckworth, A., Little, T., & Grammer, J. (2017). Handbook of life course health development [E-book]. *Self-regulation*. Springer. https://doi.org/10.1007/978-3-319-47143-3

Meier, A., & Johnson, B. K. (2022). Social comparison and envy on social media: A critical review. *Current Opinion in Psychology*, *45*, 101302. https://doi.org/10.1016/j.copsyc.2022.101302

Moate, R. M., Gnilka, P. B., West, E. M., & Rice, K. G. (2019). Doctoral student perfectionism and emotional well-being. *Measurement and Evaluation in Counseling and Development*, *52*(3), 145–155. https://doi.org/10.1080/07481756.2018.1547619

Murray, S. B., Nagata, J. M., Griffiths, S., Calzo, J. P., Brown, T. A., Mitchison, D., Blashill, A. J., & Mond, J. M. (2017). The enigma of male eating disorders: A critical review and synthesis. *Clinical Psychology Review*, *57*, 1–11. https://doi.org/10.1016/j.cpr.2017.08.001

National Institute of Mental Health. (n.d.). *Eating disorders*. National Institute of Mental Health (NIMH). Retrieved September 21, 2022, from https://www.nimh.nih.gov/health/statistics/eating-disorders

Rice, K. G., & Ashby, J. S. (2007). An efficient method for classifying perfectionists. *Journal of Counseling Psychology*, *54*(1), 72–85. https://doi.org/10.1037/0022-0167.54.1.72

Rodríguez, S., González-Suárez, R., Vieites, T., Piñeiro, I., & Díaz-Freire, F. M. (2022). Self-Regulation and Students Well-Being: A Systematic Review 2010–2020. *Sustainability*, *14*(4), 2346. https://doi.org/10.3390/su14042346

Santini, Z. I., Torres-Sahli, M., Hinrichsen, C., Meilstrup, C., Madsen, K. R., Rayce, S. B., Baker, M. M., Ten Have, M., Schotanus-Dijkstra, M., & Koushede, V. (2020). Measuring positive mental health and flourishing in Denmark: validation of the mental health continuum-short form (MHC-SF) and cross-cultural comparison across three countries. *Health and Quality of Life Outcomes*, *18*(1). https://doi.org/10.1186/s12955-020-01546-2

Singh, S., & Sharma, N. R. (2018). Self-regulation as a correlate of psychological well-being. *Indian Journal of Health and Well-Being*, *9*(3), 441–444.

Slaney, R. B., Rice, K. G., Mobley, M., Trippi, J., & Ashby, J. S. (2001). The Revised Almost Perfect Scale. *Measurement and Evaluation in Counseling and Development*, *34*(3), 130–145. https://doi.org/10.1080/07481756.2002.12069030

Solomon-Krakus, S., Uliaszek, A. A., & Sabiston, C. M. (2022). The differential associations between self-critical perfectionism, personal standards perfectionism, and facets of restrictive eating. *Personality and Individual Differences*, *184*, 111178. https://doi.org/10.1016/j.paid.2021.111178

Spector, P. E. (2019). Do not cross me: Optimizing the use of cross-sectional designs. *Journal of Business and Psychology*, *34*(2), 125–137. https://doi.org/10.1007/s10869-018-09613-8

Spratt, C. J., MacKenzie Myles, L. A., & Merlo, E. M. (2022). Eating disorders in men: A Comprehensive Summary. *Journal of Mind and Medical Sciences*, *9*(2), 249–254. https://doi.org/10.22543/2392-7674.1362

Stoeber, J., Madigan, D. J., & Gonidis, L. (2020). Perfectionism is adaptive and maladaptive, but what's the combined effect? *Personality and Individual Differences*, *161*, 109846. https://doi.org/10.1016/j.paid.2020.109846

Stricker, J., Buecker, S., Schneider, M., & Preckel, F. (2019). Multidimensional Perfectionism and the Big Five Personality Traits: A Meta–Analysis. *European Journal of Personality*, *33*(2), 176–196. https://doi.org/10.1002/per.2186

Teixeira, P. J., Carraça, E. V., Marques, M. M., Rutter, H., Oppert, J. M., De Bourdeaudhuij, I., Lakerveld, J., & Brug, J. (2015). Successful behavior change in obesity interventions in adults: a systematic review of self-regulation mediators. *BMC Medicine*, *13*(1). https://doi.org/10.1186/s12916-015-0323-6

