

**PROMOTING PSYCHOLOGICAL RESILIENCE IN THE FACE OF STRESS:
THE COMBINED INFLUENCE OF EMOTIONAL AND SOCIAL
FUNCTIONING**

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ABSTRACT

Psychological resilience is influenced by affective and social processes. It is also generally recognized that the relationship between emotional and social functioning is reciprocal. Still, research on psychological resilience has largely investigated these processes independently. The current study sought to (1) identify naturally occurring groups of individuals based on indicators of emotional and social functioning utilizing a Latent-Profile Analysis, (2) examine whether profile membership is differentially associated with depression, and (3) examine whether the association between stress and depression varies as a function of profile membership. Undergraduates ($N = 422$) at a public, southeastern university completed self-report measures on perceived stress, depressive symptoms, family and peer relationships, emotion regulation strategies, and emotional intelligence. Results from the Latent-Profile Analysis, using emotion regulation, emotional intelligence, and family and peer functioning as LPA indicators, supported a three-profile solution of high, average, and low emotional and social functioning. Perceived stress was positively associated with depression. Individuals in the low functioning profile and in the average functioning profile, relative to the positive profile, reported higher levels of depressive symptoms. Profile membership moderated the association between perceived stress and depressive symptoms. Simple slopes analysis revealed the association between stress and depressive symptoms was attenuated for individuals in the high functioning profile relative to individuals in the low functioning profile. Results suggest affective and social processes may act together to impact psychological resilience and subsequent mental health.

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION AND GENERAL INFORMATION	1
CHAPTER TWO: LITERATURE REVIEW.....	3
Psychological Resilience and the Affective-Regulation Framework.....	3
Emotional Functioning.....	4
Social Functioning	6
Co-Occurrence of Emotional and Social Functioning.....	7
Study Overview	8
CHAPTER THREE: MATERIALS AND METHODS	10
Participants and Procedures	10
Measures	10
Perceived Stress Scale.....	10
Generalized Anxiety Disorder-7 Questionnaire.....	11
Center for Epidemiologic Studies Depression Scale (CES-D).....	11
Network of Relationships Inventory – Social Provisions Version, Revised (NRI- SPV).....	11
Emotion Regulation Questionnaire (ERQ).....	12
Schutte Self-Report Emotional Intelligence Test	13
Data Analysis Plan.....	13
CHAPTER FOUR: RESULTS AND DISCUSSION.....	16
Aim 1: Latent Profiles of Social and Emotional Functioning	16
Aim 2: Associations among Profile Membership, Stress, and Depression.....	17

Aim 3: Profile Membership as a Moderator of Stress and Depression	18
Discussion	19
Limitations and Future Directions.....	22
CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS	24
LIST OF REFERENCES	26
APPENDIX.....	36
VITA.....	46

LIST OF TABLES

Table 1. Means, Standard Deviations, and Bivariate Correlations Among All Study Variables.	42
Table 2. Latent Profiles Solution Fit Indices.....	43
Table 3. Means, Standard Deviations, and One-Way Analyses of Variance in Perceived Stress and Depression	44
Table 4. Moderation Analyses: Interaction between Profile Membership and Perceived Stress on Depression	45

LIST OF FIGURES

Figure 1. Latent Profile Analysis of Social and Emotional Factors	36
Figure 2. Association between Profile Membership and Percieved Stress and Depression	37
Figure 3. Influence of Profile Membership on Stress and Depression	38
Figure 4. Profile 1: High-Functioning Profile.....	39
Figure 5. Profile 2: Low-Functioning Profile	40
Figure 6. Profile 3: Average-Functioning Profile	41

CHAPTER ONE

INTRODUCTION AND GENERAL INFORMATION

It is well documented that the experience of stress increases risk for depression (Hammen, 2005; Van Praag, 2004; Yang et al., 2015). This is thought to occur through stress-related effects on psychological and physiological processes. For example, stress-induced disruptions of cognitive and affective pathways in individuals can lead to increased hopelessness, self-devaluation, and emotional reactivity (Hyde et al., 2020; Kleim et al., 2012; Myin-Germeys & van Os, 2007). The experience of stress also results in the dysregulation of neural pathways related to emotion processing and executive function, aggravation of hormonal stress responses in the endocrine system, and inflammation in the immune system - factors that are all related to increased risk of depression (Hyde et al., 2020; Hammen et al., 2005; Van Praag, 2004; Yang et al., 2015).

An individual's response to stress, whether adaptive or maladaptive, may modulate the association between stress and depression across the lifespan (Compas et al., 1993). There is evidence that a maladaptive stress response in pre-adolescence, defined by poor cognitive and affective features (e.g. rumination), predicts symptoms of psychopathology one year later (Richardson et al., 2021). Further, a maladaptive response to stress predicted worsened depressive symptoms in non-depressed and depressed adult women, but adaptive coping, such as problem-solving, attenuated this relation (Thompson et al., 2010).

Individuals who respond well to stress often employ adaptive cognitive processes, personal and social resources, and coping behaviors (Zimmer-Gembeck & Skinner, 2016). These processes or resources employed in the management of stress may be conceptualized as promoters of psychological resilience (Dunker-Schetter & Dolbier, 2011). Well-being, or

alternatively, psychopathology, in the face of stress may suggest the presence or absence, respectively, of processes or resources that promote psychological resilience. In the present study, *psychological resilience* is defined as the attenuation of the relationship between stress and depression. Given the impact of stress on the development and maintenance of depression, it is important to understand factors that influence psychological resilience.

Emotional and social functioning are distinct, but interrelated, constructs that work in tandem to impact psychological resilience. Using a person-centered data analysis approach, a goal of the current study is to establish the naturally co-occurring relationship between these constructs in a sample of undergraduate students (Ferguson et al., 2020). The current investigation will also examine whether profiles of emotional and social functioning moderate the relationship between perceived stress and depression (i.e., influence psychological resilience).

CHAPTER TWO

LITERATURE REVIEW

Psychological Resilience and the Affective-Regulation Framework

Psychological resilience, though widely researched, has largely been unclearly defined. Two well-established approaches or frameworks are often adopted in the resilience literature. First, the stress and coping approach, pioneered by Lazarus and Folkman (1984), emphasizes the “ongoing efforts in thought and action” individuals employ when managing stress (Lazarus, 1993; Troy et al., 2023). Second, the emotion regulation approach, developed largely in response to the stress and coping approach, emphasizes how a person manages their emotion in reaction to a stressor. (Troy et al., 2023). Previous literature on stress and depression generally fails to integrate stress-coping literature with emotion regulation paradigms. To define and understand psychological resilience more clearly, Troy et al. (2023) proposed the affective regulation framework, a conceptualization of the processes impacting resilience that includes aspects of both the stress-coping literature and the emotion regulation literature. The authors specifically integrate these two approaches under the belief that coping and emotion regulation are both processes that define affective regulation. The affective-regulation framework extends these existing theories by emphasizing the short-term consequences (e.g., affective experience, social processes) of affect-regulation strategies (e.g., cognitive change, response modulation) in impacting resilience (Troy et al., 2023). Within this framework, emotional functioning, as conceptualized in the current study, encompasses various aspects of affect-regulation strategies, including emotion regulation and emotional intelligence. Moreover, social functioning may represent the behavioral manifestation of such affect-regulation strategies. Given the individual

impact of emotional and social functioning on resilience, they are important factors to consider within the affect-regulation framework.

