

Longitudinal impacts of emotion regulation on emerging adults:
Variable- and person-centered approaches

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Abstract

Emotion regulation, or the ways people modify their emotional responses, impacts mental health in important ways. This longitudinal study assessed how cognitive reappraisal and expressive suppression, two specific emotion-regulation strategies, predict (a) emerging adults' later membership in latent classes determined by psychosocial adjustment, using person-centered analyses, and (b) their subsequent psychosocial adjustment outcomes, using variable-centered analyses. Results of latent transition analysis indicated that one's use of emotion-regulation strategies predicts future profiles of psychosocial functioning, even while adjusting for profile status eight months earlier. Further, in regression analyses, reappraisal and suppression predicted subsequent levels of several components of psychosocial adjustment, also above and beyond baseline levels of these outcomes. Both of these findings highlight the strong influence of cognitive reappraisal and expressive suppression on emerging adults' future psychosocial adjustment. Programs promoting mental health during this formative developmental period should target emotion regulation as a key skill predicting future outcomes.

Keywords:

Emotion regulation
Emerging adults
Mental health
Psychosocial adjustment
Longitudinal
Person-centered

1. Introduction

Emotion regulation is the process by which individuals modulate their emotions in response to their environments (Aldao, Nolen-Hoeksema, & Schweizer, 2010). Although maladaptive emotion-regulation strategies have been associated with symptoms of psychopathology across development in many previous studies (Aldao et al., 2010; Eisenberg, Spinrad, & Eggum, 2010), emotion regulation has not been as widely studied in relation to psychosocial strengths. Further, whereas cross-sectional and variable-centered designs abound in this literature, longitudinal and person-centered methods have been underrepresented (Berking & Wupperman, 2012; Gross, 2013). The present study targets gaps in previous research in two ways: (a) by examining the extent to which emotion-regulation strategies predict membership in groups of people with distinct profiles of psychosocial adjustment, and (b) by investigating whether emerging adults' use of specific emotion-regulation strategies predicts their future psychological wellbeing and distress, cognitive strengths and vulnerabilities, and social wellbeing. Importantly, this study adds to the literature on emotion regulation by focusing on a crucial developmental phase, by doing so with a longitudinal research design, by integrating person- and variable-centered methods, and by evaluating both positive and negative outcomes.

1.1. Defining emotion regulation

Among the numerous ways that scholars have conceptualized emotion regulation in previous research, Gross's (1998) empirically validated process model is the most widely cited model to date (Webb, Miles, & Sheeran, 2012). This model's classification of emotion-regulation strategies into *antecedent-focused* and *response-focused* classes has important implications for individual mental health (Gross, 2015). Whereas antecedent-focused emotion-regulation strategies intervene before an emotional response and can therefore alter the emotional

course, response-focused emotion-regulation strategies activate after an emotional response, thereby modifying the resulting behavioral expressions without reducing negative emotions (Gross & John, 2003). Two well-established emotion-regulation strategies that exemplify these families of strategies are *cognitive reappraisal*, an antecedent-focused strategy that consists of interpreting an emotion-inducing situation in a way that mitigates or alters its impact, and *expressive suppression*, a response-focused strategy that involves inhibiting outward emotional expression (Gross & John, 2003).

Generally, cognitive reappraisal is considered an adaptive strategy, and expressive suppression is considered an unhealthy strategy. This is not always the case, as emotion-regulation strategies can be useful to different extents depending on the context in which they are used (Aldao, 2013; Gross, 2015). For instance, a college student may suppress feelings of amusement in order to remain serious during an important class, thereby demonstrating the adaptive nature of suppression (example adapted from Gruber, Mauss, & Tamir, 2011). Similarly, too much reappraisal may be harmful, as it may lead to unrealistically positive interpretations of life events and related negative outcomes (Aldao, 2013). Nonetheless, the overall pattern of results across emotion regulation research tends to associate positive outcomes with cognitive reappraisal and negative outcomes with expressive suppression (Aldao, 2013; Gross, 2013).

1.2. Emotion regulation throughout development

As research has established that people differ in their utilization of reappraisal and suppression and that these two strategies differ markedly in their respective outcomes (Gross, 2013; Gross & John, 2003), emotion regulation has become of central interest in the field of developmental psychopathology, which highlights both adaptive and maladaptive developmental

trajectories (Eisenberg et al., 2010). Due to the recent surge in the popularity of emotion regulation research, there are many studies that have measured emotion regulation and psychopathology cross-sectionally. As this type of research design is vulnerable to making premature conclusions regarding the causal relationship between emotion regulation and psychopathology, experts have called for prospective research examining the long-term consequences of using certain emotion-regulation strategies (Berking & Wupperman, 2012).

Longitudinal research in this area has focused on the development of emotion-regulation strategies from infancy through adolescence, as passage through these developmental periods involves critical changes in neurobiology, cognitions, temperament, and social understanding (Gross, 2013; Gross & Thompson, 2007). A majority of the extant research on emotion regulation also focuses on adulthood. One developmental stage that may not have received adequate attention is the period of emerging adulthood—the transitional phase spanning the late teens to the early twenties—which is a crucial period for emotion regulation due to the increased emotionality and rapid changes occurring during that time (Zimmerman & Iwanski, 2014). There is evidence that individuals' use of emotion-regulation strategies develops throughout adulthood (Gross, 2015), perhaps especially during periods of great transition (Gross & Thompson, 2007). Further, developmental scientists have posited that emotion regulation may be the primary mechanism driving the changes in emotional experience that occur between the ages of eighteen and ninety-four (Riediger & Luong, 2015). Thus, it is important to examine emotion regulation in crucial transitional stages of development, such as emerging adulthood (Arnett, 2000; Gross, 2013).

Emerging adulthood comprises a great deal of change and exploration of identity, worldviews, love, and work (Arnett, 2000; O'Connor et al., 2011; Schulenberg & Zarrett, 2006).

During this time, rates of mental health problems are relatively high, but this period also has been described as a “window of opportunity for positive change in life course trajectories” (O’Connor et al., 2011, p. 860; also see Schulenberg, Sameroff, & Cicchetti, 2004). Thus, it is important to identify factors that influence successful versus maladaptive development, as these factors may be promising targets for intervention (O’Connor et al., 2011). In the developmental sciences, emotion regulation is considered to be a basic ability that can increase the likelihood of either adaptive or maladaptive development (Eisenberg et al., 2010). Thus, it is critical that the impacts of emotion-regulation skills are clarified during pivotal developmental periods. Research has identified emerging adulthood as a key phase for the development and importance of emotion regulation skills, as emerging adults experience high dysregulation of anger and fear, and when compared to middle adults, emerging adults display less adaptive emotion regulation for these negatively-valenced emotions (Zimmerman & Iwanski, 2014). Thus, examining emotion regulation during this developmental period may highlight skills that can have a large impact on future wellbeing.

