THE IMPACT OF STRESS EXPOSURE ON PSYCHOLOGICAL OUTCOMES DURING EMERGING ADULTHOOD: THE BUFFERING ROLE OF PSYCHOLOGICAL FLEXIBILITY

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ABSTRACT

A robust literature has shown that stress exposure increases risk for deleterious psychological outcomes, including depression and anxiety. Studies also demonstrate, however, that not all individuals exposed to stress experience poor psychological outcomes. It is likely that these individuals possess protective factors that confer resilience to stress. Psychological flexibility--the ability to remain in contact with unwanted internal experiences in order to engage in behavior that is consistent with one's values and long-term goals—may be one such protective factor. The current studies utilized cross-sectional (Study 1) and daily-diary (Study 2) methodology to examine whether (1) emerging adults with greater stress exposure have poorer psychological outcomes and (2) psychological flexibility buffered against the deleterious impacts of stress exposure.

A sample of 432 emerging adults (*M* age = 19.69 years [*SD* = 1.54]; 84.2% female; 56.7% white) participated in Study 1 and completed a self-report battery assessing early adversity, recent life stress, psychological flexibility, depressive and anxiety symptoms, and psychological well-being. A subset of participants from Study 1 (N = 52; *M* = 19.42 years [*SD* = 1.55], 90.4% female; 55.8% white) completed Study 2. These participants completed a 14-day daily diary protocol measuring daily stress, depressive and anxiety symptoms, and negative affect.

Findings demonstrated that stress exposure was associated with increased risk for poor psychological outcomes. Specifically, greater early adversity was associated with higher depressive and anxiety symptoms; greater recent life stress was associated with higher depressive and anxiety symptoms and lower psychological well-being; and greater

within-person daily stress was associated with higher same-day depressive and anxiety symptoms and negative affect. Contrary to hypotheses, there was no evidence of psychological flexibility buffering against the deleterious impact of stress exposure.

Overall, these results contribute to the extant literature and provide further evidence that stress exposure is a transdiagnostic risk factor for psychopathology among emerging adults. Given that emerging adulthood is characterized by heightened instability, uncertainty, and the accumulation of stressors, future research is needed to identify malleable characteristics that protect against the consequences of stress exposure during this developmental period.

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CHAPTER 1

MANUSCRIPT IN JOURNAL ARTICLE FORMAT

Introduction

Emerging adulthood, the developmental period between 18 and 25 years of age, is a time of considerable exploration (Arnett, 2000). Emerging adults—free from the constraints of childhood and adolescence and not yet burdened by the demands of adult responsibilities—have the opportunity to experiment with different values and identities, careers, living arrangements, and relationships (Arnett, 2000). Although growth in identity, autonomy, and social roles are positive aspects of development, these pervasive changes also lead to instability and uncertainty. Emerging adulthood may be a period of increased vulnerability because individuals have not yet developed the skills to effectively navigate these challenging and often stressful transitions. As such, emerging adulthood is a period of heightened risk for the onset and worsening of psychopathology (e.g., Auerbach et al., 2018; Schulenberg & Zarrett, 2006).

Decreased psychological functioning during emerging adulthood can disrupt critical developmental tasks and contribute to increased mortality rates causing substantial personal and societal burdens. Internalizing psychopathology adversely impacts educational attainment (Auerbach et al., 2016; Bruffaerts et al., 2018; Mojtabai et al., 2015), occupational productivity (e.g., Plaisier et al., 2010), and interpersonal relationships (e.g., Kupferberg et al., 2016). Moreover, internalizing psychopathology is associated with suicidal thoughts and behaviors (e.g., Eisenberg et al., 2007; Gomes et al., 2019), and suicide is the leading cause of death among emerging adults (Center for Disease Control and Prevention, 2019; Turner et al., 2013). Therefore, research aimed at

better understanding the etiology of internalizing disorders during emerging adulthood is of great public health significance.

