Adaptive and Maladaptive Emotion Regulation and Self-Esteem. The Mediating Effect of Positive and Negative Emotions.

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Abstract

Self-esteem is an important attribute for success in many areas of one's life. A great deal of previous research into the development of self-esteem has focused on its lifespan trajectory. However, a growing body of research started to recognize the importance of studying self-esteem in the context of life transitions. Life transitions come with daily challenges which seem to destabilize self-esteem levels. Emotions seem to play an important role in people's subjective interpretation of these daily challenges. The way we regulate our emotions may explain why there are inter-individual differences in intra-individual change in self-esteem. Therefore, the aim of this paper was to examine the mediating role of positive emotion and negative emotion on two relationships: adaptive emotion regulation and self-esteem, maladaptive emotion regulation and self-esteem. Our data came from experience sampling research on teacher education students (N = 277) who were studying and doing internships. To examine our hypotheses, we conducted four mediation analyses. The results revealed that positive emotions mediate the relationship between: (a) adaptive emotion regulation and self-esteem, and (b) maladaptive emotion regulation and self-esteem. Negative emotion only mediated the relationship between maladaptive emotion regulation and self-esteem. Future studies should focus on using multilevel statistical modelling to examine daily diary data, and use more heterogeneous samples. Also, they should examine these relationships in the context of other life transitions (e.g., moving, marriage, divorce).

Keywords: self-esteem, emotion, emotion regulation, life transitions, teacher education students

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According to Leary and Baumeister (2000, p. 2), self-esteem is the subjective evaluation of oneself. Self-esteem is one of the most valued traits and positively influences many areas of one's life. According to Orth et al. (2012), high self-esteem positively predicts relationship and job satisfaction, occupational status, salary, health, and positive affect. Moreover, the same study found that self-esteem is associated with low negative affect, depression, and health problems (Orth et al., 2012). Despite its importance in various life domains, self-esteem levels seem to be affected during life transitions. For example, the transition to parenthood, higher education, and work have been shown to influence one's self-esteem (Bleidorn et al., 2016; Chen et al., 2016; Chung et al., 2014; Reitz et al., 2020). Moreover, there seem to be interindividual differences in intraindividual change of self-esteem (Reitz et al., 2020). However, little is known about why people differ in their self-esteem change during life transitions. One explanation suggested by theory is that personality and self-esteem change during transitions because of repeated short-term situational events (Wrzus & Roberts, 2016). In addition, how we regulate our emotions seems to affect our subjective interpretation of daily successes and failures (Doron et al., 2013; Garnefski et al., 2001). Furthermore, successes are related to positive emotions and failures are related to negative emotions (Krohne et al., 2002; Nummenmaa & Niemi, 2004; Rosi et al., 2019). Emotion regulation might also explain why these interindividual differences in self-esteem occur at the daily level. Therefore, the present study aims to investigate the impact of adaptive and maladaptive emotion regulation on self-esteem. In addition, emotion regulation modifies emotions and self-esteem has affective components. So, we also seek to examine whether positive and negative emotions explain these relationships.

Self-Esteem Changes During Work and Education-Related Transitions

A considerable amount of literature about the development of self-esteem focused on its life-span trajectory. Findings in this area of research indicate that individuals' self-esteem increases in an accelerated way between adolescence and middle adulthood and then continues to grow steadily (Orth et al., 2012). Then, it peaks between ages 50 and 60 and abruptly decreases (Orth et al., 2012). However, a growing body of literature has underscored the importance of studying self-esteem amid life transitions. Life transitions are significant changes in social roles or life phases that an individual experiences (Luhmann et al., 2021). Some studies suggest that life transitions create favourable circumstances for personality and self-esteem change (Bleidorn et al., 2016; Bleidorn et al., 2020; Denissen et al., 2019).