Emotional Functioning

Emotional functioning refers to the ability to regulate and utilize emotions (Compas et al., 2014; Salovey & Mayer, 1990). The present study conceptualizes emotional functioning as comprised of an individual's emotion regulation and emotional intelligence as these constructs encompass one's ability to regulate, monitor, and utilize emotions. Emotion regulation encompasses strategies (e.g., cognitive reappraisal vs. expressive suppression) related to the experience of emotions (Compas et al., 2014). It is especially important to understand the strategies that individuals use to regulate emotions in the context of stress given the evidence that emotion regulation strategies can modulate the effect of stress on mental health (Compas et al., 2014; Gruhn & Compas, 2020). Cognitive reappraisal and expressive suppression are two of the most researched emotion regulation strategies. Cognitive reappraisal is defined as "cognitive-linguistic strategy that alters the trajectory of emotional responses by reformulating the meaning of a situation" (Gross & Thompson, 2007; Compas et al., 2017). The use of cognitive reappraisal is associated with better psychological adjustment and fewer symptoms of depression and anxiety (Compas et al., 2017). Individuals who are able to process the meaning of a situation in a way that appreciates nuance in or depersonalizes a stressor may experience fewer negative emotions (e.g. shame, anger) in response to a stressful situation. In addition, cognitive interference in a negative emotional trajectory may reduce subsequent secondary emotions (i.e., anger to sadness) thereby mitigating the perpetuation of a low mood state associated with depression. Alternatively, expressive suppression is conceptualized as "efforts to dampen internal or external experiences and/or expressions of emotion" (Gruhn & Compas, 2020). In

contrast to cognitive reappraisal, individuals who engage in expressive suppression refrain from using cognitive interference strategies in response to emotion. Individuals who suppress the expression of emotion often experience an increase in negative affect and poorer adjustment over time (Compas et al., 2017). Those who suppress their affective expression may continue to reflect on activating events with negative or unprocessed emotions. This resistance towards processing emotions may be especially relevant for individuals who feel too emotionally ill-equipped or overwhelmed by negative experiences to engage with affective responses. For instance, experiences of maltreatment in childhood are associated with increased use of expressive suppression, suggesting expressive suppression may be a strategy more so utilized by those who have endured chronic stressful experiences (Gruhn & Compas, 2020).

Emotional intelligence (EI), defined by Salovey & Mayer (1990) as “the ability to monitor one’s own and other’s feelings and emotions, to discriminate amongst them and to use this information to guide one’s thinking and actions” is another aspect of emotional functioning likely related to effective stress management (p. 189). Researchers often distinguish between several domains of emotional intelligence: appraisal and expression of emotions (in self and others), regulation of emotions, and utilization of emotions (Salovey & Mayer, 1990). Appraisal and expression of emotions are characterized by the capacity to accurately perceive emotion and express emotion through verbal and nonverbal communication. This domain also encapsulates the ability to accurately assess and employ empathy in response to other’s ’emotions. Regulation of emotions refers to the ability to monitor and modulate one’s own mood as well as regulate and alter other’s affective states. Lastly, the utilization of emotions is defined as using emotions in various aspects of problem-solving, including creative thinking and motivation (Salovey & Mayer, 1990). Components of emotional intelligence may support stress management by

allowing individuals to perceive/appraise, express, and regulate emotions in themselves and others (Zeidner et al., 2006; Salovey et al., 1999). The ability to engage effectively with emotion may increase the likelihood that individuals engage in more adaptive coping practices in response to stress. Consistent with this notion is research finding that higher levels of isemotional intelligence are associated with more positive coping styles, such as emotional engagement and active problem-coping (Moradi et al., 2011; Fteiha & Awwad, 2020).

Social Functioning

Support and conflict in relationships with family and peers may influence psychological resilience (Coyne & Downey, 1991; Thoits, 1995; Ioannou et al., 2019). Social support can be conceptualized as a coping resource, acting to protect against or exacerbate poor mental health outcomes in the face of stress. Stress and coping theory (Lazarus & Folkman, 1984) suggests that effective stress management is influenced by an individual's perceptions of social support when confronted with a stressful event. In other words, the evaluation of and response to a stressful event is shaped by perceptions of support across support systems. Individuals embedded in supportive relationships may have increased capacity to utilize coping strategies in the face of stress (Thoits, 1995; Dumont & Provost, 1999). Alternatively, the capacity to effectively cope with stress may be compromised when individuals lack interpersonal connections or find themselves in unsupportive relationships. Consistent with these suppositions is evidence that perceived social support from family and friends is negatively associated with symptoms of depression (Ioannou et al., 2019). To note, interpersonal conflict, characterized by conflict or hostility, is not necessarily implied by the absence of social support. Interpersonal conflict, as opposed to the absence of support, is considered a unique dimension of relationship quality and risk factor for maladjustment (Coyne & Downey, 1991). For example, low support and high

conflict are uniquely associated with higher symptoms of depression (Jenkins et al. 2002; Hagerty & Williams, 1999).

Co-occurrence of Emotional and Social Functioning

Emotional and social functioning influence psychological resilience. It is important to understand how these constructs work in congruence with one another. The relationship between emotional and social functioning is inherently reciprocal (Escolana, 2014; Yang et al., 2023). The way an individual manages their thoughts influences their affective response which, in turn, impacts their behavior (Bandura, 1977; Beck, 1979). As such, the cognitions and affective responses related to emotional functioning will impact an individual's ability to successfully engage socially. Research suggests that emotional functioning may better enable an individual to connect with other individuals due to improved empathy (Benita et al., 2017; Lockwood et al., 2014), perceived likability (Sroufe et al., 1985), and a general inclination towards adaptive interactions (Lopes et al., 2004; Marti-Vilar et al., 2022). More specifically, good regulation of emotions is associated with prosocial behavior in children and adaptive social functioning (Rydell et al., 2007; Jacob et al., 2014). Alternatively, children who regulate emotions less well often experience interpersonal challenges and difficulties sharing emotional experiences with peers (Jacob et al., 2014). Research further demonstrates the ability to regulate emotions predicts prosocial behavior in adolescence (Benita et al., 2017) and is associated with empathy and prosocial behaviors in adulthood (Lockwood et al., 2014). Additionally, individuals high on emotional intelligence experience increased positive peer interactions, positive relationships, decreased negative peer interactions, and higher peer competence (Lopes et al., 2003; Mavroveli et al., 2009). Moreover, emotional intelligence is associated with positive social interactions throughout adulthood (Lopes et al., 2004; Marti-Vilar et al., 2022).