Identifying the causes of internalizing disorders is a longstanding priority among researchers. Although the complex etiologies underlying these disorders remain poorly understood, numerous factors associated with the onset of internalizing symptomatology have been identified (see Hammen, 2018 for a review). Stress exposure is one of the most well-established risk factors for internalizing disorders (e.g., Grant et al., 2014) and may be a particularly potent risk factor during emerging adulthood due to the accumulation of multiple types of stressors (e.g., peer, family, achievement) that occur during this time (Hankin et al., 2016).

Importantly, not all individuals who experience stress develop a mood or anxiety disorder. The vulnerability-stress model posits that specific individuals possess traits that interact with stress to confer risk for psychiatric disorders (e.g., Ingram & Luxton, 2005), and a vast body of literature has identified factors that increase individuals' risk. An emerging body of literature also examines protective factors that may confer resilience to stress (see Southwick et al., 2005, for a review). Resilience, defined as the capacity to maintain positive outcomes in the face of adversity and stress (Masten, 2001), represents an informative and modifiable target for prevention and intervention efforts. Despite this, there is a paucity of research investigating factors that may confer resilience to stress among emerging adults who experience heightened stress levels and, thus, are at increased risk for developing internalizing psychopathology. The present study was designed to address this gap in the literature by examining whether psychological flexibility confers resilience to stress exposure in a sample of emerging adults.

Stress and Psychological Outcomes

Stress and Depression

Existing literature recognizes the well-documented relationship between stress and depression (see Hammen, 2005 for a review). Life stress is consistently associated with the onset (Daley et al., 2000; Kendler, 1999; Lewinsohn et al., 1999), severity (Hammen et al., 1992), and course (Kendler et al., 1997) of depression. Several studies have demonstrated the adverse impact of life stress on depression during emerging adulthood (e.g., Asberg et al., 2008; Cusack & Merchant, 2013; Dixon & Reid, 2000; Dyson & Renk, 2006; Ebert et al., 2019; Reyes-Rodriguez, 2013; Sokratous et al., 2013). For example, two prospective studies revealed that interpersonal stress predicted greater risk for the onset (Vrshek-Schallhorn et al., 2015) and recurrence of major depressive disorder (MDD; Sheets & Craighead, 2014) among emerging adults.

Early adversity also has been investigated as a risk factor for depression (for reviews, see LeMoult et al., 2020; Liu, 2017; Vrshek-Schallhorn et al., 2020) and has been found to be associated with onset, recurrence, and remission (e.g., Gilman et al., 2003; Kessler et al., 1997) of MDD. In emerging adulthood, although several studies have supported the association between early adversity and later depressive symptomatology (e.g., Merksey et al., 2013; Schilling et al., 2007;), not all studies have found evidence of this association (e.g., Vrshek-Schallhorn et al., 2015). Additionally, a growing body of evidence suggests that early adversity indirectly confers risk for depressive symptomatology via recent life stress (e.g., Hazel et al., 2008; Stroud et al., 2021; Vrshek-Schallhorn et al., 2015).

Furthermore, daily hassles or stress also have been implicated in the etiology of depression. Support for the association between daily hassles and depression has been found in cross-sectional (e.g., Bouteyre et al., 2007; D'Angelo & Wierzbicki, 2003; Mcintosh et al., 2010; Sim, 2000) and daily diary (e.g., Dunkley et al., 2017; O'Neill et al., 2004) studies. For example, Barker and colleagues (2007) found that among college students, daily stress over four weeks predicted depressive symptoms at follow-up.

Stress and Anxiety

Although less robustly, stress also has been implicated in the etiology of anxiety disorders (e.g., Asselmann et al., 2015; Miloyan et al., 2018; Platt et al., 2016; Young et al., 2015). Among emerging adults, accumulating evidence suggests that life stress (e.g., Hankin et al., 2004; Yilmaz et al., 2011), early adversity (e.g., Merksey et al., 2013), and daily stress (e.g., Yilmaz et al., 2011) are associated with increased anxiety. Despite these results, mixed findings (e.g., Phillips et al., 2015) and limited research examining the prospective relationship between stress and anxiety during emerging adulthood underscores the importance of additional research aimed at investigating the role of life stress in the etiology of anxiety during emerging adulthood.