Consequently, some studies focused on the development of self-esteem in the context of significant life transitions. One transition undertaken by past research is the beginning of a romantic relationship. For instance, Luciano and Orth (2017) showed that the beginning of a relationship coincides with increases in self-esteem and this development pattern continues if the relationship lasts for a minimum of one year. In contrast, self-esteem decreases in the event of a breakup, however, this effect disappears after one year (Luciano & Orth, 2017). Moreover, Chen et al. (2016) and Bleidorn et al. (2016) have examined how the transition to parenthood impacts self-esteem. They found that the self-esteem of young parents first suddenly decreases, and as they adjust to the parenting role, the decline is more gradual (Bleidorn et al., 2016; Chen et al., 2016).

Life transitions such as starting higher education and work were also researched. For instance, one study found that the self-esteem of college students decreases in the first semester but then recovers by the end of the first year (Chung et al., 2014). Furthermore, researchers distinguished between mean-level change and rank-order stability of self-esteem amid a life transition. For instance, Hutteman et al. (2015) compared the self-esteem of high-school students on an international exchange with the self-esteem of a control group. The

international exchange group had an abrupt increase in mean-level self-esteem, however, it had lower rank-order stability than the control group (Hutteman et al., 2015). Similarly, another study looked at the stability and change of self-esteem during the transition from school to work. The findings suggested that students transitioning to work had increased self-esteem, but the increase was not significantly different from the control group. Nevertheless, rank-order stability was lower in the work-transitioning group than in the comparison group (Reitz et al., 2020). The decreased rank-order stability in these studies indicate inter-individual differences in intra-individual self-esteem change.

Processes of Self-Esteem Change

It is not understood what causes individual differences in self-esteem development during work and education transitions. Wrzus and Roberts (2016) indicated that life transitions promote personality and self-esteem development by changing people's daily lives. Also, daily experiences accumulate over time resulting in trait level changes (Wrzus et al., 2021). For instance, repeated negative emotions in the daily life mediate the relationship between stressful events and the development of neuroticism (Wrzus et al., 2021). So, daily events seem to capture subjective experiences, and this could explain why we see individual differences in self-esteem change during life transitions. Reitz et al. (2020) also support this idea as they demonstrated that daily events occurring amidst a life transition explain individual differences in self-esteem change.

Emotion Regulation and Self-esteem

Emotion regulation encompasses the automatic and controlled processes which influence what emotions we experience, when we experience them, and how we express them (Gross, 1998). Previous literature recognizes the impact of emotion regulation on wellbeing and self-esteem (Newman & Nezlek, 2021; Nezlek & Kuppens, 2008). For instance, one study analyzed the effect of two emotion regulation strategies on wellbeing at

the daily level (Newman & Nezlek, 2021). One emotion regulation strategy analyzed was reappraisal, the ability to change one's perspective to increase positive emotion and decrease negative emotion. The other emotion regulation strategy was suppression, the process by which one restrains the expression of emotions. The study revealed that reappraisal is positively linked to wellbeing, while suppression is negatively linked to wellbeing (Newman & Nezlek, 2021). Furthermore, the study by Nezlek and Kuppens (2008) investigated how emotion regulation strategies (reappraisal, suppression) affect self-esteem. The findings revealed that reappraisal is associated with increased self-esteem, while suppression of positive emotion is linked to lower self-esteem (Nezlek & Kuppens, 2008).

Like Nezlek and Kuppens (2008), previous studies have typically conceptualized reappraisal as adaptive emotion regulation and suppression as maladaptive emotion regulation (Gross, 1998; John & Gross, 2004; Newman & Nezlek, 2021; Nezlek & Kuppens, 2008). However, some research also studied the broader constructs of adaptive and maladaptive emotion regulation (Aldao et al., 2010; Garnefski et al., 2001; Kamalinasab & Mohammadkhani, 2018). Generally, adaptive emotion regulation strategies increase positive emotion and decrease negative emotion, while maladaptive emotion regulation strategies decrease positive emotion and increase negative emotion. Still, these studies mainly focused on these constructs in relation to mental health (e.g., depression, anxiety). So far, no studies have analyzed whether the general constructs of adaptive and maladaptive emotion regulation significantly affect self-esteem. Therefore, this paper aims to examine if adaptive and maladaptive emotion regulation strategies significantly impact self-esteem.