Within emerging adulthood, the first year of college is a developmental transition comprising rapid academic, social, and ecological changes, as well as shifts in personal responsibility, autonomy, and identity. Research on adjustment to college has indicated that this transition involves heightened rates of psychological distress (Conley, Kirsch, Dickson, & Bryant, 2014). As such, the college transition adds a further risk factor to the already challenging developmental period young people face as they enter emerging adulthood. The present study focuses on the transitional first year of college, examining emotion regulation during a time of significant adjustment across multiple domains. Through understanding the impacts that emotion

regulation has during this key developmental transition, it may be possible to identify pivotal ways in which emotion regulation affects functioning (Zimmerman & Iwanski, 2014).

1.3. Psychosocial adjustment

A developmental psychopathology perspective considers individuals within a developmental process that comprises diverse factors interacting to impact adjustment (Sroufe, 2009). Thus, it is important for researchers to devote attention to emerging adults' broad psychosocial adjustment, a construct that allows for the comprehensive evaluation of functioning in psychological, cognitive, and social domains (Diener & Ryan, 2009). These three components are multifaceted, in that they allow for the examination of both adaptive and maladaptive functioning within each domain. Through the integration of multiple domains and their positive and negative counterparts, the present study adopts a developmental psychopathology perspective by considering the individual as a whole, within a developmental framework, and impacted by multiple factors (Sroufe, 2009).

1.3.1. Psychological functioning. Studies of college-attending emerging adults have identified elevated stress, psychological distress, depression, and anxiety during this developmental period (Conley et al., 2014; Bewick, Gill, Mulhearn, Barkham, & Hill, 2008; Bouteyre, Maurel, & Bernaud, 2007; Eisenberg, Gollust, Golberstein, & Hefner, 2007). Research with college students has shown that low levels of reappraisal are related to high levels of depression, anxiety, stress, and anger (Martin & Dahlen, 2005). An examination of positive psychological functioning is also important, as self-esteem, self-efficacy, and hope can bolster developmentally important outcomes such as academic success and college retention (Gloria & Ho, 2003; Pritchard & Wilson, 2003; Snyder, Hackett, Stewart, & Smith, 2003). In past research, cognitive reappraisal has been correlated with lower levels of negative emotions and higher

levels of positive emotions, whereas expressive suppression has been tied to less positive emotion but not negative emotion (Gross, 2013). Further, adaptive emotion-regulation strategies including cognitive reappraisal have been tied to greater positive affect, life satisfaction, and self-esteem, whereas maladaptive emotion regulation such as expressive suppression has been associated with diminished positive affect, reduced life satisfaction, and lower self-esteem (Gross & John, 2003; Nezlek & Kuppens, 2008; Quoidbach, Berry, Hansenne, & Mikolajczak, 2010). Given the implications that emotion regulation has for both adaptive and maladaptive psychological functioning, the present study includes a number of indicators of mental health in order to determine their associations with prior emotion-regulation strategies.

1.3.2. Cognitive styles. In addition to psychological functioning, research has identified associations between emotion regulation and various cognitive styles, or characteristic ways in which people think about and process information. Among emerging adults, cognitive styles such as coping, positive thinking, and dysfunctional attitudes are especially pivotal in their impact on college adjustment (Bouteyre et al., 2007; Pritchard, Wilson, & Yamnitz, 2007) and academic achievement (Vaez & Laflamme, 2008). Gross and John (2003) have found associations between emotion regulation and coping strategies, such that reappraisal was positively associated with reinterpretation and negatively associated with rumination, whereas suppression was correlated with higher levels of rumination and lower levels of both reinterpretation and venting. Other research has clarified that although cognitive reappraisal and adaptive coping strategies (such as cognitive restructuring and acceptance) are similar, they account for both shared and unique variance, indicating that they are related but distinct constructs (Andreotti et al., 2013). In addition to associations between emotion regulation and coping, research has demonstrated relationships between emotion regulation (both cognitive

reappraisal and expressive suppression) and cognitions about the self, life, and the world. Specifically, reappraisal has been tied to positive thoughts, and suppression to negative thoughts, across this *cognitive triad* (Beck, Rush, Shaw, & Emery, 1979; Nezlek & Kuppens, 2008). In sum, emotion regulation plays a significant role in the cognitive adjustment, and it is important to study this facet of wellbeing for emerging adults.

1.3.3. Social wellbeing. Beyond psychological and cognitive domains, emotion regulation also has been shown to have important implications for social adjustment and dysfunction (Gross, 2013). This is a crucial domain of functioning for college-attending emerging adults, as the transition to college typically requires major shifts in social context (Conley et al., 2014). Given the developmental and physical separation from parents, other family members, and high school friends, along with the need to adapt to an unfamiliar social landscape, emerging adults often encounter social difficulties when adjusting to college (American College Health Association, 2012). Research also indicates that social support and wellbeing are related to college adjustment (Bouteyre et al., 2007), academic functioning (DeBerard, Spielmans, & Julka, 2004), and college retention (Gloria & Ho, 2003). Importantly, expressive suppression has been linked to a variety of negative social outcomes, disrupting interpersonal communication and inhibiting relationship formation in an experimental setting (Butler et al., 2003) and demonstrating significant relationships with more avoidance of attachment, less sharing of emotion with others, fewer close relationships, and less social support (Gross & John, 2003). Conversely, laboratory research has demonstrated that the use of cognitive reappraisal does not impede individuals' peer-rated social affiliation (Butler et al., 2003), and reappraisal has been tied to more sharing of emotions with others, higher numbers of close relationships, and higher likability by peers (Gross & John, 2003). As with psychological and

cognitive outcomes, emotion regulation demonstrates significant associations with social wellbeing, which is a crucial component of emerging adults' psychosocial adjustment.

1.4. A person-centered approach to emotion regulation

Although it has been established that the emotion-regulation strategies people tend to use are tied to distinct outcomes across domains, the ways these strategies may function differently within different individuals is relatively unknown. Leaders in emotion regulation research have noted the importance of studying individual differences in emotion regulation styles (Gross, 2013), but targeted person-centered research is rare. Some studies reporting associations between variables are discussed using language such as "people who use suppression frequently" (Gross 2013, p. 361), which can be misleading, as it implies that the research is person-centered in nature. Instead, much research in the area of emotion regulation focuses on associations between variables, using variable-centered analytic methods to detect relations between emotion-regulation strategies and mental health outcomes. This can be problematic in that variable-centered approaches assume a certain degree of homogeneity across people in terms of the ways variables impact each other. By contrast, person-centered quantitative analyses focus on categories of individuals with distinct patterns of responding, thereby assuming heterogeneity across people in the ways variables influence each other (Bergman & Wangby, 2014). When integrated, these two approaches can enrich developmental research through their complementary capacities. Variable-centered analyses can identify broad principles that connect variables over time, whereas person-centered analyses can identify how distinct types of individuals differ based on their patterns of variable attributes (Laursen & Hoff, 2006). The present study takes an integrative approach to studying emerging adults' emotion regulation by including both variable-centered and person-centered means of analysis.

1.5. The current study

Targeting gaps that exist in previous research, the present study aimed to (a) examine specific emotion-regulation strategies as predictors of membership in classes of emerging adults with distinct profiles of psychosocial adjustment eight months later, while controlling for baseline class membership; and (b) assess the predictive value of emotion-regulation strategies on emerging adults' psychosocial adjustment eight months later, while controlling for baseline levels of psychosocial functioning outcomes. Importantly, this research adds to the existing literature on emotion regulation by considering these issues within a developmental framework and by focusing on a crucial developmental period, by doing so with a longitudinal research design that covers a span of eight months, by evaluating both positive and negative outcomes within the framework of psychosocial adjustment, and by including both variable-centered and person-centered analyses.