In turn, social experiences may inform how individuals respond to and regulate their thoughts and emotions. Despite the breadth of research on the impact of emotional functioning on social functioning, our understanding of the inverse remains limited (Grecucci et al., 2015; Marroquín, 2011; Reeck et al., 2016). Reeck et al. (2016) propose a model conceptualizing the social regulation of emotion, or how people contribute to the regulation of others' emotions, emphasizing the related neural pathways between social regulation and self-regulation. Marroquín (2011) highlighted how interpersonal relationships impact key aspects of individual affective strategies including attentional deployment and cognitive change. More simply, the human tendency to seek support from others when managing distress is well documented (Zaki & Williams, 2013; Grecucci et al., 2015). A notable study by Coan et al. (2011) demonstrates that merely holding the hand of an intimate partner offsets the neural reaction to an aversive event. Further, social experiences contribute to an individual's ability to recognize and process emotion. The experience of childhood maltreatment results in increased neural pathways contributing to poorer expression, recognition, processing, and understanding of emotion (Cicchetti & Ng, 2014; Maughan & Cicchetti, 2002; Cicchetti, 2002). Though the contributing influence of emotional functioning on social functioning and social functioning on emotional functioning remains entangled, the bi-directional nature of these constructs is well-documented.

Study Overview

How individuals engage with and respond to the experience of emotion influences social behaviors and interpersonal functioning, but the resilience literature has largely investigated these processes independently in the context of psychological resilience. The few studies that investigate these constructs together often seek to understand the unique influence of these constructs on health and wellbeing (Zhao et al., 2019). First, the present study seeks to fill a gap

in the literature by considering whether unique, naturally occurring profiles of young adults emerge based on the simultaneous consideration of social and emotional functioning utilizing a person-centered data analysis approach (see **Figure 1**). All tables and figures are located in the appendix. A person-centered data analysis will reveal how rates of social and emotional functioning naturally occur in this population without relying on arbitrary cut-off scores or assumptions. Based on prior literature and theory, it is hypothesized that levels of emotional and social functioning will co-occur in the data. Second, the current investigation will examine whether levels of depression and stress vary as a function of profile membership in these naturally occurring groups (see **Figure 2**). It is hypothesized that individuals belonging to a low emotional and social functioning profile will experience higher levels of perceived stress and depression than individuals in all other profiles. Lastly, the current investigation will examine whether profile membership moderates the relationship between stress and depression (i.e., how emotional and social functioning impact psychological resilience; see **Figure 3**). It is hypothesized that the relationship between stress and depression will be attenuated for individuals in profiles characterized by higher levels of emotional and social functioning relative to individuals in profiles characterized by lower levels of emotional and social functioning. Findings will offer a better understanding of the role of emotional and social functioning on psychological resilience in a young adult sample, contributing to our ability to better enable college students with the ability to respond to stress.

CHAPTER THREE

MATERIALS AND METHODS

Participants and Procedures

Participants were recruited from introductory psychology classes at a large, public university in the Southeastern United States from the Spring of 2017 to the Spring of 2018. Undergraduate students ($N = 422$) completed an online, self-report survey, receiving partial credit in class for their participation. Twenty-three participants were excluded because they completed less than half of the study measures. The remaining 399 participants ($M_{\text{age}} = 20.31$; $SD_{\text{age}} = 2.21$) were representative of the University from which they were recruited (51.0% male; 78.6% White; 5.4% Black; 9.8% Asian; 1.3% Other; 4.8% Mixed Race). All study procedures were approved by the Internal Review Board.

Measures

Perceived Stress Scale

Participants completed the Perceived Stress Scale (PSS) to assess their perceived stress in the last month (Cohen & Williamson, 1988). Participants responded to 10 items on a 5-pt Likert scale (0 = never; 4 = very often). Items assessed the participant's perception of stress (e.g., *in the last month, how often have you felt that you were unable to control the important things in your life; in the last month, how often have you found that you could not cope with all the things that you had to do*). A perceived stress score was created by averaging participant response across items. Roberti et al. (2006) demonstrate good internal consistency ($\alpha = .89$), convergent validity, and divergent validity for the PSS among a sample of college students. In the present study, reliability estimates suggest good internal consistency ($\alpha = .71$).

Generalized Anxiety Disorder-7 Questionnaire (GAD-7)

The Generalized Anxiety Disorder-7 (GAD-7) Questionnaire is a self-report survey that was administered to participants to assess anxiety symptoms, such as nervousness, fear, and worry (Spitzer, Kroenke, Williams, & Lowe, 2006). Participants responded to the 7-items of the GAD-7 on a 4-pt Likert scale (0 = not at all; 3 = everyday). Items assessed general symptoms of anxiety (e.g., *I thought my life had been a failure; I felt that people dislike me*) and an anxiety score was computed by averaging scores across items. The GAD-7 demonstrates good reliability ($\alpha = .92$) as well as criterion, construct, factorial, and procedural validity among adult populations (Spitzer, Kroenke, Williams, & Lowe, 2006). The internal consistency estimate was high in the current investigation ($\alpha = .941$).

Center for Epidemiologic Studies Depression Scale (CES-D)

Participants completed the Center for Epidemiologic Studies Depression Scale (CES-D) to assess symptoms of depression in the last week (Radloff, 1977). Twenty items were administered on a 4-pt scale (1 = rarely/none of the time (less than one day); 4 = most or all of the time (5-7 days)). Items assessed depressive symptoms in the past week (e.g., *I thought my life had been a failure; I felt that people dislike me*). The CES-D demonstrates good internal consistency and construct validity among clinical ($\alpha = .90$) and non-clinical populations ($\alpha = .85$; Radloff, 1977). A depression score will be computed by averaging scores across items. In the present study, reliability estimates suggest high internal consistency ($\alpha = .916$).

Network of Relationships Inventory – Social Provisions Version, Revised (NRI-SPV)

Participants completed the Network of Relationships Inventory – Social Provisions Version (NRI-SPV) to assess the quality of relationships across family (mother, father, sibling, relative) and peer (boy/girlfriend, same-sex friend, other-sex friend, mentor) networks (Furman

& Buhrmester, 1985). The survey assesses support features including companionship, instrumental aid, intimate disclosure, nurturance, affection, admiration, and reliable alliance (e.g., *how much does this person treat you like you're admired and respected; how much do you play around and have fun with this person*). The survey also assesses negative interaction features including conflict and antagonism (e.g., *how much do you and this person get upset with or mad at each other; how much do you and this person hassle or nag one another*). Questions were developed based on Robert Weiss' (1974) and Harry Stack Sullivan's (1953) definitions of social needs and provisions. Respondents rate social experiences with various network members (e.g., father, same-sex friend) on a 5-pt Likert scale (1 = little or none; 5 = The most). The NRI-SPV demonstrates good internal consistency and validity (typical mean alphas = .80; Furman, 1996).

The present study uses 4 subscales to assess positive family interactions (created from mother, father, sibling, and relative scores on the 7 support features), negative family interactions (created from the mother, father, sibling, and relative scores on the 2 negative interaction features), positive peer interactions (created from the boy/girlfriend, same-sex friend, opposite-sex friend, and mentor scores on the 7 support features), and negative peer interactions (created from the boy/girlfriend, same-sex friend, opposite-sex friend, and mentor scores on the 2 negative interaction features). In the present study, estimates of internal consistency were high across subscales ($\alpha = .971$; $\alpha = .924$; $\alpha = .966$, $\alpha = .903$).