According to Gross (1998), emotion regulation controls our emotions. Therefore, it is not unreasonable to believe that emotion regulation influences self-esteem through the channel of emotion. Furthermore, extensive research established the relationship between emotions and self-esteem. For instance, plenty of papers have found positive correlations

between positive emotions and self-esteem (Fordyce; 1988; Ozyesil, 2012; Rodrigues, 2021) and negative correlations between negative emotions and self-esteem (Dua, 1989; Lorr & Wunderlich, 1988; Ozyesil, 2012; Rodrigues et al., 2021). Moreover, Nezlek and Kuppens (2008) showed that the relationship between reappraisal and self-esteem is mediated by positive emotions, and negative emotions mediate the relationship between suppression of positive emotions and self-esteem. Therefore, another aim is to examine the mediating effect of positive and negative emotions on two relationships: adaptive emotion regulation and self-esteem, and maladaptive emotion regulation and self-esteem.

As previously mentioned, life transitions are the breeding ground for personality and self-esteem change (Wrzus & Roberts, 2016) and people differ in their self-esteem development during transitions (Reitz et al., 2020). Since emotion regulation can modify emotions, it is reasonable to believe that individual differences in self-esteem change occur because of one's way of managing emotions. Therefore, to better understand why there are inter-individual differences in intra-individual change of self-esteem, it is important to analyze the relationship between adaptive emotion regulation and self-esteem, maladaptive emotion regulation and self-esteem, and the mediating role of positive and negative emotions in the context of a life transition.

The Present Study

Although we have information about how specific emotion regulation strategies affect self-esteem, much less is known about how the general construct of adaptive and maladaptive emotion regulation influences self-esteem. To address this research gap, we formulate two research aims. First, this paper aims to examine the relationship between adaptive emotion regulation and self-esteem. Second, this paper aims to investigate the relationship between maladaptive emotion regulation and self-esteem.

Hypothesis 1: Adaptive emotion regulation predicts higher self-esteem.

Hypothesis 2: Maladaptive emotion regulation predicts lower self-esteem.

In accordance with the idea that the goal of emotion regulation is to change emotional states and that self-esteem has strong affective components, we developed some research aims. First, this paper assesses the extent to which the association between adaptive emotion regulation and self-esteem is mediated by positive emotions. Second, we explore the degree in which the association between adaptive emotion regulation and self-esteem is mediated by negative emotions. Third, we aim to investigate the mediation of the relationship between maladaptive emotion regulation and self-esteem by positive emotions. Fourth, we analyze the mediation of the relationship between maladaptive emotion regulation and self-esteem by negative emotions. To address these aims we tested the following associated hypotheses:

Hypothesis 3: Positive emotions mediate the relationship between adaptive emotion regulation and self-esteem such that adaptive emotion regulation predicts more positive emotions and positive emotions predict higher self-esteem.

Hypothesis 4: Negative emotions mediate the relationship between adaptive emotion regulation and self-esteem such that adaptive emotion regulation predicts fewer negative emotions and negative emotions predict lower self-esteem.

Hypothesis 5: Positive emotions mediate the relationship between maladaptive emotion regulation and self-esteem such that maladaptive emotion regulation predicts fewer positive emotions and positive emotions predict higher self-esteem.

Hypothesis 6: Negative emotions mediate the relationship between maladaptive emotion regulation and self-esteem such that maladaptive emotion regulation predicts more negative emotions and negative emotions predict lower self-esteem.

We examined these hypotheses by using experience sampling data from students enrolled in a teacher education program who were doing internships and were transitioning to work.