This study evaluates both person-centered and variable-centered hypotheses. First, cognitive reappraisal and expressive suppression are expected to predict membership in classes of people defined by distinct profiles of psychosocial adjustment eight months later while adjusting for baseline class membership. Second, high baseline levels of reappraisal and low baseline levels of suppression are expected to predict all of the following eight months later while controlling for baseline levels of each of these outcome areas: (a) psychological functioning, including both greater psychological wellbeing and less psychological distress; (b) cognitive styles, including both higher levels of cognitive strengths and lower levels of cognitive vulnerabilities; and (c) social adjustment, including greater social wellbeing.

2. Method

2.1. Participants

Participants ($N = 1,568$; $M_{\text{age}} = 18.49$; 68.8% female; 72.1% White, 12.7% Asian, 7.0% Hispanic, 2.4% African American, 1.3% Puerto Rican, 0.6% Multiracial, 0.4% American Indian / Alaskan Native, 0.2% Native Hawaiian / Pacific Islander, 2.5% Other) were first-year undergraduate students at a private, midsized Midwestern university. The mean high school GPA of participants was 3.77, $SD = 0.40$, and 9.1% were first-generation college students. All eligible incoming students ($N = 4,251$) were invited to complete an online assessment the week prior to the start of the academic year (Time 1), and those who completed or partially completed the first round ($n = 2,974$; 69.96%) were invited to complete the survey again at the end of the academic year (Time 2). Among the students who completed or partially completed the survey at Time 2 ($n = 1,706$; 40.13% of all students invited at Time 1), the participants included in the present study were those who completed the measures assessing key study variables at both time points (described below), yielding a final sample of 1,568 (36.89% of all students invited at Time 1). Exact sample sizes varied slightly across analyses due to incomplete data.

Compared to the overall population of first-year undergraduates from which it was drawn, the present study sample differed in that they were slightly older, $t(4096) = 2.61$, $p = .009$, Cohen's $d = 0.08$, had slightly higher high school GPAs, $t(4139) = -7.10$, $p < .001$, Cohen's $d = 0.23$, were less likely to have first-generation college status, $X^2(1) = 4.76$, $p = .029$, Cramer's $V = .04$, were more likely to be female, $X^2(1) = 19.75$, $p < .001$, Cramer's $V = .07$, and were more likely to be White, $X^2(10) = 1045.32$, $p < .001$, Cramer's $V = .41$. All of these differences constitute null effect sizes, with the exceptions high school GPA, which was a small effect, and ethnicity, which was a large effect. Thus, although the final sample is relatively similar to the survey respondents who did not complete the measures assessing key study variables, the

potential confounds resulting from differences in high school GPA and ethnicity were both accounted for in all variable-centered analyses.

2.2. Procedure

This research, approved by the university Institutional Review Board, is part of a larger, ongoing study of college student adjustment (Conley et al., 2014). The parent study is a multi-cohort longitudinal study conducted at various time points before and during college. All incoming first-year students were invited by email to complete an online survey that comprised various measures of psychosocial health. Participants completed a baseline assessment (Time 1) the week prior to the start of the academic year. Those who completed the baseline survey were invited to complete the same survey again at the end of their first year (Time 2). Eligible students were entered into a drawing for various prizes at each time point.

2.3. Measures

2.3.1. Demographic information. Participants responded to questions about their sex and age at each time point of the survey. Additionally, with participants' permission, school records were used to obtain information on students' ethnicity, high school GPA, college generational status, estimate of family income, and parents' highest level of education.

2.3.2. Emotion regulation. The 10 items on the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) fall into one of two emotion regulation categories: reappraisal or suppression. Sample items include "I control my emotions by changing the way I think about the situation I'm in" (reappraisal) and "I control my emotions by not expressing them" (suppression). All items are rated on a scale from 1 (strongly disagree) to 7 (strongly agree). In the present sample, both the reappraisal and suppression subscales had adequate to good internal consistency (α ranges of .84-.87 and .77-.80, respectively).

2.3.3. Psychological wellbeing.

2.3.3.1. Self-esteem. Self-esteem was assessed using the Rosenberg Self Esteem scale (RSE; Rosenberg, 1965), consisting of 10 items evaluating global self-esteem (e.g., “On the whole, I am satisfied with myself”). Reliability for the present sample was good ($\alpha = .89$ to $\alpha = .90$) across the two assessments.

2.3.3.2. Self-efficacy. The General Self Efficacy Scale (SES; Sherer et al., 1982) measures mobilizing, cognitive, behavioral, and motivational courses of action in response to the demands of a situation. Participants review statements that describe their beliefs and abilities (e.g., “If I can’t do a job the first time, I keep trying until I can”). The SES is a 17-item measure that uses a 5-point rating scale (1 = strongly disagree, 5 = strongly agree). Cronbach’s alphas for the present sample were good ($\alpha = .86$ to $\alpha = .88$) across the two assessments.

2.3.3.3. Hope. The Adult Dispositional Hope Scale (ADHS; Snyder et al., 1991) measures an individual’s ability to have a successful sense of agency (goal-directed determination), along with a perceived means to achieve salient goals. It is an 8-item measure with a scale ranging from 1 (definitely false) to 4 (definitely true). Sample items include “I energetically pursue my goals” and “My past experiences have prepared me well for my future.” In the present sample, the ADHS had good internal consistency ($\alpha = .83$ to $\alpha = .89$) across the two assessments.

2.3.3.4. Resilience. The Connor-Davidson Resilience Scale 10 (CD-RISC10; Campbell-Sills & Stein, 2007) is a measure of ability to cope with stress. It is a 10-item measure with a rating scale that ranges from 0 (not true at all) to 4 (true nearly all of the time). Sample items include “Under pressure, I stay focused and thinking clearly” and “Having to cope with stress

can make me stronger.” Cronbach’s alphas for the present sample were strong ($\alpha = .89$ to $\alpha = .92$).

2.3.3.5. *Satisfaction with life.* The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) is a measure of life satisfaction as a whole. The SWLS consists of 5 items (e.g., “In most ways, my life is close to ideal” and “If I could live my life over, I would change almost nothing”). Respondents indicate their agreement with each statement (1= strongly disagree; 7 = strongly agree). The SWLS shows discriminant validity from other emotional wellbeing measures and good convergent validity with other assessments of subjective wellbeing. It also shows good internal reliability ($\alpha = .86$ to $\alpha = .90$ in the present sample), good temporal stability, and sufficient sensitivity to be valuable in detecting change in life satisfaction over periods of time.

2.3.4. Psychological distress.

2.3.4.1. *Depression, anxiety, and stress.* Psychological distress was assessed using the Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995). Participants reported the extent to which they experienced symptoms of depression (e.g., “I felt down-hearted and blue”), anxiety (e.g., “I felt scared without any good reason”), and stress (e.g., “I found myself getting upset rather easily”), on a scale from 0 (“did not apply to me at all”) to 3 (“applied to me very much, or most of the time”). Thus, higher scores reflect higher levels of psychological symptoms. This scale evidenced strong internal consistency at both assessments ($\alpha s = .92 - .94$).