Stress as a Transdiagnostic Risk Factor

Stress also is understood as a transdiagnostic risk factor. March-Llanes and colleagues (2017) argue that stressful life events should be conceptualized as a general risk factor contributing to the common liability underlying psychopathology rather than a specific risk factor for individual disorders. Supporting this supposition, stress has been associated with greater internalizing symptomatology (Duprey et al., 2018) and psychological distress (Tiwari & Deshpande, 2020), and lower subjective well-being

(e.g., Karlsen et al., 2006) and life satisfaction (e.g., Denovan & Macaskill, 2016). Furthermore, greater perceived stress is associated with lower psychological well-being (e.g., He et al., 2018). Further research is needed to examine the impact of life stress, early adversity, and daily stress on psychological well-being among emerging adults.

Taken together, the extant literature examining the link between stress and psychological functioning establishes stress exposure, including life stress, early adversity, and daily stress, as a risk factor for poor psychological outcomes. Although stress exposure is a universal and ubiquitous part of life, especially during emerging adulthood, not all emerging adults exposed to stress experience poor psychological outcomes. There are likely protective factors that mitigate the impact of stress exposure, and research has begun to focus on identifying these factors (see Southwick et al., 2005). The present investigation hypothesized that psychological flexibility might be one such protective factor.

Psychological Flexibility and Psychological Outcomes

A burgeoning body of research demonstrates that flexibility within psychological processes consistently is associated with adaptive psychological outcomes (for a review, see Kashden & Rottenberg, 2010). For example, meta-analytic findings suggest a small-to-moderate effect of coping flexibility on psychological adjustment (Cheng et al., 2014). Furthermore, Stange and colleagues (2017) found that cognitive inflexibility, coping inflexibility, affective inflexibility, explanatory inflexibility, and low cardiac vagal control each conferred risk for depressive outcomes within the extant literature. These processes, broadly labeled as psychological flexibility, often are understood from a neuropsychological framework (e.g., Schultz & Searleman, 2002).

In addition to this generic use of psychological flexibility, this term also refers to a specialized construct derived from Relational Frame Theory (RFT; Barnes-Holms & Roche, 2011) and Acceptance and Commitment Therapy (ACT; e.g., Hayes et al., 2004). Within RFT and ACT, psychological flexibility is defined as "the ability to contact the present moment more fully as a conscious human being, and to either change or persist [in behavior] when doing so serves valued ends" (Hayes et al., 2004, p. 5). According to ACT theory, psychological flexibility is achieved through six core processes: acceptance, cognitive defusion, self-as-context, present moment awareness, values, and committed action (Hayes et al., 2016).

ACT-based psychological flexibility is the cornerstone of the Psychological Flexibility Model—a theoretical model of mental health that posits that psychological inflexibility is at the root of all psychopathologies (Hayes et al., 2006; Hayes et al., 2011). The model theorizes that pain (e.g., distressing thoughts and emotions) is an inherent and transient characteristic of life, but does not inevitably result in suffering. Instead, suffering is the result of psychological inflexibility. That is, when a psychologically inflexible individual responds to a painful experience by attempting to control or reduce it, the attempts at control prolong the experience of pain and lead to increased avoidance, interfere with an individual's adaptive functioning, and distract from goal-directed pursuits. This prolonged (versus transient) experience of pain, coupled with increased avoidance, decreased adaptive functioning, and limited goal-directed actions, leads to suffering.

In support of the Psychological Flexibility Model, several studies indicate that ACT-based psychological flexibility (versus inflexibility) is associated with reduced

depression and anxiety (e.g., Hernandez-Lopez et al., 2021; Masuda et al., 2014; Spinhoven et al., 2014; Woodruff et al., 2014; see Bluett et al., 2014 for a review). Furthermore, transdiagnostic studies have supported the link between psychological flexibility and improved psychological well-being (e.g., Guerrini Usubini et al., 2021; Imani et al., 2017; Twiselton et al., 2020). These associations between psychological flexibility and psychological functioning have been documented within diverse populations, including emerging adults. Given that ACT-based psychological flexibility is associated with decreased psychopathology and increased psychological well-being, there is evidence that it serves as a protective factor and confers resilience.