Methods

Participants

Participants were students enrolled in a full-time teacher training bachelor offered by Fontys University of Applied Sciences. In the first wave, 446 students finished a thirty-minute online questionnaire. Out of these, 303 started completing the daily diary assessments. The data for this paper came from 277 students who finished the thirty-minute questionnaire and the daily diary measures. Also, no participants were excluded from the data analysis. To estimate whether our sample size is adequate for a statistical power of 0.80 we used the guidelines provided by Fritz and Mackinnon (2007). Therefore, our sample size is adequate if we want moderate effect sizes on the independent variable-mediator path and mediator-dependent variable path. The initial sample of participants' age ranged from 17 to 38 (M = 20.9, SD = 2.30) and 79.7% were female. As a part of the teacher training curriculum, students were required to participate in internships to gain practical knowledge. Students from all years had at least part-time work experience. However, through internships, students started getting full-time practical experience related to the teacher training program in their second, third, and fourth years. For more detailed information about the participants' work experience by year, see Table A1.

Design

Data for this study were derived from an intensive longitudinal research study initiated by researchers from Tilburg University and Fontys University of Applied Sciences. The topics covered were personality development, self-esteem, and teacher identity. At the time of writing, two measurements have been completed. The data collection of the first wave started in September 2021, and the second started in January 2022. For the purpose of this paper, only data from the first measurement was used.

Procedure

In the first wave of the study, participants were recruited in multiple ways: through announcements during lectures, Instagram posts from the University's accounts, and University emails. Each measurement moment had two assessments: one thirty-minute questionnaire and daily diary questionnaires four times a day for fourteen days. The thirty-minute questionnaire was completed online and included questions about the participants' personalities, needs, and work. The daily diary evaluations were available on the Ethica app at the same time of each day. Participants who completed the daily diary questionnaires received motivating WhatsApp messages. Also, participants periodically received messages in which they were informed about their progress. The data in this paper came from the daily diary measures given at the end of the day. Participants were rewarded with a personalized report of their results for their contribution to the study. Moreover, students who referred other students who completed the first wave were compensated in vouchers.

Measures

Self-Esteem

Participants rated four items (see Table A2) from a validated Dutch translation of the Rosenberg Self-Esteem Scale (Franck et al., 2008; Rosenberg, 1965). The items were rated on a 5-point Likert scale (1 = totally disagree, 2 = disagree, 3 = do not agree/disagree, 4 = agree, 5 = totally agree). Since, the items were part of the daily evaluations, the statements were rated with the stem "Today". The Cronbach's Alpha for this measure was $\alpha = .98$.

Positive and Negative Affect

Four items (see Table A2) were selected from a translated Dutch version of the Positive and Negative Affect Schedule (Watson et al., 1988). For the measurement of positive emotions, we used the items joy and calm. The Cronbach Alpha for these items over the fourteen days was $\alpha = .94$. We measured negative emotions with the items for sadness and anxiety. The value of the Cronbach Alpha for the two items was $\alpha = .95$. Participants had to

report how much they agreed with the statement on the moment of assessment on a 5-point Likert scale (1 = not at all, 2 = somewhat, 3 = moderately, 4 = quite a bit, 5 = extremely).

Emotion Regulation Strategies

Participants rated a few statements (see Table A2) translated in Dutch from the Experience Sampling Method Item Repository (Kirtley et al., 2022). To measure adaptive emotion regulation, we used the following emotion regulation strategies: expression, reappraisal, and acceptance. For this subscale, the Cronbach's Alpha over fourteen days was $\alpha = .89$. For the measurement of maladaptive emotion regulation, we used other two emotion regulation strategies: suppression and rumination. The Cronbach's Alpha for this subscale was $\alpha = .91$.

Data Analysis

Descriptive Statistics

We computed the descriptive statistics using Jamovi 2.2.5 (The jamovi project, 2021). We calculated the means and standard deviations of each variable and we made a correlation matrix to check the linear relationship between each pair of variables.