Emotion Regulation Questionnaire (ERQ)

Participants completed a 10-item, 7-pt Likert scale ((1 = strongly disagree; 7 = strongly agree) survey to assess for preferred emotion regulation strategies (Gross & John, 2003). The survey assesses cognitive reappraisal (e.g., *when I want to feel more positive emotion (such as*

joy or amusement), I change what I'm thinking about) and expressive suppression (e.g., *I control my emotions by not expressing them*). Gross & John (2003) report good reliability (cognitive reappraisal: $\alpha = .79$ and expressive suppression: $\alpha = .73$), convergent validity, and discriminant validity of the ERQ in undergraduate populations. In the present study, reliability estimates are satisfactory for cognitive reappraisal ($\alpha = .85$) and expressive suppression ($\alpha = .69$).

Schutte Self-Report Emotional Intelligence Test

Participants completed a 33-item, 5-pt Likert scale survey (1 = strongly disagree; 5 = strongly agree) questionnaire to assess various aspects of emotional intelligence (Schutte et al., 1998). The subscales, developed based on the emotional intelligence model by Salovey & Mayer (1990), assess the perception of emotion (e.g., *I find it hard to understand the non-verbal messages of other people*), managing own emotion (e.g., *when I experience a positive emotion, I know how to make it last*), managing other's emotions (e.g., *I compliment others when they have done something well*), and utilization of emotions (e.g., *some of the major events of my life have led me to re-evaluate what is important and not important*). The measure demonstrates good internal consistency ($\alpha = .90$), test-retest reliability, convergent validity, and predictive validity (Schutte et al., 1998). In the present study, reliability estimates are good for perception of emotion ($\alpha = .809$), managing own emotions ($\alpha = .850$), managing others' emotions ($\alpha = .793$), and utilization of emotions ($\alpha = .740$).

Data Analysis Plan

A power analysis was completed to ensure the data analysis was sufficiently powered. To perform a Latent Profile Analysis (LPA), a minimum sample of 300-500 is recommended (Ferguson et al., 2020). A minimum sample of 200 is recommended to estimate a structural equation modeling with 1 latent variable, 2 observed variables, and a small effect size estimate

(Wolf et al., 2013; Soper, 2023). Little's MCAR test was used to determine the extent to which variables in the data set are associated with missing data patterns (Little, 1988). If variables in the data set are associated with missingness, these variables will be included as auxiliary variables in analyses. Analyses were conducted under the assumption that data is Missing at Random (MAR; Little, 1988), and full information maximum likelihood (FIML) was used to handle missing data (Mazza et al., 2015).

The initial aim of the present study was to determine whether distinct latent profiles of emotional and social functioning emerge in a sample of undergraduates (see **Figure 1**). Latent Profile Analysis was estimated to identify naturally occurring groups of individuals based on their scores on emotional and social functioning. Indicators of emotional functioning (subscales from the Schutte Self-Report Emotional Intelligence Test and Emotion Regulation Questionnaire) and social functioning (created subscales from the Network of Relationship Inventory) were included as predictors in the model. Profiles were determined based on an evaluation of common model fit indices used to evaluate LPA fit (Ferguson et al., 2020). Specifically, AIC, BIC, and SABIC indices were considered, with lower values indicating better model fit. Additionally, LMRT and BLRT indices were utilized to determine model fit as a statistically significant LMR or BLR test suggests the current model is a better fit than the model with k-1 profiles. Entropy above .80 was considered to demonstrate a good model fit. Lastly, the theoretical basis, including the sample size of each profile, was considered to determine what model best represented the data and research question. Model fit indices are detailed in Table 2.

The second aim of the investigation was to examine the relationship between stress and depression and assess differences in levels of stress and depression between profiles. A regression analysis was performed to investigate the relationship between perceived stress and

depression. An ANCOVA and follow-up t-tests were utilized to examine differences in stress and depression between latent profiles of social and emotional functioning. Mean scores on the Perceived Stress Scale (PSS) were used to determine levels of stress, and mean scores on the Center for Epidemiologic Studies Depression Scale (CES-D) were used to determine levels of depression.

The third aim of the present study is to examine whether the relationship between stress and depression differs by latent profile membership (see **Figure 3**). A regression analysis was used to observe the moderating effect of profile membership on the relationship between stress and depression. Profiles of emotional and social functioning identified in Aim 1 of the study were employed as the multiple-categorical moderator. Descriptive statistics, correlations, and regressions were calculated using SPSS 28, and the moderation analysis was run utilizing the Hayes PROCESS macro in which the categorical moderator was automatically dummy-coded (Hayes, 2022). Latent profile factor analyses were estimated in Mplus 8.5 (Muthén & Muthén, 2017).

CHAPTER FOUR

RESULTS AND DISCUSSION

Results

Means, standard deviations, and correlations for all study variables are presented in Table 1. Perceived stress and depressive symptoms were significantly positively correlated. Additionally, perceived stress was significantly negatively correlated with all aspects of emotional intelligence, with the exception of utilization of emotions, and cognitive reappraisal. Perceived stress was significantly positively associated with negative family and peer relationships. Depressive symptoms significantly negatively correlated with all aspects of emotional intelligence, cognitive reappraisal, and positive family relationships. Depressive symptoms were significantly positively correlated with expressive suppression and negative family relationships.

Aim 1: Latent Profiles of Social and Emotional Functioning

Latent profile analysis was used to identify naturally occurring groups of individuals based on their scores on emotional and social functioning. There were 5 plausible models that were considered in the identification of the best fitting model. Results suggested a 3-profile solution best modeled the data (see **Table 2**). Profiles were labeled high-functioning, average-functioning, and low-functioning based on profile scores on emotional and social functioning. The high-functioning profile represented 20.05% of the sample (see **Figure 4**) and captured individuals scoring high on the adaptive dimension of emotional and social functioning. The average-functioning profile represented 48.6% of the sample (see **Figure 5**). Individuals in this profile scored closer to the sample mean on measures of emotional and social functioning.

Lastly, the negative functioning profile, categorized by largely maladaptive emotional functioning and negative social functioning, represented 31.3% of the sample (see **Figure 6**).

Aim 2: Associations among Profile Membership, Stress, and Depression

A regression analysis was performed to examine the association between perceived stress and depression while controlling for age, race, and gender (see **Table 4**). Perceived stress was significantly positively associated with depression (β [beta] = .645, SE = .039, $p < .001$), such that individuals scoring higher on perceived stress reported higher levels of depression. Next, an ANCOVA and follow-up t-tests were utilized to assess differences in stress and depression between profiles when controlling for age, race, and gender (see **Table 3**). There was a significant difference in mean levels of perceived stress [$F(2,380) = 6.44$, $p = .002$] between the profiles. Individuals in the high-functioning profile ($M = 2.45$, $SD = .59$) experienced significantly lower rates of perceived stress than individuals in the low-functioning profile ($M = 2.74$, $SD = .66$), $t(203) = -3.25$, $p < .001$. Further, individuals in the average-functioning profile ($M = 2.54$, $SD = .55$) experienced significantly lower rates of perceived stress than individuals in the low-functioning profile ($M = 2.74$, $SD = .66$), $t(317) = 2.89$, $p = .002$. Lastly, individuals in the high-functioning profile ($M = 2.45$, $SD = .59$) experienced similar rates of perceived stress to individuals in the average-functioning profile ($M = 2.54$, $SD = .55$), $t(272) = -1.28$, $p = .10$.