Interaction of Stress and Psychological Flexibility on Outcomes

Further supporting the buffering effect of psychological flexibility, recent studies have examined the impact of psychological flexibility on the association between COVID-19 pandemic-related stress and psychological functioning. These studies demonstrated that psychological flexibility was associated with an adaptive response to COVID-19-related distress (e.g., Arslan & Allen, 2021; Crasta et al., 2020; Dawson & Golijani-Moghaddam, 2020; Kroska et al., 2020; Landi et al., 2020; McCracken et al., 2021). For example, higher psychological flexibility attenuated the impact of COVID-19-related stress and mental health outcomes among Italian adults (Pakenham et al., 2020). Thus, this newly emerging and highly relevant body of literature supports the protective role of psychological flexibility in the context of stress exposure.

With regards to stressful life events more broadly, Fonseca and colleagues (2020) demonstrated that among Portuguese adults with greater psychological flexibility, the frequency and subjective impact of self-reported major life events over the past 12

months were not significantly associated with current depressive symptoms. Likewise, Gloster and colleagues (2017) found that psychological flexibility moderated the relationship between daily stress and adverse psychological outcomes (e.g., depression, anxiety, and psychological well-being). Psychological flexibility also moderated the relationship between life stress and depression and anxiety (Gloster et al., 2017).

These results provide preliminary support for the importance of psychological flexibility in the context of stress exposure. Specifically, there is evidence for psychological flexibility as a protective factor that confers resilience to life stress and daily stress. However, no studies have examined the moderating effects of psychological flexibility on the relationship between early adversity and psychological functioning. Moreover, the buffering role of psychological flexibility against life stress and daily stress has not been investigated in samples of emerging adults.

The Current Studies

To better understand the associations between stress exposure, psychological flexibility, and psychological outcomes during emerging adulthood, the present investigation employed cross-sectional (Study 1) and daily-diary (Study 2) methodology to examine whether self-reported stress exposure was associated with poorer psychological functioning. Based on the robust and growing literature identifying stress exposure as a risk factor for psychopathology, in Study 1, it was hypothesized that early adversity and recent life stress would be associated with greater depressive and anxiety symptoms, as well as lower overall psychological well-being. Likewise, in Study 2, it was hypothesized that daily stress would be associated with greater same-day and next-day anxiety and depression symptoms and negative affect.

Additionally, given the evidence that, in accordance with the Psychological Flexibility Model, psychological flexibility is associated with more adaptive psychological outcomes, psychological flexibility was tested as a buffer against the deleterious impacts of stress exposure among emerging adults. More specifically, it was hypothesized that the magnitude of the association between stress exposure and psychological functioning would decrease as psychological flexibility increases. This hypothesis was examined with both the cross-sectional (Study 1) and daily-diary (Study 2) methodologies.

Study 1

Methods

Participants and Procedures

Study 1 included undergraduate students recruited to participate in the Flexibility and Life Experiences (FLEX) Project. Recruitment for the FLEX Project was via the Temple University Research Participation System (SONA). Undergraduates were eligible to participate in the present study if they were between 18 and 25 years old, able to complete written assessments in English, and currently enrolled in an undergraduate course. The FLEX Project was approved by the Institutional Review Board of Temple University, and prior to initiating data collection, all participants provided written informed consent.

Participants enrolled in the FLEX Project completed an online battery of questionnaires assessing demographics, psychological flexibility, lifetime stress exposure, depressive symptoms, anxiety symptoms, and psychological well-being. Participants also completed measures assessing coping flexibility, explanatory flexibility,

and cognitive flexibility; however, these alternative measures of flexibility were not used within Study 1. Participants earned SONA credit for their participation in the study.