Assumption Tests

Before analyzing our hypotheses, we tested a few assumptions. First, we tested whether the distributions of the dependent, independent, and mediating variables are normal. For this purpose, we used the software Jamovi 2.2.5 (The jamovi project, 2021). To check the normality of the distributions we looked at skewness and kurtosis. To determine whether the skewness of the distribution indicated normality, we considered values between -0.5 and 0.5. For kurtosis, we considered values from -1 to 1 to indicate a normal distribution. To examine the heteroscedasticity assumption and the multicollinearity assumption we used the software SPSS (Version 24). We checked the homoscedasticity assumption by analyzing the scatterplots of the standardized residuals. We used tolerance tests and variance inflation

factors to assess whether there was concern for multicollinearity. The cutoff for the variance inflation factor were scores larger than 6 and for tolerance were scores smaller than 0.25.

Mediation Analyses

To conduct the mediation analyses we used the software Jamovi 2.2.5 and added the jamm module (Gallucci, 2020). First, we evaluated if adaptive emotion regulation strategies predict higher self-esteem, and whether this relationship is mediated by positive emotions. To do this, self-esteem was recorded as the dependent variable, adaptive emotion regulation as the independent variable, and positive emotion as the mediator. Second, we analyzed whether adaptive emotion regulation strategies predicted higher self-esteem, and whether the link is mediated by negative emotions. Self-esteem was the dependent variable, adaptive emotion regulation was the independent variable, and negative emotion was the mediator. Thirdly, we evaluated if maladaptive emotion regulation strategies predict lower self-esteem, and whether this relationship is mediated by positive emotion. To test this, self-esteem was the dependent variable, maladaptive emotion regulation strategies was the independent variable, and positive emotion was the mediator. Finally, we inspected if maladaptive emotion regulation strategies predict lower self-esteem, and whether this relationship is mediated by negative emotion. Self-esteem was recorded as the dependent variable, maladaptive emotion regulation as the independent variable, and negative emotions as the mediator.

Results

Descriptive Statistics

The overall mean of adaptive emotion regulation is 3.0 (SD = 0.5) and of maladaptive emotion regulation is 2.5 (SD = 0.8). Therefore, participants reported more experiences of adaptive than maladaptive emotion regulation. Moreover, the students' mean self-esteem levels was 3.6 (SD = 0.6). Finally, the mean score of positive emotion (M = 3.8; SD = 0.6) and negative emotion (M = 1.7; SD = 0.6) suggests that participants reported more positive emotion than negative emotion. Self-esteem is weakly to moderately correlated with positive emotion, negative emotion, adaptive emotion regulation, maladaptive emotion regulation. Positive emotions are weakly related to adaptive emotion regulation and maladaptive emotion regulation. Negative emotions are moderately related to maladaptive emotion regulation. For more detail about the correlation coefficients a correlation matrix can be found in Table A3.

Assumption Tests

First, we considered all variables to be normally distributed based on the skewness and kurtosis values. However, the skewness of negative emotion was slightly higher than the cutoff (0.57). Also, the kurtosis value of positive emotion (1.03) and self-esteem (1.19) was a little larger than the cutoff.

Next, based on the scatterplot of the standardized residuals, we considered that the data met the assumption of homoscedasticity and linearity. However, the scatterplot of standardized residuals for the regression between adaptive emotion regulation strategy and negative emotion and the regression between maladaptive emotion regulation and negative emotion looked more heteroscedastic than the rest of the plots.

Finally, based on the tolerance tests and variance inflation factors it seems that there is no concern for multicollinearity. Table A4 displays detailed collinearity statistics.

Mediation Analyses

The first mediation analysis was performed to assess the mediating role of positive emotions on the relationship between adaptive emotion regulation and self-esteem. The results revealed that the total effect of adaptive emotion regulation on self-esteem is significant ($b = .45$, $t(237) = 7.07$, $p < .001$). This indicates that adaptive emotion regulation influences self-esteem which supports Hypothesis 1. The indirect effect of adaptive emotion regulation on self-esteem was also found to be significant ($z = 4.40$, $p < .001$). This suggests that positive emotions mediate the relationship between adaptive emotion regulation and self-esteem which is in support of Hypothesis 3. Moreover, adaptive emotion regulation positively influences positive emotions ($b = .37$, $t(237) = 5.75$, $p < .001$), and positive emotions positively influence self-esteem ($b = .39$, $t(236) = 6.76$, $p < .001$).