2.3.4.2. *Perceived stress.* The Perceived Stress Scale (PSS-10; Roberti, Harrington & Storch, 2006) measures the degree to which life situations are appraised as stressful. Participants review statements and rate how much each statement reflects the last month of their lives (e.g., “In the last month, how often have you found that you could not cope with all the things you had

to do?”). The PSS is a 10-item measure with a rating scale that ranges from 0 (never) to 5 (very often). Cronbach’s alphas for the present sample were good ($\alpha = .84$ to $\alpha = .86$).

2.3.5. Cognitive strengths.

2.3.5.1. Positive automatic thoughts. The Automatic Thought Questionnaire – Positive (ATQ-P; Ingram & Wisnicki, 1988) is a 30-item measure that evaluates the frequency of positive automatic thoughts (e.g., “I will finish what I start”) on a scale from 1 (“never”) to 5 (“all the time”). Higher scores on the ATQ-P reflect a high frequency of positive thinking, and lower scores indicate a low frequency of positive thinking. Reliability for the present sample was strong ($\alpha = .97$ to $\alpha = .98$) across the two assessments.

2.3.5.2. Problem-focused coping and active-emotional coping. The Brief COPE (Carver, 1997; Carver, Scheier, & Weintraub, 1989) is a 28-item measure (abbreviated by the writers of the scale from the original 60 items) that assesses a broad range of coping responses. Respondents indicate how frequently they employ particular coping strategies from 1 (“I haven’t been doing this at all”) to 4 (“I’ve been doing this a lot”). Sample items for problem-focused coping and active-emotional coping include “I take action to try to make the situation better” and “I express my negative feelings,” respectively. Cronbach’s alphas for the present sample ranged from $\alpha = .69$ to $\alpha = .78$ across the two subscales and time points.

2.3.6. Cognitive vulnerabilities.

2.3.6.1. Dysfunctional attitudes. The Dysfunctional Attitudes Scale (DAS; Power et al., 1994) is a 24-item scale that measures the beliefs or assumptions by which individuals organize their lives. Participants reported on a 7-point scale indicating whether they totally agreed (7) or totally disagreed (1) with statements describing beliefs and assumptions about their life (e.g.,

“My happiness depends more on other people than it does on me”). Reliability for the present sample was good ($\alpha = .87$ to $\alpha = .89$) across the two assessments.

2.3.6.2. Avoidant coping. The Brief COPE (Carver, 1997; Carver, Scheier, & Weintraub, 1989) was used to assess this and other forms of coping (see above for full description). Sample items for avoidant coping include “I refuse to believe that it has happened” and “I say to myself ‘this isn't real.’” Cronbach’s alphas for the present sample ranged from $\alpha = .78$ to $\alpha = .82$.

2.3.7. Social wellbeing.

2.3.7.1. Social support. The Social Support Appraisal Scale (SSA; Vaux, Phillips, Holly, Thompson, Williams, & Steward, 1986) is a 23-item subjective measure of social support. Participants are presented with statements regarding their relationship with family and friends (e.g., “I can rely on my friends”) and are asked to rate them on a 4-point scale ranging from strongly agree to strongly disagree. Cronbach’s alphas for the present sample were good ($\alpha = .93$ to $\alpha = .94$).

2.3.7.2. Relationship satisfaction. Relationship satisfaction was assessed by asking students “How satisfied are you, on the whole, with the following relationships?” Relationships evaluated included friends, romantic partner, parents, and siblings. Given that this scale included only four items, Cronbach’s alphas for the present sample were adequate ($\alpha = .60$ to $\alpha = .65$).

2.4. Analytic strategy

2.4.1. Person-centered analyses. To accomplish the research aims, person-centered techniques were used to assess the value of cognitive reappraisal and expressive suppression in predicting membership in classes of psychosocial adjustment at the end of the first year of college, while controlling for baseline class membership. First, in order to identify subgroups of participants who tended to respond similarly across all fourteen indicators of psychosocial

functioning at the end of the first year of college (Time 2), latent profile analysis (LPA) was conducted via *Mplus* Version 7.3 (Muthén & Muthén, 2015). LPA is an application of latent class modeling that uses a set of continuous variables as indicators of categorical latent class membership (Muthén, 2001). Next, in order to determine whether membership in these Time 2 latent classes could be predicted from the use of emotion-regulation strategies at Time 1 while adjusting for Time 1 class membership, latent transition analysis (LTA) was conducted, again via *Mplus* Version 7.3 (Muthén & Muthén, 2015). Latent transition analysis is an extension of latent class modeling that assesses changes in class membership over time via maximum likelihood estimation (Collins, Hyatt, & Graham, 2000). This analysis was structured so as to specify invariance in profile structures between Time 1 and Time 2, with the class model originally identified through LPA providing the basis for the profile structure at both time points. Both cognitive reappraisal and expressive suppression were included in the overall LTA model as covariates, permitting an assessment of their impacts on between-class transitions over time.

2.4.2. Variable-centered analyses. Variable-centered techniques were used to assess the value of cognitive reappraisal and expressive suppression in predicting indicators of psychosocial functioning at the end of the first year of college, while controlling for baseline functioning. Fourteen hierarchical regressions were used to predict Time 2 outcome levels, in which participants' high school GPAs and ethnicities were entered in Step 1 to adjust for these potential confounds, the Time 1 measure of the relevant outcome was entered in Step 2 to adjust for baseline levels, and the Time 1 levels of reappraisal and suppression were entered simultaneously in Step 3. To adjust for familywise error rate, a Bonferroni correction was implemented, making the significance level for all regressions $p < .0036$.

3. Results

3.1. Preliminary analyses

Descriptive statistics for all study variables are presented in Table 1. All study variables were tested for skewness and kurtosis at Time 1 and Time 2. Results indicated that the distributions of study variables were not highly skewed, with values ranging from -1.55 to 1.82. Though kurtosis values also tended to fall within the commonly accepted range (-2 to 2; George & Mallery, 2016), there were four variables that exceeded these values, ranging in kurtosis from 2.08 to 4.42. However, as formal inference tests of normality become increasingly stringent with larger sample sizes, and departures from normality in the cases of positive kurtosis can begin to be mistakenly identified in samples as small as 100 participants (Tabachnick & Fidell, 2007), it was determined that data transformations to correct for kurtosis were not necessary in the present study.

3.2. Person-centered analyses

Latent profile analyses were conducted that specified 1-, 2-, 3-, 4-, 5-, and 6-class models, with results compared across solutions in order to determine the number of profiles that best fit the data. Model fit was assessed via the Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (LMRT; Lo, Mendell, & Rubin, 2001), Akaike Information Criteria (AIC; Akaike, 1974), and sample size-adjusted Bayesian Information Criteria (BIC; Schwarz, 1978). The LMRT compares the fit of a target model with k classes to an alternative model that specifies $k-1$ classes, with p values $< .05$ for the LMRT statistic indicating that the target model is preferable to the simpler alternative; in contrast, LMRT-associated p values $> .05$ indicate that the target model does not provide better fit to the data than its more parsimonious alternative with $k-1$ classes. Smaller AIC and BIC values (i.e., closer to 0) are also generally representative of better model fit

but are not accompanied by *p*-values that can allow for direct comparisons of competing solutions. Table 2 summarizes the fit indices for the six potential solutions evaluated.