Measures

Psychological Flexibility. The *Multidimensional Psychological Flexibility Inventory* (MPFI; Rolffs et al., 2018) is a 60-item self-report measure that assesses psychological flexibility/inflexibility across six dimensions: values/lack of contact with values (e.g., "I stuck to my deeper priorities in life"), present moment awareness/lack of contact with present moment awareness (e.g., "I was attentive and aware of my emotions"), defusion/fusion (e.g., "I was able to let negative feelings come and go without getting caught up in them"), self-as-context/self-as-content (e.g., "I tried to keep perspective even when life knocked me down"), acceptance/ experiential avoidance (e.g., "I opened myself to all of my feelings, the good and the bad"), and committed action/inaction (e.g., "Even when life got stressful and hectic, I still worked toward things that were important to me"). The MPFI has twelve subscales reflecting flexibility and inflexibility within each of the six dimensions. Each item has a 14-day recall period and is rated on a 6-point Likert-type scale from 0 (Never True) to 5 (Always True). Items within each subscale were averaged, with high scores indicating greater flexibility/inflexibility within the specific dimension. In the present study, a Psychological Flexibility Composite score was created by averaging the six subscales representing flexibility. The MPFI Psychological Flexibility Composite score has demonstrated excellent internal consistency ($\alpha = 0.959$-0.971) across various demographic groups (Rolffs et al., 2018). Similarly, the MPFI Psychological Flexibility Composite score demonstrated excellent internal consistency ($\alpha = 0.95$) in the current sample. Of note, the MPFI Psychological Inflexibility Composite demonstrated strong

convergent validity (*r*s = 0.77 – 0.87) with other widely used measures of global inflexibility (i.e., the Acceptance and Action Questionnaire [AAQ], Acceptance and Action Questionnaire-II [AAQ-II], and the Avoidance and Fusion Questionnaire for Youth [AFQ-Y]), whereas the MPFI Psychological Flexibility Composite demonstrated only moderate convergent validity (*r*s = -0.45 – -0.58) with these global measures, suggesting that the MPFI Psychological Flexibility Composite offers a novel and distinct measure of psychological flexibility (Rolffs et al., 2018).

Stress Exposure. The *Stress and Adversity Inventory for Adults* (Adult STRAIN; Slavich & Shields, 2018) is an online stress assessment system consistent with the contextual threat method (Brown & Harris, 1978) that measures lifetime exposure to acute and chronic stress. The Adult STRAIN includes 55 core stressors from major life domains, and the optional Transition to College (TCC) module contains an additional 14 stressors that are commonly experienced during college. The stressors in the TCC were likely to be highly relevant to the undergraduate participants recruited for the present study. Thus, the TCC module also was administered to all participants. For each stressor endorsed, participants were asked a series of tailored follow-up questions assessing the severity, frequency, timing, and duration of the stressor. In the present study, stress exposure was operationalized using two variables: early adversity (i.e., frequency of stress exposure prior to age 18) and recent life stress (i.e., frequency of stress exposure in the last six months). The Adult STRAIN demonstrated acceptable psychometric properties, including convergent validity (*r* = 0.552) with the Childhood Trauma Questionnaire-Short Form, discriminant validity (all correlations were non-significant, *p*s > 0.08) with the Big Five personality traits and social desirability, predictive validity (*r*s

= 0.185 – 0.493) in relation to self-reported mental and physical health complaints, and test-retest reliability (r = 0.919) over two weeks (Slavich & Shields, 2018).

Internalizing Symptoms. The *Patient Reported Outcomes Measurement Information Systems* (PROMIS; Irwin et al., 2010) Anxiety Item Bank contains 29 items assessing symptoms of fear (e.g., "I felt frightened"), worry (e.g., "Many situations made me worry"), hyperarousal (e.g., "I felt tense"), and associated somatic responses (e.g., "I had a racing or pounding heart) in adults. Each item has a seven-day recall period, and the frequency of each item is rated on a 5-point scale from 1 (Never) to 5 (Always), with higher scores indicating more severe anxiety symptoms. The Anxiety item bank demonstrated strong convergent validity with the Mood and Anxiety Symptom Questionnaire-General Distress scale (r = 0.80) and weak divergent validity with the Center for Epidemiologic Studies-Depression scale (r = 0.75; Pilkonis et al., 2011). In the present study, the PROMIS Anxiety 8-item short form (v1.0, 8a) was used. The PROMIS Anxiety 8-item short form has been found to have excellent internal consistency (α = 0.93; Hadlandsmyth et al., 2020). Similarly, the PROMIS Anxiety 8-item short form demonstrated excellent internal consistency (α = 0.93) in the current sample.