The second mediation analysis was conducted to assess the mediating role of negative emotions on the relationship between adaptive emotion regulation and self-esteem. Again, the total effect of adaptive emotion regulation on self-esteem is significant. However, the indirect effect of adaptive emotion regulation on self-esteem was insignificant ($z = 1.37$, $p = .170$). This suggests that negative emotions do not mediate the relationship between adaptive emotion regulation and self-esteem, which does not support of Hypothesis 4. Moreover, adaptive emotion regulation negatively influences negative emotions ($b = -.09$, $t(237) = -1.38$, $p = .169$), and negative emotions negatively influence self-esteem ($b = -.50$, $t(236) = -9.67$, $p < .001$).

The third mediation analysis was performed to assess the mediating effect of positive emotions on the association between maladaptive emotion regulation and self-esteem. The results showed that the total effect of maladaptive emotion regulation on self-esteem is significant ($b = -.29$, $t(237) = -6.75$, $p < .001$). This indicates that maladaptive emotion regulation influences self-esteem, which supports Hypothesis 2. Similarly, the indirect effect of maladaptive emotion regulation on self-esteem was found to be significant ($z = -4.02$, p

< .001). This indicates that positive emotions mediate the relationship between maladaptive emotion regulation and self-esteem, which supports Hypothesis 5. Moreover, maladaptive emotion regulation negatively influences positive emotions ($b = -.22$, $t(237) = -4.83$, $p < .001$), and positive emotions positively influence self-esteem ($b = .41$, $t(236) = 7.15$, $p < .001$).

The fourth mediation analysis was conducted to determine the mediating role of negative emotions on the relationship between maladaptive emotion regulation and self-esteem. Again, the results suggested the total effect of maladaptive emotion regulation on self-esteem is significant. The indirect effect of maladaptive emotion regulation on self-esteem was significant ($z = -5.54$, $p < .001$). This suggests that negative emotions mediate the relationship between maladaptive emotion regulation and self-esteem, which is in support of Hypothesis 6. Moreover, maladaptive emotion regulation positively affects negative emotions ($b = .40$, $t(237) = 10.6$, $p < .001$), and negative emotions negatively affects self-esteem ($b = -.44$, $t(236) = -6.44$, $p < .001$).

Discussion

In the present study we aimed to examine the relationship between adaptive emotion regulation and self-esteem, and maladaptive emotion regulation and self-esteem. Furthermore, we aimed to determine whether the relationship between adaptive emotion regulation and self-esteem is mediated by positive and negative emotion. Another objective was to assess whether the maladaptive emotion regulation and self-esteem link is mediated by positive and negative emotion. The results suggested that adaptive emotion regulation has a significant positive effect on self-esteem (Hypothesis 1). Similarly, maladaptive emotion regulation had a significant negative effect on self-esteem (Hypothesis 2). Also, we found that positive emotions mediated the link between adaptive emotion regulation and self-esteem (Hypothesis 3). Contrary to our expectations, negative emotions did not mediate the link between adaptive emotion regulation and self-esteem (Hypothesis 4). Both positive and negative emotions mediated the association between maladaptive emotion regulation and self-esteem (Hypothesis 5, Hypothesis 6).

In line with our hypotheses, adaptive emotion regulation positively predicts self-esteem (Hypothesis 1), and maladaptive emotion regulation negatively predicts self-esteem (Hypothesis 2). These findings are in support of previous research. The study by Nezlek and Kuppens (2008) examined similar relationships, however, they conceptualized adaptive emotion regulation as reappraisal and maladaptive emotion regulation as suppression. Their study revealed that the correlation between reappraisal and self-esteem was positive, whilst the correlation between suppression and self-esteem was negative (Nezlek & Kuppens, 2008).