Results of the latent profile analyses revealed that a 4-class solution provided the best fit to the data. Although AIC and BIC continued to decrease with each increasingly complex model, the 5-class solution did not provide significantly better fit to the data than the simpler 4-class solution according to the LMRT. Similarly, the 6-class solution did not provide a statistically significant increase in model fit as compared with the 5-class solution. Based on these results, the more parsimonious and easily interpretable 4-class model was retained as the best-fitting solution. The classes extracted by this model included (a) a “well-adjusted” profile ($n = 488$, 31.1% of sample), characterized by notably high levels of all positive outcomes (e.g., resilience) and relatively low levels of all negative outcomes (e.g., perceived stress); (b) an “average” profile ($n = 653$, 41.6% of sample), characterized by near-average levels of all fourteen psychosocial adjustment outcomes; (c) a “coping with distress” profile ($n = 235$, 15.0% of sample), characterized by near-average levels of several outcomes but with markedly elevated levels of depression, anxiety, and stress, perceived stress, and dysfunctional attitudes, along with high levels of active-emotional coping and avoidant coping; and (d) a “maladjusted” profile ($n = 192$, 12.2% of sample), characterized by markedly low levels of all positive outcomes accompanied by high levels of all negative outcomes. Follow-up analyses via MANOVA with post-hoc tests adjusting for the number of between-group comparisons demonstrated that all four profiles differed significantly from each other across all fourteen psychosocial adjustment outcomes, with the exceptions of six out of 84 total between-group comparisons (see Table 3). Profiles of standardized mean levels of psychosocial adjustment outcomes are presented in Figure 1.

Latent transition analyses were conducted specifying three different models in order to assess for the impacts of reappraisal and suppression on class membership over time. Hypothesis testing in latent transition analysis for a model with n covariates is performed using a likelihood-ratio χ^2 test that compares the fit of an overall model with all covariates included to n models, each of which removes one of the original set of covariates while leaving the rest included in the model, thereby assessing the unique predictive power of each covariate (described in detail by Collins & Lanza, 2010). Thus, the model with both cognitive reappraisal and expressive suppression included as covariates was compared to two additional models, one with suppression only (i.e., with reappraisal removed) and one with reappraisal only (i.e., with suppression removed), with the expectation that the comparison models would not perform as well as the model including both covariates.

Results supported this hypothesis, such that the models with either cognitive reappraisal or expressive suppression removed demonstrated significantly worse performance in predicting class membership over time than did the model including both covariates (see Table 4). This indicates that both cognitive reappraisal and expressive suppression significantly influenced the pattern of individual transitions between groups over time, thereby predicting class membership at Time 2 above and beyond Time 1 class membership. While a large majority of participants tended to remain in the same group over time, 31.4% of emerging adults transitioned to a different class between Time 1 and Time 2 (see Table 5 for details).

3.3. Variable-centered analyses

The results of hierarchical regressions are presented in Table 6. Above and beyond baseline levels, utilizing reappraisal at Time 1 predicted psychosocial adjustment at Time 2 in the domains of (a) psychological functioning, including both wellbeing (higher self-efficacy,

more hope, more resilience), and distress (less depression, anxiety, and stress); (b) cognitive styles, particularly strengths (more positive automatic thoughts, more problem-focused coping, more active-emotional coping); and (c) social wellbeing (more social support and more relationship satisfaction). Use of reappraisal at Time 1 did not predict outcomes within the area of cognitive vulnerabilities. Further, above and beyond baseline levels, using suppression at Time 1 predicted psychosocial adjustment at Time 2 in the domains of (a) psychological functioning, specifically wellbeing (lower satisfaction with life) and (b) cognitive styles, including both strengths (less problem-focused and active-emotional coping) and vulnerabilities (more dysfunctional attitudes). Use of suppression at Time 1 did not predict outcomes within the areas of psychological distress or social wellbeing.

4. Discussion

This study demonstrates that emotion regulation has a significant impact on psychosocial adjustment—including the domains of psychological functioning (wellbeing and distress), cognitive styles (strengths and vulnerabilities), and social adjustment—during the important developmental period of emerging adults' transition to college. Through a person-centered analysis of Time 2 adjustment profiles, four classes of students were identified, defined by (a) “well-adjusted,” (b) “average,” (c) “coping with distress,” and (d) “maladjusted” psychosocial functioning. This four-profile solution was further examined via latent transition analysis, which revealed that both cognitive reappraisal and expressive suppression uniquely impacted between-class transitions over time, above and beyond baseline class membership. Nearly one-third of students changed class membership over the first year of college, indicting the importance of emotion-regulation strategies for determining emerging adults' changes in psychosocial adjustment during a pivotal developmental period.

Through variable-centered analyses, cognitive reappraisal and expressive suppression were found to be predictive of components of subsequent psychosocial adjustment across all five outcome areas. Among outcomes related to psychological adjustment, cognitive reappraisal was found to predict greater psychological wellbeing (self-efficacy, hope, and resilience) and less psychological distress (depression, anxiety, and stress), whereas expressive suppression only predicted less satisfaction with life, over the first year of college. In the domain of cognitive styles, reappraisal predicted greater cognitive strengths (positive automatic thoughts, problem-focused coping, and active-emotional coping), and suppression predicted lower levels of two of these cognitive strengths (problem-focused and active-emotional coping) as well as greater cognitive vulnerabilities (dysfunctional attitudes), across time. Finally, within the domain of social wellbeing, reappraisal predicted greater social support and relationship satisfaction across the course of eight months.

Importantly, the cumulative effects of emotion regulation on some of these outcomes were below the threshold of what can be considered meaningful effect sizes (i.e., small or larger, see f^2 values in Table 6). Specifically, the predictive impacts of both emotion-regulation strategies on self-efficacy; satisfaction with life; depression, anxiety, and stress; positive automatic thoughts; and dysfunctional attitudes constituted null effects (i.e., below the threshold for small effects). In contrast, emotion regulation meaningfully predicted hope, resilience, problem-focused coping, active-emotional coping, social support, and relationship satisfaction across the transitional first year of college (see f^2 values in Table 6). This indicates that cognitive reappraisal and expressive suppression may impact specific areas of functioning more than others during this critical developmental period. Importantly, however, it must be noted that variable-centered analyses assume homogeneity in the ways variables relate to each other across

people. As such, though reappraisal and suppression may be associated with their respective outcomes, this does not necessarily mean that they lead to the same outcomes for each individual at all times. In contrast, person-centered analyses recognize the heterogeneity in how variables influence each other by examining groups of people with distinct patterns of responding. Thus, the results of person-centered analyses provide more nuanced information regarding the impact of emotion-regulation strategies on emerging adults' psychosocial functioning than can be found through variable-centered analyses alone.