There was a significant difference in mean depressive symptoms [$F(2,380) = 25.74$, $p < .001$] between the profiles. Individuals in the high-functioning profile ($M = 1.51$, $SD = .41$) experienced significantly lower rates of depression than individuals in the low-functioning profile ($M = 2.04$, $SD = .61$), $t(203) = -6.95$, $p < .001$. Additionally, individuals in the average-functioning profile ($M = 1.76$, $SD = .48$) experienced significantly lower rates of depression than individuals in the low-functioning profile ($M = 2.04$, $SD = .61$), $t(317) = 4.66$, $p < .001$. Lastly,

individuals in the high-functioning profile ($M = 1.51$, $SD = .41$) experienced significantly lower rates of depression than individuals in the average-functioning profile ($M = 1.76$, $SD = .48$), $t(272) = -4.09$, $p < .001$.

Aim 3: Profile Membership as a Moderator of Stress and Depression

A regression model was estimated to examine whether profile membership moderated the association between stress and depression while controlling for age, race, and gender (see **Table 4**). Findings from this analysis revealed that the relationship between stress and depression was moderated by profile membership. There was a significant interaction between profile membership and stress in association with depression for individuals in the low-functioning profile as compared to the high-functioning profile (β [beta] = .264, $SE = .104$, $t = 2.54$, $p = .011$). The relationship between stress and depression was attenuated for individuals in the high-functioning profile (β [beta] = .455, $SE = .0849$, $t = 5.36$, $p < .001$) as compared to individuals in the low-functioning profile (β [beta] = .719, $SE = .059$, $t = 12.13$, $p < .001$). The strength of the association between stress and depression was not significantly different for individuals in the high-functioning profile as compared to individuals in the average-functioning profile (β [beta] = .102, $SE = .103$, $p = .325$). Additionally, there was a marginally significant interaction between profile membership and stress in association with depression for individuals in the low-functioning profile as compared to the average-functioning profile (β [beta] = .162, $SE = .083$, $t = 1.96$, $p = .051$). The relationship between stress and depression was attenuated for individuals in the average-functioning profile (β [beta] = .557, $SE = .058$, $t = 9.54$, $p < .001$) as compared to individuals in the low-functioning profile (β [beta] = .719, $SE = .059$, $t = 12.13$, $p < .001$).

Discussion

Psychological resilience, or one's ability to withstand or respond adaptively to stress, is influenced by one's emotional functioning and social functioning. As posited in the affective-regulation framework, social functioning exists as a short-term consequence of affect-regulation strategies, as encompassed by emotional functioning (Troy et al., 2023). However, the current study explores these concepts as bi-directional, suggesting emotional functioning is also impacted by the consequences of social functioning. To this aim, the current study first sought to identify naturally co-occurring profiles of social and emotional functioning utilizing a person-centered data analysis method. Explored next was whether levels of perceived stress and depression differed between profiles of social and emotional functioning. Lastly, the study examined whether the association between stress and depression differs as a function of social and emotional functioning.

For Aim 1, I identified three naturally occurring profiles of social and emotional functioning. Profile 1, the high-functioning profile, was characterized by high levels of emotional intelligence, high levels of adaptive emotion regulation (defined by increased use of cognitive reappraisal and decreased use of expressive suppression), high levels of positive peer and family relationships, and low levels of peer and family conflict (**see Figure 4**). Profile 2, the low-functioning profile, was characterized by low levels of emotional intelligence, low levels of maladaptive emotion regulation (defined by decreased use of cognitive reappraisal and increased use of expressive suppression,) low levels of positive peer and family relationships, and high levels of peer and family conflict (**see Figure 5**). Profile 3, the average-functioning profile, was characterized by moderate levels of emotional intelligence, both adaptive and maladaptive emotion regulation (defined by a similar use of cognitive reappraisal and expressive

suppression,) moderately increased positive family relationships and moderately decreased negative family relationships, and moderately decreased positive peer relationships and increased negative peer relationships (see **Figure 6**).

Utilizing a person-centered data analysis approach enabled me to explore emotional and social functioning as naturally co-occurring constructs. Our findings suggests that young adults with the ability to identify, monitor, and regulate emotion are often functioning well in their relationships with family and peers. When young adults begin to experience a decline in either social or emotional functioning, their functioning in the other domain appears to follow. Findings suggest the relation between social and emotional functioning is reciprocal. It is also possible that social functioning may, in part, be viewed as a behavioral manifestation of emotional functioning. Young adults with emotional challenges may act in ways that interfere with developing and maintaining high quality relationships with others. Examining data patterns of social and emotional functioning allowed for the identification of relationships occurring between variables, rather than a linear cause and effect. Findings provide support for the reciprocal relationship between emotional and social functioning as previously documented in the literature (Rydell et al., 2007; Lopes et al., 2003; Reeck et al., 2016; Marroquin, 2011).

For Aim 2, hypotheses regarding the levels of stress and depression between profiles were supported. I found individuals in the high-functioning profile, experienced significantly lower levels of perceived stress and depression compared to individuals in the low-functioning profile. Additionally, individuals in the high-functioning profile experienced lower levels of depression as compared to individuals in the average-functioning profile. This finding suggests that young adults able to identify, monitor, and regulate emotion and are embedded in higher quality relationships are less likely to experience life events as stressful or experience negative mood.

Further, I found individuals within profile 2, the low-functioning profile, experience significantly higher levels of perceived stress and depression as compared to individuals in the average- and high-functioning profiles, suggesting individuals with co-occurring deficits in social and emotional functioning are at significant risk for experiencing stress and depressed mood. This relationship demonstrates that the relationship between poor social and emotional functioning may exist as a risk factor in the development of negative mental health outcomes. This finding supports the previous literature that explored the separate impact of social and emotional functioning on mental health outcomes and establishes the combined impact of these factors as a co-occurring construct. In total, these findings suggest positive functioning, in comparison to low or average functioning, acts as a protective factor in the development of depression.

Additionally, findings suggest individuals in the average-functioning profile experience better outcomes than those in the low-functioning group, suggesting average functioning is still more protective than poor functioning. The present findings further contribute to the literature by demonstrating the impact of social and emotional functioning on one's ability to manage stress (Bruce et al., 2014; Coyne & Downey, 1991).