Consistent with our hypotheses, positive emotions mediate the adaptive emotion regulation and self-esteem link (Hypothesis 3), and negative emotions mediate the maladaptive emotion regulation and self-esteem link (Hypothesis 6). These findings are

consistent with those of Nezlek and Kuppens (2008) who examined similar models. Namely, they found that the relationship between reappraisal (adaptive emotion regulation) and self-esteem is mediated by positive emotions, and the relationship between suppression of positive emotions (maladaptive emotion regulation) is mediated by negative emotions.

Contrary to our expectations this study was unable to demonstrate that negative emotions mediate the association between adaptive emotion regulation strategies and self-esteem (Hypothesis 4). This finding is in contrast with past psychopathological research linking the use of adaptive emotion regulation strategies to fewer symptoms of depression and anxiety (Garnefski et al., 2001). A possible explanation for this result is that this indirect effect does not exist. Another possible explanation is that different adaptive emotion regulation strategies act in different ways. Specifically, studying the general construct of adaptive emotion regulation could conceal the effect of specific strategies on negative emotions.

Another finding which we found to be in line with our expectations is that positive emotions mediate the association between maladaptive emotion regulation and self-esteem (Hypothesis 5). We could not find any studies that have analyzed a comparable mediation model. However, there is support for negative correlation between maladaptive emotion regulation and positive emotion (Nezlek & Kuppens, 2008), and for the association between positive emotion and self-esteem (Fordyce; 1988; Ozyesil, 2012; Rodrigues, 2021).

There are some practical implications which can be derived from this study. For instance, these findings have important implications for developing interventions aimed at increasing adaptive emotion regulation and decreasing maladaptive emotion regulation to boost one's self-esteem levels. Such interventions could be implemented by educational institutions, similar to Fontys University of Applied Sciences, to better prepare their students in their transition to work. Moreover, since being a teacher demands a high emotional load

and responsibility, it would make sense to include such interventions in training practicing teachers. Also, since maladaptive emotion regulation is a risk factor for low self-esteem, our findings could be helpful for recruiters in identifying employees who are using predominately maladaptive emotion regulation. As previous research suggests, having decreased self-esteem tends to affect the productivity of employees, which shows the relevance of addressing maladaptive emotion regulation strategies and low levels of self-esteem.

Following this study, we can also identify some theoretical implications. First, the general constructs of adaptive and maladaptive emotion regulation have been mostly studied in the mental health context (Aldao et al., 2010; Yalçinkaya-Alkar, 2017). To our knowledge, only Kamalinasab and Mohammadkhani (2018) analyzed if the general constructs of adaptive and maladaptive emotion regulation predicted self-esteem. Therefore, the present study adds to past findings by determining whether adaptive and maladaptive emotion regulation predict self-esteem. Furthermore, to our knowledge adaptive and maladaptive emotion regulation have not been studied yet in the context of a life transition. Consequently, this study contributes to past research by examining these constructs during potentially challenging periods of one's life which would require use of emotion regulation. Furthermore, we develop past findings on self-esteem development during the school-to-work transition (Reitz et al., 2020) by accounting for the direct effect of positive and negative emotions and the direct and indirect effect of adaptive and maladaptive emotion regulation.

On the one hand, the main strength of this study is the use of experience sampling data. Instead of making retrospective assessments, this research design allows real-time collection of the data in naturalistic environments. Moreover, this method ensures reliability by measuring the constructs repeatedly. The large sample size and power also allows for more reliable generalizations from our data. Another strength is the use of the validated Dutch translation of self-esteem items which ensured the validity of the construct. On the

other hand, this study also has limitations. First, a better way of handling daily data would have been using multilevel statistical modelling, however this method was avoided due to our lack of training in this method. Moreover, the fact that a big proportion of the respondents were female make these findings less generalizable to the population of students. Similarly, our sample was made up of university of applied sciences students who were enrolled in a teacher training program. This also limits the generalizability of the findings to the population of students who study at universities of applied sciences.