The person-centered results reveal heterogeneity across students in profiles of functioning at the end of the first year of college. When separated into classes based on patterns of psychosocial adjustment, participants fell into four groups: (a) a "well-adjusted" group characterized by consistently high levels of psychological, cognitive, and social strengths and low levels of psychological and cognitive vulnerabilities; (b) an "average" group characterized by near-average levels of all outcomes; (c) a "coping with distress" group characterized by notably high levels of both distress and coping; and (d) a "maladjusted" group characterized by low levels of strengths and high levels of vulnerabilities. While the largest proportion (41.6%) of students displayed near-average levels of all outcomes at the end of the first year of college, almost one third (31.3%) of students displayed significant strengths across all psychosocial domains. This is encouraging, given that the first year of college is a time of developmental transitions in multiple domains, resulting in increased risk for psychological distress (Conley et al., 2014). By contrast, a minority (15.0%) of students reported high levels of distress and more coping behaviors than their peers, and another group (12.2%) of students displayed significantly worse functioning than their peers across psychosocial domains. The emerging adults in these

final two classes likely could benefit most from psychoeducation regarding adaptive emotion-regulation strategies.

This interpretation is further supported by the results of longitudinal person-centered analyses. Latent transition analysis revealed that nearly one-third (31.4%) of students transitioned from one class to another during the first year of college. Further, cognitive reappraisal and expressive suppression were both unique predictors of students' profiles of functioning at the end of the year, above and beyond Time 1 class membership. This demonstrates the importance of emotion-regulation strategies in determining mental health during the formative developmental period of emerging adulthood (Arnett, 2000; O'Connor et al., 2011).

The two proportionately most common transitions (i.e., representing the greatest proportion of a given class that transitioned to another class) over time were (a) from the "well-adjusted" class to the "average" class (23.1% of Time 1 "well-adjusted" participants made this transition) and (b) from the "coping with distress" class to the "maladjusted" class (24.2% of Time 1 "coping with distress" participants made this transition). In interpreting these transitions, it is useful to consider the variable-centered results, which can help to illuminate possible reasons for these transition patterns. First, students' transition from "well-adjusted" to "average" may have been most strongly influenced by cognitive reappraisal. This is because, overall, cognitive reappraisal had a broader impact than expressive suppression in terms of the number of outcomes that it predicted over the first year of college. More so than suppression, reappraisal was predictive of outcomes across domains of psychosocial adjustment, especially in psychological wellbeing (i.e., hope and resilience), cognitive strength (i.e., adaptive coping), and social wellbeing (i.e., social support and relationship satisfaction). Therefore, it may be that

students whose functioning decreased from broadly “well-adjusted” to generally “average” over time were engaging in less cognitive reappraisal at the end of the first year of college.

Second, when interpreting students’ transition from “coping with distress” to “maladjusted,” it is important to note the predictive effects of both cognitive reappraisal and expressive suppression. Variable-centered analyses revealed that both emotion-regulation strategies were strongly related to the variables of problem-focused coping and active-emotional coping, cognitive strengths that were endorsed at greater levels by the “coping with distress” class than the “average” or “maladjusted” classes. Thus, it may be that students’ transition out of the class characterized by high levels of these forms of coping was impacted by changes in their emotion regulation, both reappraisal and suppression, over the course of the first year.

As noted, variable-centered analyses indicated that one area in which cognitive reappraisal had consistently positive impacts was in the domain of cognitive styles. This was particularly true for adaptive coping, a construct that shares some conceptual overlap with reappraisal, though, as noted previously, research suggests that these processes are related but distinct (Andreotti et al., 2013; Gross, 2015; Zimmerman & Iwanski, 2014). Gross and John (2003) conclude that the strength of the relationship between coping and both reappraisal and suppression is “not so high as to suggest redundancy” (p. 354). Emotion regulation and coping are often treated as entirely separate in the literature (e.g., Hasking et al., 2010). Gross (1998) provides perhaps the clearest delineation of the differences between these constructs when he explains that coping involves efforts that may exceed an individual’s cognitive or behavioral resources and includes “nonemotional actions taken to achieve nonemotional goals” (p. 275). Emotion regulation, by contrast, includes processes that may or may not tax the resources of an individual and is exclusively focused on managing which emotions people have, when they have

them, and how these emotions are experienced and expressed. Thus, though there is some conceptual overlap between these constructs, the predictive effects of cognitive reappraisal on coping styles are nonetheless meaningful.

Compared to cognitive reappraisal, the pattern of results for expressive suppression was more difficult to interpret. Suppression's inconsistent effects across domains of psychosocial adjustment were in contrast to past research on this emotion-regulation strategy, wherein it has been associated with outcomes across multiple domains (Butler et al., 2003; Gross & John, 2003; Nezlek & Kuppens, 2008; Quoidbach et al., 2010). Thus, it seems likely that there is another factor impacting the relationship between expressive suppression and psychosocial adjustment, unmeasured in the present study but exerting its influence on these results. Future research should explore possible moderators of the association between suppression and key outcomes. Overall, it may be that cognitive reappraisal and expressive suppression function differently in terms of the impacts they have on emerging adults over time.

The present study's variable- and person-centered analyses provide complementary findings that, when integrated, demonstrate that cognitive reappraisal and expressive suppression meaningfully influence emerging adults' psychosocial adjustment over the course of the first year of college. These results make an important and novel contribution to the literature by identifying profiles of psychosocial adjustment using a person-centered approach, pinpointing emotion regulation as a predictor of emerging adults' adjustment profiles over time, and delineating a clearer pattern of the specific outcomes that reappraisal and suppression predict during a crucial developmental period. Cognitive reappraisal produced the clearest pattern of results, suggesting that this emotion-regulation strategy has significant benefits for psychosocial adjustment during this formative developmental transition. Factors that promote positive

outcomes in this population are important to identify, given the unique demands that emerging adults face during the first year of university life (Conley et al., 2014).

4.1. Promotion of adaptive emotion regulation

Of this study's findings, those related to cognitive reappraisal may be of the greatest import for informing preventative programs and clinical interventions for college students. The developmental tasks facing college-attending emerging adults include adapting to living away from parents who provide extrinsic emotion regulation for young children (Eisenberg et al., 2010) and continue to model emotion regulation for middle children and adolescents (Bariola, Gullone, & Hughes, 2011), regulating emotions in the context of new peer relationships (Zimmerman & Iwanski, 2014), and managing the increased emotional volatility associated with the major role changes, increased responsibilities, and need to adapt to the academic rigors of university (Conley et al., 2014). Thus, it is important to provide psychoeducation on emotion regulation skills that can promote wellbeing during this developmental turning point. Emotion regulation-focused clinical interventions for problems such as depression and anxiety, substance use, eating disorders, and borderline personality disorder have been shown to be effective (Beck et al., 1979; Breslin, Zack, & McMain, 2002; Fairburn et al., 1995; Linehan, 2015; Roemer, Orsillo, & Salters-Pedneault, 2008; Segal, Williams, & Teasdale, 2002).