For Aim 3, hypotheses regarding the moderating influence of profile membership on the relationship between stress and depression were supported. These findings demonstrate a young adult's understanding of and interaction with emotions as well as their ability to maintain high quality relationship with family and friends protects them from the impact of stress on the development of depression. The relationship between stress and depression was significantly stronger for individuals in the low-functioning group as compared to the high-functioning group. Of note, the relationship between stress and depression did not significantly differ between individuals in the average-functioning group as compared to the high-functioning group. This

finding suggests that high levels of social and emotional functioning are not required to experience protection from the ill effects of stress on mood. Rather, simply not being in the low-functioning group is protective in nature. Additionally, the relationship between stress and depression was marginally weaker for individuals in the average-functioning group as compared to the low-functioning group. This finding again emphasizes a “good enough” approach to emotional and social functioning, suggesting average functioning will still result in an attenuated relationship between stress and depression as compared to low functioning. These findings offer a novel contribution to the literature by examining the co-occurring impact of emotional and social functioning on psychological resilience compared to the previous frame of exploring emotional and social functioning as separate factors.

Limitations and Future Directions

When considering the findings from the current investigation, there are limitations worth noting. All constructs were assessed through self-report questionnaires. The associations among constructs could be inflated due to shared method variance. Though it is important to understand individual’s perceptions of stress, depression, and social and emotional functioning, it would be important to replicate these findings using multiple methods of assessment. Future studies may employ objective measurements of stress (e.g., cortisol) or collect data from multiple report sources to provide a more comprehensive understanding of the relations under investigation in the current study.

Additionally, the current study examined the role of emotional and social functioning on psychological resilience at one time point. Specifically, future studies may examine whether the role of emotional and social functioning as a mechanism of psychological resilience is protective in the development of depression over time. Further, a longitudinal design would allow

researchers to establish the temporal sequencing of the reciprocal relation between emotional and social functioning, exploring how emotional functioning impacts social functioning and, inversely, how social functioning impacts emotional functioning, overtime.

Lastly, future studies should explore these constructs in developmentally and racially/ethnically diverse populations and across the lifespan. Additionally, research may explore how minority stress may influence the association between study variables among diverse populations. Research may further explore how findings generalize across groups as well as identify where results differ.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

The present study utilized a unique, person-centered approach in establishing patterns of social and emotional functioning. By utilizing a latent profile analysis, findings demonstrate naturally occurring profiles of social and emotional functioning without the use of arbitrary cutoffs in the data. This approach presents the co-occurring nature of social and emotional functioning within a cross-sectional sample. By using these identified profiles as a categorical moderator, the present study further contributes to the literature by considering the co-occurring impact of emotional and social functioning on psychological resilience. Lastly, the present study utilizes a non-clinical sample of individuals experiencing high levels of stress, undergraduate students. Findings from this study may inform interventions supporting college populations as well as be generalized to other non-clinical, high-stress individuals. Findings may be especially impactful for interventions targeting youth and emerging adult populations, including undergraduate populations, as their emotional and social functioning evolve as they age. These interventions may be specifically tailored to individuals at-risk for peer victimization or who have experienced maltreatment as these individuals are likely to experience poorer social and emotional functioning (Gruhn & Compas, 2020; Cicchetti & Ng, 2014; Maughan & Cicchetti, 2002; Cicchetti, 2002).

Lastly, it is recommended that future studies further explore how emotional and social functioning exist as co-occurring constructs as well as how these constructs impact psychological resilience. Namely, future research studies should explore these constructs through different forms of measurement (e.g., cortisol sampling, additional reporting) and longitudinal data as well as among developmentally and racially/ethnically diverse populations. Lastly, researchers may

explore how to employ study findings in clinical interventions. Specifically, there are strong implications that clinical interventions must target interpersonal functioning in tandem with internal processes for the improvement of psychological resilience and reduction of negative mental health outcomes in the face of stress.

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APPENDIX

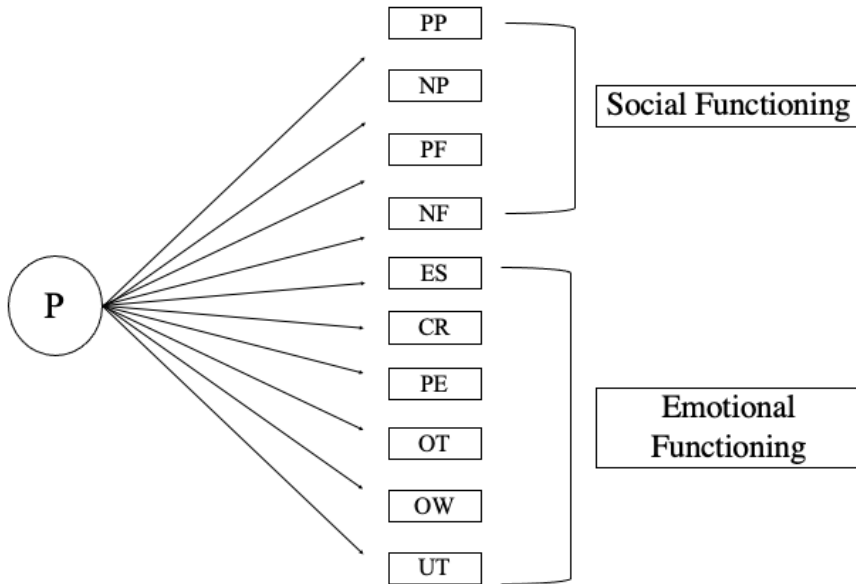


Figure 1

Latent Profile Analysis of Social and Emotional Factors

Note. P = Profiles; PP = Positive Peer; NP = Negative Peer; PF = Positive Family; NF = Negative Family; ES = Expressive Suppression; CR = Cognitive Reappraisal; PE = Perception of emotions; OT = Managing other's emotions; OW = Managing own emotions; UT = Utilization of emotions

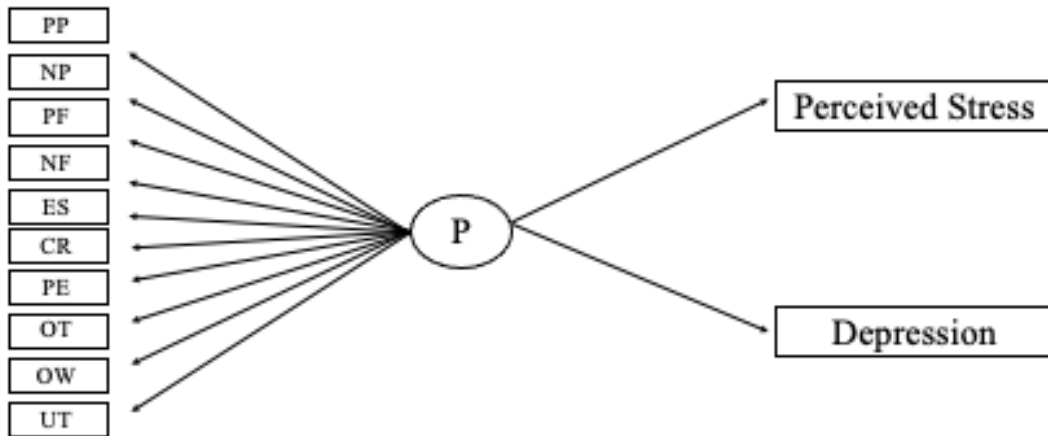


Figure 2

Association between Profile Membership and Perceived Stress and Depression

Note. P = Profiles; PP = Positive Peer; NP = Negative Peer; PF = Positive Family; NF = Negative Family; ES = Expressive Suppression; CR = Cognitive Reappraisal; PE = Perception of emotions; OT = Managing other's emotions; OW = Managing own emotions; UT = Utilization of emotions