Therefore, future research should take into account using multilevel statistical modelling. This could give us a better understanding of the relationship between emotion regulation, emotions, and self-esteem on each day of the data collection. Moreover, we could better understand how self-esteem develops in individuals as a function of adaptive and maladaptive emotion regulation across a period. Furthermore, future investigations should focus on using more heterogenous samples to improve the generalizability of the findings. Also, other life transitions should be taken into consideration (e.g., marriage, divorce, death of a loved one) when studying the relationship between emotion regulation, affect, and self-esteem to see whether the effects found in this paper would also apply in the contexts of other transitions.

Conclusion

Essentially, the results were in support of our hypothesis that positive emotions mediate the adaptive emotion regulation and self-esteem link, and the maladaptive emotion regulation and self-esteem link. Also, negative emotion mediated the relationship between maladaptive emotion regulation and self-esteem but did not mediate the relationship between adaptive emotion regulation and self-esteem. This study will be of interest to educational institutions and clinicians who want to help students and clients overcome their maladaptive emotion regulation. Also, these findings are relevant for employers who want to identify at-

risk employees whose self-esteem levels are affected due to use of maladaptive emotion regulation. However, considerably more work will need to be done to understand how emotion regulation affects self-esteem and how emotions mediate the link between emotion regulation and self-esteem. Such work should include multilevel modelling, more heterogeneous samples, and exploration of other life transitions.

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Appendix

Table A1

Work Status of the Students in Each Year of Their Study

Year of study	Total sample	1st year	2nd year	3rd year	4th year
n	403	241	74	47	41
% part-time in a paid job unrelated to teacher education	100.0	100.0	100.0	100.0	100.0
% part-time in volunteer work	14.1	12.0	14.9	14.9	24.4
% part-time in a paid job related to teacher education (part-time internship included)	5.2	3.3	4.1	8.5	14.6
% full-time in an internship related to teacher education	11.7	5.4	14.9	17.0	36.6
% full-time in a paid job related to teacher education	0.3	0.4	0.0	0.0	0.0
% full-time in a paid job unrelated to teacher education	0.9	1.2	0.0	2.1	0.0

Table A2

Daily Diary Items

Source	Subscale	Item
(Franck et al., 2008; Rosenberg, 1965)	-	I felt that I have a number of good qualities.
	-	I certainly felt useless at times.
	-	I felt that I'm a person of worth, at least on an equal plane with others.
	-	I took a positive attitude towards myself.

Source	Subscale	Item
(Watson et al., 1988)	Joy	I feel happy.
	Calm	I feel calm.
	Sadness	I feel gloomy.
	Anxiety	I feel nervous.
(Hierkkaranta et al., 2021)	Expression	I expressed my emotions.
	Acceptance	I just accepted my emotions.
	Rumination	I have thought about it a lot.
(Brans et al., 2013)	Reappraisal	I tried to look at the cause of my feelings from a different perspective.
	Suppression	I tried to hide my emotions.

Table A3

Correlation Matrix of the Variables

Variable	Positive emotion	Negative emotion	Adaptive emotion regulation	Maladaptive emotion regulation	Self-esteem
Positive emotion	1				
Negative emotion	-.62***	1			
Adaptive emotion regulation	.35***	-.09	1		
Maladaptive emotion regulation	-.30***	.57***	.17***	1	
Self-esteem	.49***	-.52***	.42***	.40***	1

Table A4

Collinearity statistics: Tolerance Tests and Variance Inflation Factor

Independent variable	Tolerance	VIF
Hypothesis 3		
Adaptive emotion regulation	0.877	1.140
Positive emotions	0.877	1.140
Hypothesis 4		

Independent variable	Tolerance	VIF
Adaptive emotion regulation	0.992	1.008
Positive emotions	0.992	1.008
Hypothesis 5		
Maladaptive emotion regulation	0.910	1.098
Positive emotions	0.910	1.098
Hypothesis 6		
Maladaptive emotion regulation	0.667	1.477
Negative emotions	0.677	1.477