Further, interventions targeting emotion regulation processes for women diagnosed with breast cancer have shown that this form of treatment is more helpful than standard care in improving emotional wellbeing and coping efficacy (Cameron & Jago, 2008). Given the increased risk for mental health problems during emerging adulthood and the college transition, promoting adaptive emotion-regulation strategies also may have a large impact among college students. Interventions for this population targeting emotional intelligence (Nelis et al., 2011)

and emotional awareness (Conley, Travers, & Bryant, 2013) have already been found to improve students' psychological wellbeing, with some long-term effects noted (i.e., 6 months post-intervention) when interventions included both emotion understanding and emotion regulation. These intervention programs did not specifically target cognitive reappraisal as it is defined in the emotion regulation literature, but were still effective. Based on the present findings, more targeted training of reappraisal skills may have an even larger impact on college students' psychosocial wellbeing. Universities are well poised to offer this type of instruction to entering first-year students, and by doing so could positively influence their wellbeing over the first year of college and beyond.

4.2. Limitations of the present study

Despite the meaningful implications of these findings, there are several limitations of the present study that merit consideration. The first such limitation is the nature of the data collection methods used. Although the survey methodology of this study was highly efficient, allowing for the collection of longitudinal data on a variety of measures from a very large sample, there is also bias inherent to self-reported data. Self-report bias can lead to stronger relationships appearing among constructs than are actually present due to the information all being reported both by the same individuals and in the same manner. Furthermore, survey data are subjective by nature and lack the unbiased qualities of behavioral, biological, and other objective measurement methods.

It also is notable that, although cognitive reappraisal and expressive suppression are both important emotion-regulation strategies—and possibly the two that have received the most attention in the emotion regulation literature (e.g., Gross, 2013)—they are only two examples of a larger pool of emotion-regulation strategies that merit study. Other measures of emotion

regulation assess strategies such as rumination, self-blame, catastrophizing, and acceptance of emotions, among others (e.g., Garnefski, Kraaij, & Spinhoven, 2001; Gratz & Roemer, 2004). An integration of other emotion-regulation strategies with the present findings would provide a more nuanced and complete picture of the long-term impacts of emotion regulation on psychosocial adjustment.

Additionally, although the present study made one of the first forays into the territory of longitudinal research called for by the emotion regulation literature, the eight-month time frame is still somewhat short and, as such, limits both the sophistication of possible data analyses and the conclusions that can be drawn from these results. Finally, although an important component of this study was its assessment of emotion regulation among emerging adults in their first year of college, the use of this population also limits the generalizability of these findings.

Participants were first-year students at a private, midsized midwestern university, were relatively homogeneous (72.1% White, 68.8% female), and achieved academic success in high school ($M_{GPA} = 3.77$). Further, the participants included in the present study's analyses were more likely to be White than the population of all first-year students from which participants were drawn, introducing further bias into the present study's results. Thus, though attempts were made to statistically account for overrepresented demographic characteristics, it may be difficult to generalize the present findings to other college populations and to more diverse groups of emerging adults in general.

4.3. Future directions

Future research in this area should address these limitations by including multi-source and multi-method assessments of emotion regulation and psychosocial wellbeing, doing so over a longer period of observation, and including a wider range of participants. Demonstrating the

lasting effects of emotion-regulation strategies over the course of multiple years and with a more diverse group of emerging adults will further inform prevention and intervention programs. Research of this nature can help to demonstrate the need for programs using healthy emotion regulation to promote adjustment among emerging adults in general, and college students in particular. Specifically, establishing the long-lasting benefits of using cognitive reappraisal can solidify this skill's position among other mental health behaviors that are known to promote overall wellbeing.

Additionally, considering the inconsistent pattern of findings with expressive suppression in the present study, future research should examine the potential for interactive effects between this emotion-regulation strategy and other constructs predicting psychosocial wellbeing. Analyses of this kind may illuminate a clearer picture of the ways in which suppression impacts adjustment during this developmental and environmental transition. This greater understanding of the role of suppression can help to inform models of developmental psychopathology for an age group in which many forms of mental illness emerge for the first time (Schulenberg et al., 2004).

Finally, building on the present study's incorporation of both person- and variable-centered designs, future research should seek to illuminate further the impacts on mental health determined by individual differences in emotion regulation patterns. Specifically, person-centered findings can help to inform what types of emotion regulation-focused interventions might most benefit which people, personalizing prevention and intervention programs to increase their likelihood of utilization and success. The person-centered approach to grouping people by their profiles of psychosocial adjustment also could be applied to identifying person-profiles of emotion regulation, such that people who flexibly engage in all or many emotion-regulation

strategies are distinguishable from those whose emotion regulation patterns are limited or inflexible. Given the importance of context to healthy emotion regulation (Aldao, 2013), people who utilize multiple emotion-regulation strategies flexibly might experience more positive mental health outcomes.

Overall, the present study delivers an important two-part message: (a) cognitive reappraisal and expressive suppression each have meaningful impacts on both overall profiles of psychosocial adjustment and specific domains of wellbeing, and (b) in particular, the use of cognitive reappraisal has wide-reaching benefits across a variety of outcomes. These findings both further our understanding of emotion regulation and give us valuable information about its importance as a target for programs promoting mental health during the formative developmental period of emerging adulthood.

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Table 1

Descriptive Statistics for Study Variables

Variables	Time 1		Time 2	
	<i>M (SD)</i>	Range	<i>M (SD)</i>	Range
<u>Emotion-regulation strategies</u>				
Cognitive reappraisal	29.42 (6.13)	6 - 42	28.90 (6.16)	6 - 42
Expressive suppression	14.41 (4.93)	4 - 28	15.07 (5.06)	4 - 28
<u>Psychological wellbeing outcomes</u>				
Self-esteem	22.09 (5.08)	3 - 30	21.47 (5.47)	2 - 30
Self-efficacy	65.90 (8.84)	34 - 85	63.19 (9.51)	31 - 85
Hope	26.72 (3.05)	16 - 32	26.71 (3.55)	16 - 32
Resilience	29.81 (6.07)	0 - 40	28.96 (6.51)	0 - 40
Satisfaction with life	26.60 (5.75)	5 - 35	25.32 (6.10)	5 - 35
<u>Psychological distress outcomes</u>				
Depression, anxiety, and stress	8.78 (8.65)	0 - 63	11.93 (11.26)	0 - 63
Perceived stress	15.22 (6.40)	0 - 37	17.02 (6.28)	0 - 40
<u>Cognitive strength outcomes</u>				
Positive automatic thoughts	110.75 (23.69)	30 - 150	105.83 (25.48)	30 - 150
Problem-focused coping	22.38 (4.34)	8 - 32	21.73 (4.37)	8 - 32
Active-emotional coping	27.22 (4.51)	10 - 40	26.62 (4.57)	10 - 40
<u>Cognitive vulnerability outcomes</u>				
Dysfunctional attitudes	88.42 (18.58)	34 - 168	89.44 (20.65)	29 - 151
Avoidant coping	18.92 (4.24)	10 - 40	19.35 (4.61)	10 - 40
<u>Social wellbeing outcomes</u>				
Social support	78.40 (10.00)	29 - 92	76.57 (10.83)	23 - 92
Relationship satisfaction	16.46 (2.90)	4 - 20	16.36 (2.88)	4 - 20

Table 2

Model Fit Indices for All Latent Profile Analysis Solutions

Model	Fit Indices			
	AIC	BIC	LMRT	Entropy
1-class	138429.61	138490.68	—	—
2-class	133147.10	133240.87	5264.82*	0.861
3-class	131455.83	131582.31	1705.81*	0.842
4-class	130797.42	130956.61	682.23*	0.834
5-class	130231.90	130423.81	590.17	0.815
6-class	129891.77	130116.39	366.45	0.819

Note. * $p < .05$.