The *Patient Reported Outcomes Measurement Information Systems* (PROMIS; Irwin et al., 2010) *Depression Item Bank* contains 28 items assessing the affective (e.g., "I felt unhappy") and cognitive (e.g., "I had trouble making decisions") symptoms of depression in adults. Each item has a seven-day recall period, and the frequency of each item was rated on a 5-point scale from 1 (Never) to 5 (Always), with higher scores indicating more severe depressive symptoms. The Depression item bank demonstrated strong convergent validity with the Center for Epidemiologic Studies-Depression scale (r

= 0.83) and weak divergent validity with the Mood and Anxiety Symptom Questionnaire-General Distress scale (r = 0.72; Pilkonis et al., 2011). In the present study, the PROMIS Depression 8-item short form (v1.0, 8a) was used. The PROMIS Depression 8-item short form has been found to have excellent internal consistency (α = 0.974; Nolte et al., 2019). Similarly, the PROMIS Depression 8-item short form demonstrated excellent internal consistency (α = 0.95) in the current sample.

Psychological Well-Being. The *Scale of Psychological Well-Being* (PWB; Ryff, 1989) is a 42-item questionnaire that assesses psychological well-being across six domains: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. The PWB has six subscales reflecting the six domains of well-being, and each subscale contains seven items. Each item was rated on a 6-point Likert-type scale from 1 (Strongly Disagree) to 6 (Strongly Agree), and items within each subscale were summed. The six PWB subscales have been found to have good internal consistency (α = 0.77 – 0.90; van Dierendonck, 2005) and convergent validity (r = 0.25 – 0.73) with existing measures of positive functioning (i.e., life satisfaction [Life Satisfaction Index], affect balance [Affect Balance Scale], self-esteem [Self-Esteem Scale], internal control [Levenson's Locus of Control Scales], and morale [Revised Philadelphia Geriatric Center Morale Scale]), and discriminant validity (r = -0.30 – -0.60) with measures of negative functioning (i.e., powerful others [Levenson's Locus of Control Scales], chance control [Levenson's Locus of Control Scales], and depression [Self-Rating Depression Scale]; Ryff et al., 1989). Although the subscales are commonly used, prior research has also utilized a total composite score (e.g., Haas et al., 2019). In the present study, a total overall Psychological Well-Being Composite score

was created by summing the six subscales, with higher scores representing greater overall psychological well-being. The Psychological Well-Being Composite score demonstrated excellent internal consistency ($\alpha = 0.92$) in the current sample.

Data Analytic Plan

All analyses were performed in R (R Core Team, 2018) with R Studio (RStudio Team, 2016). Descriptive statistics were examined for the variables of interest, including means, standard deviations, and bivariate correlations. Bivariate correlational analyses also were conducted between demographic variables (i.e., age, biological sex, race) and measures of psychological functioning (i.e., anxiety symptoms, depressive symptoms, psychological well-being). Based on these preliminary analyses, potential covariates that were at least marginally significantly ($p < 0.10$) associated with psychological functioning were included as covariates in the respective primary analyses. Distributional assumptions were examined and met for all dependent variables.

Hierarchical multiple regression analyses examined the association between stress exposure and psychological functioning. Six separate multiple regression analyses were run: (1) anxiety symptoms regressed on early adversity, (2) anxiety symptoms regressed on recent life stress, (3) depressive symptoms regressed on early adversity, (4) depressive symptoms repressed on recent life stress, (5) psychological well-being regressed on early adversity, (6) psychological well-being regressed on recent life stress. The first step included covariates identified in the preliminary analyses, and the second step included the stress exposure variable. If no covariates were identified in the preliminary analyses as at least marginally significantly ($p < 0.10$) associated with psychological functioning, the stress exposure variable was entered in the first step.