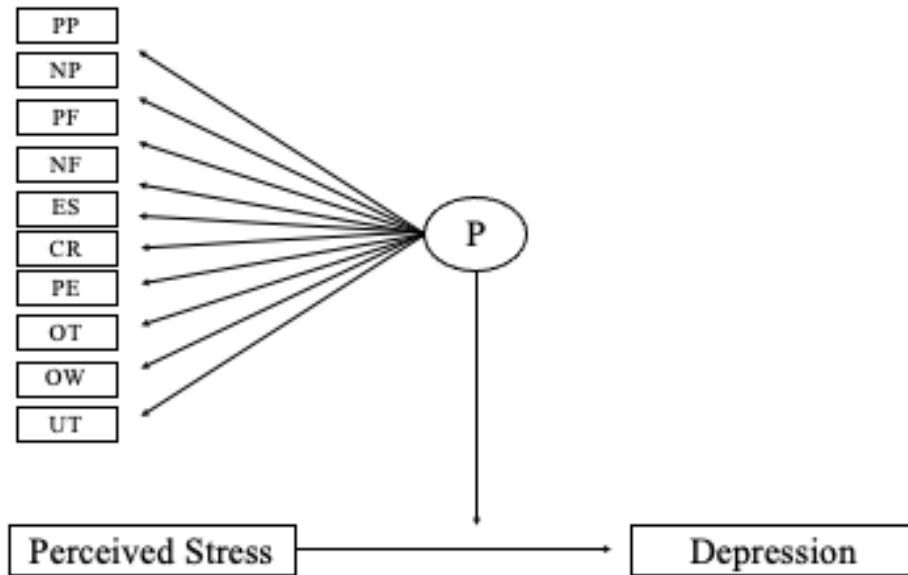


Figure 3

Influence of Profile Membership on Stress and Depression

Note. P = Profiles; PP = Positive Peer; NP = Negative Peer; PF = Positive Family; NF = Negative Family; ES = Expressive Suppression; CR = Cognitive Reappraisal; PE = Perception of emotions; OT = Managing other's emotions; OW = Managing own emotions; UT = Utilization of emotions

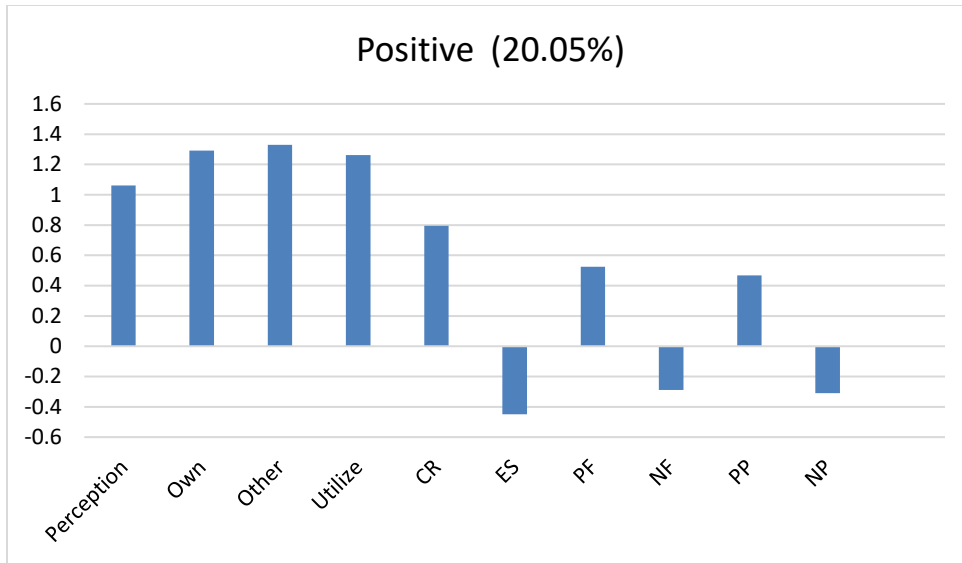


Figure 4

Profile 1: High-Functioning Profile

Note. Perception = Perception of emotions; Own = Managing own emotions; Other = Managing other's emotions; Utilize = Utilization of emotions; CR = Cognitive Reappraisal; ES = Expressive Suppression; PF = Positive Family; NF = Negative Family; Positive Peer; NP = Negative Peer

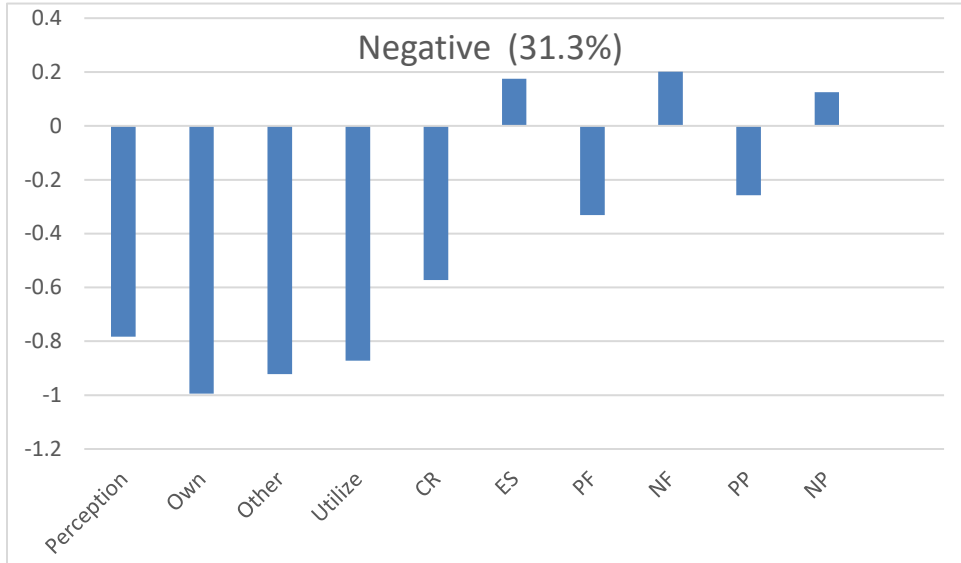


Figure 5

Profile 2: Low-Functioning Profile

Note. Perception = Perception of emotions; Own = Managing own emotions; Other = Managing other’s emotions; Utilize = Utilization of emotions; CR = Cognitive Reappraisal; ES = Expressive Suppression; PF = Positive Family; NF = Negative Family; Positive Peer; NP = Negative Peer