Table 3

Results of MANOVA Comparing Time 2 Class Members

Outcomes	Class				<i>F</i>	η_p^2
	Well-adjusted	Average	Coping with distress	Mal-adjusted		
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)		
<u>Psychological wellbeing</u>						
Self-esteem	26.88 ^a (2.89)	21.33 ^b (3.33)	17.09 ^c (3.44)	13.61 ^d (3.78)	703.68*	0.64
Self-efficacy	71.21 ^a (7.32)	62.74 ^b (6.58)	56.29 ^c (7.64)	52.41 ^d (7.29)	321.19*	0.45
Hope	29.92 ^a (2.30)	26.02 ^b (2.58)	25.35 ^c (3.02)	22.40 ^d (2.79)	338.08*	0.47
Resilience	34.78 ^a (4.48)	28.15 ^b (4.26)	25.89 ^c (4.88)	19.92 ^d (5.22)	411.08*	0.51
Satisfaction with life	29.94 ^a (3.66)	25.23 ^b (4.51)	23.33 ^c (5.22)	16.45 ^d (5.18)	319.56*	0.45
<u>Psychological distress</u>						
Depression, anxiety, and stress	4.83 ^a (5.21)	8.40 ^b (6.09)	25.61 ^c (11.19)	24.45 ^c (11.69)	451.86*	0.54
Perceived stress	11.91 ^a (5.29)	16.87 ^b (4.28)	22.53 ^c (3.92)	23.53 ^c (5.35)	317.82*	0.45
<u>Cognitive strengths</u>						
Positive automatic thoughts	127.79 ^a (18.05)	101.71 ^b (19.16)	101.69 ^b (17.34)	72.73 ^c (19.25)	324.86*	0.46
Problem-focused coping	24.62 ^a (3.86)	20.47 ^b (3.76)	22.41 ^c (3.53)	17.81 ^d (3.75)	141.20*	0.27
Active-emotional coping	29.20 ^a (4.32)	25.35 ^b (4.07)	28.33 ^a (3.68)	22.47 ^c (3.93)	122.70*	0.24
<u>Cognitive vulnerabilities</u>						
Dysfunctional attitudes	78.34 ^a (20.24)	88.85 ^b (16.93)	105.18 ^c (15.93)	101.75 ^c (19.64)	112.99*	0.23
Avoidant coping	17.10 ^a (3.64)	18.07 ^b (3.15)	25.51 ^c (4.50)	21.93 ^d (4.16)	264.10*	0.40
<u>Social wellbeing</u>						
Social support	85.92 ^a (6.27)	75.33 ^b (8.77)	70.35 ^c (8.22)	62.80 ^d (8.59)	344.09*	0.47
Relationship satisfaction	17.49 ^a (2.69)	16.32 ^b (2.58)	15.78 ^b (2.74)	14.33 ^c (3.13)	49.41*	0.11

Note. Means of the same variable sharing superscripts (^{a,b,c,d}) are not statistically different from each other.

* $p < .001$.

Table 4

LTA Model Statistics with Hypothesis-Test Model Comparisons

Model	Loglikelihood	Model Comparisons		
		Likelihood-Ratio Statistic	<i>df</i>	<i>p</i>
Reappraisal and Suppression	-132293.05	—	—	—
Reappraisal Removed	-132393.30	200.51	12	< .001
Suppression Removed	-132433.55	281.00	12	< .001

Note. A significant likelihood-ratio statistic for a model with a given covariate removed indicates that the covariate in question is a significant predictor of between-class transitions over time.

Table 5

Frequencies and Proportions of Between-Class Transitions Over Time

Class at Time 1	Class at Time 2			
	(1)	(2)	(3)	(4)
	<i>n</i> (% of Time 1 Class)			
1) Well-adjusted (<i>n</i> = 600)	415 (69.2%)	139 (23.1%)	33 (5.5%)	13 (2.2%)
2) Average (<i>n</i> = 729)	65 (8.9%)	509 (69.8%)	92 (12.6%)	63 (8.7%)
3) Coping with distress (<i>n</i> = 124)	5 (4.0%)	9 (7.3%)	80 (64.5%)	30 (24.2%)
4) Maladjusted (<i>n</i> = 115)	1 (0.9%)	13 (11.3%)	14 (12.2%)	87 (75.6%)

Note. Percentages represent proportions of Time 1 class members who are in a particular Time 2 class (i.e., 23.1% of Time 1 “well-adjusted” participants transitioned to the “average” class at Time 2). *ns* for Time 2 classes differ slightly from those identified in the original LPA because the LTA solution was extracted using data from both time points (e.g., the well-adjusted class is estimated to have 486 members at Time 2 in the LTA solution, whereas it had 488 members in the original LPA solution).

Table 6

Time 1 Reappraisal and Suppression Predicting Psychosocial Outcomes at Time 2 while Controlling for Time 1 Levels of Psychosocial Outcomes

Outcomes	Reappraisal			Suppression			Effect size for emotion regulation
	β	t	p	β	t	P	f^2
<u>Psychological wellbeing</u>							
Self-esteem	.05	2.38	.018	-.04	-2.03	.043	.01
Self-efficacy	.09	4.25	< .001*	.02	0.96	.335	.01
Hope	.12	5.28	< .001*	-.04	-1.94	.052	.02
Resilience	.11	4.61	< .001*	-.01	-0.64	.522	.02
Satisfaction with life	.03	1.49	.136	-.07	-2.96	.003*	.01
<u>Psychological distress</u>							
Depression, anxiety, and stress	-.08	-3.47	< .001*	.05	2.12	.035	.01
Perceived stress	-.05	-2.12	.034	-.03	-1.34	.179	< .01
<u>Cognitive strengths</u>							
Positive automatic thoughts	.08	3.57	< .001*	-.04	-1.95	.052	.01
Problem-focused coping	.10	4.28	< .001*	-.09	-4.01	< .001*	.02
Active-emotional coping	.12	4.84	< .001*	-.12	-4.84	< .001*	.03
<u>Cognitive vulnerabilities</u>							
Dysfunctional attitudes	-.05	-2.36	.018	.08	3.36	< .001*	.01
Avoidant coping	-.04	-1.58	.114	.02	0.97	.331	< .01
<u>Social wellbeing</u>							
Social support	.09	4.03	< .001*	-.06	-2.77	.006	.02
Relationship satisfaction	.11	3.74	< .001*	-.08	-2.77	.006	.02

Note. β = standardized Beta coefficients from the step of entry in the regression analyses. Effect sizes are reported for the step of regressions including both reappraisal and suppression ($f^2 = .02$ is a small effect, $f^2 = .15$ is a medium effect, $f^2 = .35$ is a large effect; Cohen, 1992). *ns* range from 1,414 to 1,525.

* $p < .0036$, the adjusted p value according to Bonferroni correction.