Hierarchical multiple regression analyses also were conducted to examine whether psychological flexibility moderated the association between stress exposure and psychological functioning. The same six focal variable-outcome variable pairs described above were examined. The first step included covariates identified in the preliminary analyses. The second step (or first if no covariates were identified) included the stress exposure variable and psychological flexibility. The final step included the interaction between stress exposure and psychological flexibility. Both the focal predictor and moderator were centered in these analyses.

Family-wise Holm-Bonferroni corrections were used to control for multiple comparisons, with families of analyses identified within each primary aim based on the outcome variable.

Results

Preliminary Analyses

Participants (N = 432) ranged in age from 18 to 25 years (M = 19.69; SD = 1.54). The majority of the sample, 84.2% (n = 365), were assigned female at birth, 15.6% (n = 66) were assigned male at birth, and 0.2% (n = 1) preferred not to answer. With regard to gender identity, 81.6% (n = 345) self-identified as female, 15.1% (n = 64) as male, 0.7% (n = 3) as transgender, 1.7% (n = 7) as non-binary, 0.5% (n = 2) selected "other" for gender identity, and 0.5% (n = 2) preferred not to answer. Within the sample, 56.7% (n = 240) self-identified as white, 20.3% (n = 86) as Black/African American, 12.5% (n = 53) as Asian, 0.2% (n = 1) as Native Hawaiian/Other Pacific Islander, 6.4% (n = 27) as multiracial/more than one race, 2.1% (n = 9) selected "other" for race, and 1.7% (n = 7) preferred not to answer. Additionally, 85.3% (n = 361) self-identified as Non-

Hispanic/Non-Latinx, 11.8% (*n* = 50) identified as Hispanic/Latinx, and 2.9% (*n* = 12) preferred not to answer. See Table 1 for additional demographic characteristics.

Table 1

Demographic Characteristics of Emerging Adults Included in Study 1

Variable		Study 1 Sample (N = 423)
Age, years (mean [*SD*])		19.69 (1.54)
Sex Assigned at Birth		
	Male	66 (15.6%)
	Female	356 (84.2%)
	Not Reported	1 (0.2%)
Gender, n (%)		
	Male	64 (15.1%)
	Female	345 (81.6%)
	Transgender	3 (0.7%)
	Non-Binary	7 (1.7%)
	Other	2 (0.5%)
	Not Reported	2 (0.5%)
Race, n (%)		
	White	240 (56.7%)
	Black	86 (20.3%)
	Asian	53 (12.5%)
	Native Hawaiian/Other Pacific Islander	1 (0.2%)
	Multiracial or More Than One Race	27 (6.4%)
	Other	9 (2.1%)
	Not Reported	7 (1.7%)
Ethnicity, n (%)		
	Hispanic/Latinx	50 (11.8%)
	Non-Hispanic/Non-Latinx	361 (85.3%)
	Not Reported	12 (2.9%)
Marital Status, n (%)		
	Single	305 (72.1%)
	In a Relationship (Not Married)	111 (26.2%)
	Married	1 (0.2%)
	Not Reported	6 (1.4%)

Note. SD = standard deviation.

Descriptive statistics and intercorrelations among all primary study variables are presented in Table 2. Early adversity and recent life stress were significantly positively correlated with each other and with symptoms of depression and anxiety. Additionally, recent life stress also was significantly negatively correlated with psychological well-being. Psychological flexibility was significantly negatively correlated with symptoms of depression and anxiety and significantly positively correlated with psychological well-being. Symptoms of depression and anxiety were significantly positively correlated with each other, and both were significantly negatively correlated with psychological well-being.