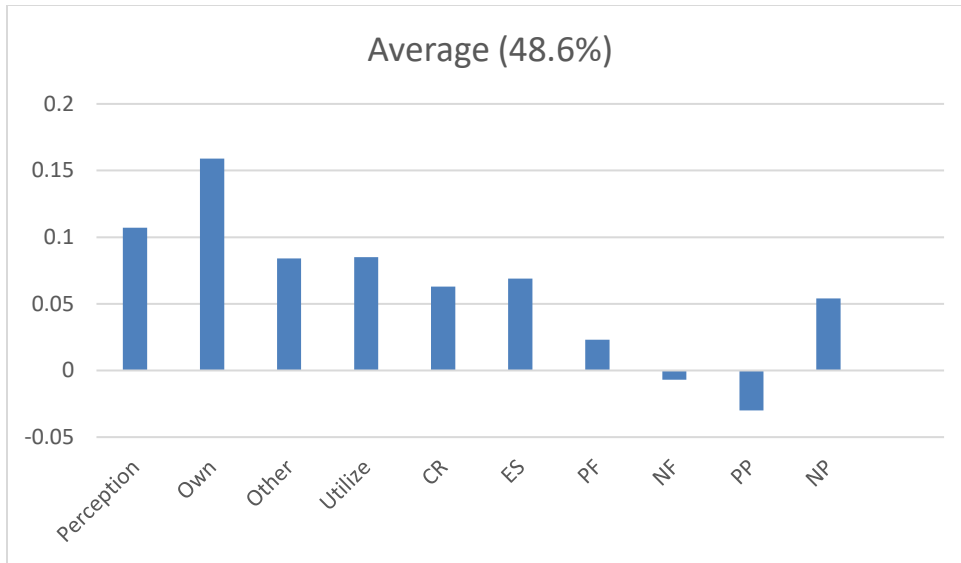


Figure 6

Profile 3: Average-Functioning Profile

Note. Perception = Perception of emotions; Own = Managing own emotions; Other = Managing other’s emotions; Utilize = Utilization of emotions; CR = Cognitive Reappraisal; ES = Expressive Suppression; PF = Positive Family; NF = Negative Family; Positive Peer; NP = Negative Peer

Table 1*Means, Standard Deviations, and Bivariate Correlations Among All Study Variables*

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	20.31	2.21	-														
2. Gender	-	-	.06	-													
3. Race	-	-	.04	-.02	-												
4. Perception of Emotions	3.56	0.59	.04	-.003	.04	-											
5. Managing Own Emotions	3.67	0.66	-.06	-.04	.03	.59**	-										
6. Managing Other Emotions	3.51	0.91	-.09	.04	.01	.61**	.72**	-									
7. Utilization of Emotions	3.64	0.62	.03	-.04	.03	.58**	.67**	.70**	-								
8. Cognitive Reappraisal	4.64	1.07	-.02	.01	.02	.33**	.49**	.36**	.44**	-							
9. Expressive Suppression	4.13	1.14	-.04	-.04	-.01	-.07	-.17**	-.29**	-.13*	.13**	-						
10. Positive Family	3.42	0.70	-.18**	-.04	-.15	.18**	.29**	.32**	.19**	.29**	-.08	-					
11. Negative Family	2.16	0.67	-.01	.14**	.002	-.14**	-.24**	-.12**	-.13**	.18**	.02	-.04	-				
12. Positive Peer	3.16	0.68	-.10*	-.05	-.20**	.16**	.18**	.28**	.19**	.36**	-.10*	.48**	.11**	-			
13. Negative Peer	1.82	0.55	-.04	-.03	-.06	-.21**	-.21**	-.14**	-.09	-.08	.04	.02	.57**	.16**	-		
14. Perceived Stress	2.58	0.60	.06	.16**	.06	-.12*	-.27**	-.11**	-.04	-.16**	.03	-.09	.18**	.04	.24**	-	
15. Depressive Symptoms	1.80	0.55	.07	.18**	.06	-.24**	-.48**	-.27**	-.18**	-.21**	.156**	-.23**	.25**	-.06	.25**	.65**	-

Note: * $p < .05$ ** $p < .01$

Table 2
Latent Profiles Solutions Fit Indices

#Profiles	Log likelihood	AIC	BIC	Entropy	LMR p-value	LMR meaning	BLRT p-value	BLRT meaning
1	-5578.374	11196.747	11276.526	-	-	-	-	-
2	-5233.648	10529.297	10652.954	0.804	0.0001	2>1	0.00001	2>1
3	-5111.449	10306.899	10474.435	0.813	0.0304	3>2	0	3>2
4	-5051.133	10208.281	10419.68	0.848	0.2171	3>4	0	4>3
5	-5005.662	10139.324	10394.618	0.845	0.1378	4>5	0	5>4

Table 3
Means, Standard Deviations, and One-Way Analyses of Variance in Perceived Stress and Depression

	High Functioning		Average Functioning		Low Functioning		<i>F</i> (2, 380)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Perceived Stress	2.45	.59	2.54	.55	2.74	.66	6.44*
Covariates							
Age	20.15	3.48	20.44	1.57	20.30	1.88	.70
Gender	-	-	-	-	-	-	9.32*
Race	-	-	-	-	-	-	1.14
Depression	1.51	.41	1.76	.48	2.04	.61	25.74**
Covariates							
Age	20.15	3.48	20.44	1.57	20.30	1.88	.76
Gender	-	-	-	-	-	-	12.57**
Race	-	-	-	-	-	-	.77

Note: * $p < .05$ ** $p < .01$ ^ $p < .10$

Table 4
Moderation Analyses: Interaction between Profile Membership and Perceived Stress on Depression

	<i>B</i>	SE	95% CI	
			LL	UL
Stress → Depression	.64**	.04	.64	16.45
PS x Profile → Depression <i>RG: High Functioning Profile</i>	.264*	.104	.06	.47
PS x Profile → Depression <i>RG: Average Functioning Profile</i>	.16^	.08	-.001	.32
High Functioning	.45**	.08	.29	.62
Average Functioning	.56**	.06	.60	.84
Low Functioning	.72**	.06	.44	.67
Covariates				
Age	.01	.02	-.03	.04
Gender	.12*	.06	.01	.24
Race	-.05	.09	-.22	.13

Note: * p < .05 ** p < .01 ^p < .10; PS = Perceived Stress; RG = Reference group

VITA

Jillian Dodson received an undergraduate degree in psychology with honors from the University of North Carolina at Chapel Hill in May 2020. As an undergraduate, Jillian worked as a research assistant in the Peer Relations Lab and the Propper Lab. She pursued post-baccalaureate training as a lab manager with the Family Studies Lab at the University of Illinois at Urbana-Champaign, studying neural processes related to emotion regulation and psychopathology in adolescence. Jillian is currently pursuing her doctorate in Clinical Psychology at the University of Tennessee at Knoxville under the supervision of Dr. Chris Elledge with the PAVES Lab. Her research broadly examines risk and resilience among children and adolescents who have experienced adversity, including peer victimization. More specifically, Jillian is interested in how these factors inform school or community-based interventions supporting at-risk youth.