Thompson, J. K., & Stice, E. (2001). Thin-ideal internalization: Mounting evidence for a new risk factor for body-image disturbance and eating pathology. *Current Directions in Psychological Science*, *10*(5), 181–183. https://doi.org/10.1111/1467-8721.00144

Van Genugten, L., Dusseldorp, E., Massey, E. K., & Van Empelen, P. (2016). Effective self-regulation change techniques to promote mental wellbeing among adolescents: a meta-analysis. *Health Psychology Review*, *11*(1), 53–71. https://doi.org/10.1080/17437199.2016.1252934

Vanstone, D. M., & Hicks, R. E. (2019). Transitioning to university: Coping styles as mediators between adaptive-maladaptive perfectionism and test anxiety. *Personality and Individual Differences*, *141*, 68–75. https://doi.org/10.1016/j.paid.2018.12.026

Verstuyf, J., Patrick, H., Vansteenkiste, M., & Teixeira, P. J. (2012). Motivational dynamics of eating regulation: a self-determination theory perspective. *International Journal of Behavioral Nutrition and Physical Activity*, *9*(1), 21. https://doi.org/10.1186/1479-5868-9-21

Vohs, K. D., & Baumeister, R. F. (2004). Handbook of self-regulation [E-book]. *Understanding self-Regulation: An introduction*. The Guilford Press.

Wang, X., & Cheng, Z. (2020). Cross-Sectional Studies. *Chest*, *158*(1), S65–S71. https://doi.org/10.1016/j.chest.2020.03.012

Ward, Z. J., Rodriguez, P., Wright, D. R., Austin, S. B., & Long, M. W. (2019). Estimation of eating disorders prevalence by age and associations with mortality in a simulated nationally representative US cohort. *JAMA Network Open*, *2*(10), e1912925. https://doi.org/10.1001/jamanetworkopen.2019.12925

Yeo, Z. Z., & Suárez, L. (2022). Validation of the mental health continuum-short form: The bifactor model of emotional, social, and psychological well-being. *PLOS ONE*, *17*(5), e0268232. https://doi.org/10.1371/journal.pone.0268232

Zolopa, C., Burack, J. A., O'Connor, R. M., Corran, C., Lai, J., Bomfim, E., DeGrace, S., Dumont, J., Larney, S., & Wendt, D. C. (2022). Changes in youth mental health, psychological wellbeing, and substance use during the COVID-19 pandemic: A rapid review. *Adolescent Research Review*, *7*(2), 161–177. https://doi.org/10.1007/s40894-022-00185-6

Appendix A

Questionnaire

Demographics

Please answer the following questions.

What is your gender?

- ◯ Male
- ◯ Female
- ◯ Non-binary / third gender
- ◯ Prefer not to say

What is your age?

What is your nationality?

- ◯ Dutch
- ◯ German
- ◯ Other

Are you currently a student?

- ◯ Yes
- ◯ No

Where are you studying?

- ◯ University (Dutch: Wetenschappelijk onderwijs (WO))
- ◯ College (Dutch: Hoger beroepsonderwijs (HBO))
- ◯ Intermediate vocational education (Dutch: Middelbaar beroepsonderwijs (MBO))
- ◯ I am not a student currently

Mental Health Continuum – Short Form

Please answer the following questions about how you have been feeling during the past month. Place a check the box that best represents how often you have experienced or felt the following:

During the past month, how often did you feel …

	Never	Once or twice	About once a week	About 2 or 3 times a week	Almost every day	Every day
happy	○	○	○	○	○	○
interested in life	○	○	○	○	○	○
satisfied with life	○	○	○	○	○	○
that you had something important to contribute to society	○	○	○	○	○	○
that you belonged to a community (like a social group, or your neighborhood)	○	○	○	○	○	○
that our society is becoming a better place for people	○	○	○	○	○	○
that people are basically good	○	○	○	○	○	○
that the way our society works makes sense to you	○	○	○	○	○	○
that you liked most parts of your personality	○	○	○	○	○	○
good at managing the responsibilites of your daily life	○	○	○	○	○	○
that you had warm and trusting relationships with others	○	○	○	○	○	○
that you had experiences that challenged you to grow and become a better person	○	○	○	○	○	○
confident to think or express your own ideas and opinions	○	○	○	○	○	○
that your life has a sense of direction or meaning to it	○	○	○	○	○	○

The Almost Perfect Scale – Revised

The following items are designed to measure attitudes people have toward themselves, their performance, and toward others. There are no right or wrong answers. Please respond to all of the items. Use your first impression and do not spend too much time on individual items in responding.

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
I have high standards for my performance at work or at school.	○	○	○	○	○	○	○
I am an orderly person.	○	○	○	○	○	○	○
I often feel frustrated because I can't meet my goals.	○	○	○	○	○	○	○
Neatness is important to me.	○	○	○	○	○	○	○
If you don't expect much out of yourself, you will never succeed.	○	○	○	○	○	○	○
My best just never seems to be good enough for me.	○	○	○	○	○	○	○
I think things should be put away in their place.	○	○	○	○	○	○	○
I have high expectations for myself.	○	○	○	○	○	○	○
I rarely live up to my high standards.	○	○	○	○	○	○	○
I like to always be organized and disciplined.	○	○	○	○	○	○	○

Doing my best never seems to be enough.	○	○	○	○	○	○	○
I set very high standards for myself.	○	○	○	○	○	○	○
I am never satisfied with my accomplishments.	○	○	○	○	○	○	○
I expect the best from myself.	○	○	○	○	○	○	○
I often worry about not measuring up to my own expectations.	○	○	○	○	○	○	○
My performance rarely measures up to my standards.	○	○	○	○	○	○	○
I am not satisfied even when I know I have done my best.	○	○	○	○	○	○	○
I try to do my best at everything I do.	○	○	○	○	○	○	○
I am seldom able to meet my own high standards of performance.	○	○	○	○	○	○	○
I am hardly ever satisfied with my performance.	○	○	○	○	○	○	○
I hardly ever feel that what I've done is good enough.	○	○	○	○	○	○	○
I have a strong need to strive for excellence.	○	○	○	○	○	○	○
I often feel disappointment after completing a task because I know I could have done better.	○	○	○	○	○	○	○

Self-Regulation of Eating Behaviour Questionnaire

Please answer the following questions.

Do you find any of these foods tempting (that is, do you want to eat more of them than you think you should)? (Tick all those that you find tempting)

- [ ] Chocolate
- [ ] Crips
- [ ] Cakes
- [ ] Ice cream
- [ ] Bread/toast
- [ ] Fizzy drinks
- [ ] Biscuits
- [ ] Sweets
- [ ] Popcorn
- [ ] Pastries
- [ ] Pizza
- [ ] Fried foods
- [ ] Chips
- [ ] Other foods (please specify below)
- [ ] I don't find any food tempting

Do you intend NOT to eat too much of the foods you find tempting in the previous question?

- ○ Yes
- ○ No

Do you intend to have a healthy diet?

- ○ Yes
- ○ No

Please read the following statements and tick the boxes most appropriate to you.

For the next few questions, please, understand that:
- 'Tempting foods' are any food you want to eat more of than you think your should.
- 'Eating intentions' refer to the way you are aiming to eat, for example you may intend to avoid tempting foods or eat healthy foods.

	Never	Rarely	Sometimes	Often	Always
I give up too easily on my eating intentions.	○	○	○	○	○
I'm good at resisting tempting food.	○	○	○	○	○
I easily get distracted from the way I intend to eat.	○	○	○	○	○
If I am not eating in the way I intend to, I make changes.	○	○	○	○	○
I find it hard to remember what I have eaten throughout the day.	○	○	○	○	○

Appendix B

Opening statement and informed consent

This study investigates factors potentially influencing eating behaviour and general well-being. You will be asked to answer questions regarding these factors. The survey is completely anonymous, and therefore nobody – including the researcher – can trace answers back to you. Before the survey starts, please read the following statements.

Taking part in the study
I have read and understood the study information provided above. I have been able to ask questions about the study and my questions have been answered to my satisfaction.

I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.

I understand that taking part in the study involves completing a survey containing personal questions.

Use of the information in the study
I understand that information I provide will be used for research purposes and will be anonymously reported in a bachelor thesis.

I understand that personal information collected about me that can identify me, such as my student number, will not be shared beyond the study team.

Future use and reuse of the information by others
I give permission for the survey database that I provide to be archived in the University of Twente Theses repository so it can be used for future research and learning.

If you have any questions regarding the research, you can e-mail the researcher: Rian Telman, r.l.m.telman@student.utwente.nl

I have read and understood the terms for participating in this research and thereby give my informed consent

- ○ Yes
- ○ No