Table 2

Correlations and Descriptive Statistics for Continuous Primary Variables in Study 1

	STRAIN-Early Adversity	STRAIN-Recent Stress	MPFI-Psychological Flexibility	PROMIS-Anxiety	PROMIS-Depression	PWB-Psychological Well-Being
STRAIN-Early Adversity	-					
STRAIN-Recent Stress	.287***	-				
MPFI-Psychological Flexibility	.045	-.038	-			
PROMIS-Anxiety	.153**	.384***	-.234***	-		
PROMIS-Depression	.123*	.366***	-.380***	.724***	-	
PBW-Psychological Well-Being	-.011	-.136**	.553***	-.429***	-.609***	-
Mean	2.657	3.813	3.696	20.657	18.865	170.241
SD	3.581	3.097	.756	7.856	8.202	27.513

Note. STRAIN = Stress and Adversity Inventory for Adults; MPFI = Multidimensional Psychological Flexibility Inventory; PROMIS = Patient Reported Outcomes Measurement Information Systems; PWB = Scale of Psychological Well-Being; SD = standard deviation; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Analyses also were conducted to examine whether there were associations between the outcome variables (i.e., depressive symptoms, anxiety symptoms, psychological well-being) and potential covariates (i.e., age, biological sex, race). Age was not significantly correlated with depressive symptoms ($r = 0.033$, $p = 0.493$), anxiety symptoms ($r = 0.024$, $p = 0.628$), or psychological well-being ($r = -0.037$, $p = 0.453$). Relative to biological males, biological females reported more anxiety symptoms ($t(420) = -2.280$, $p = 0.023$, $d = 0.306$). There were no biological sex differences in depressive symptoms ($t(420) = -1.219$, $p = 0.224$, $d = 0.163$) or psychological well-being ($t(420) = -0.372$, $p = 0.714$, $d = 0.049$). There were marginally significant racial differences in anxiety symptoms ($F(6, 416) = 1.934$, $p = 0.074$), but not in depressive symptoms ($F(6, 416) = 1.538$, $p = 0.164$) or psychological well-being ($F(6, 416) = 1.182$, $p = 0.315$). Potential covariates that were significantly ($ps < 0.05$) or marginally significantly ($ps < 0.10$) associated with an outcome variable were retained as covariates in the respective analyses.

Primary Analyses

Primary Aim 1: Is Stress Exposure Associated with Psychological Functioning?

Hierarchical multiple regression analyses were conducted to examine whether stress exposure was associated with psychological functioning (see Table 3). Greater early adversity was significantly associated with greater anxiety symptoms ($p = 0.008$), controlling for biological sex and race. Similarly, greater recent life stress was associated with greater anxiety symptoms ($p < 0.001$), controlling for biological sex and race. These

results remained significant after the family-wise Holm-Bonferroni correction was applied.

Both greater early adversity ($p = 0.011$) and greater recent life stress ($p < 0.001$) were associated with greater depressive symptoms. These results remained significant after the family-wise Holm-Bonferroni correction was applied.

Early adversity was not significantly associated with psychological well-being ($p = 0.827$). However, greater recent life stress was associated with lower psychological well-being ($p = 0.005$). This finding remained significant after the family-wise Holm-Bonferroni correction was applied.

Table 3

Stress Exposure Predicting Psychological Functioning Among Emerging Adults

STRAIN-Early Adversity						STRAIN-Recent Stress					
Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
	PROMIS-Anxiety						PROMIS-Anxiety				
1	(Intercept)	18.859	1.006	18.747***	.037*	1	(Intercept)	18.859	1.006	18.746***	.037*
	Sex (Female)	2.315	1.047	2.212*			Sex (Female)	2.315	1.047	2.280*	
	Race (Black/African American)	-1.126	.978	-1.151			Race (Black/African American)	-1.126	.978	-1.151	
	Race (Asian)	-1.316	1.180	-1.115			Race (Asian)	-1.316	1.181	-1.115	
	Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.160*			Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*	
	Race (Multiracial/More Than One Race)	1.157	1.578	.733			Race (Multiracial/More Than One Race)	1.157	1.578	2.161	
	Race (Other)	3.785	2.638	1.435			Race (Other)	3.785	2.638	1.435	
2	(Intercept)	18.046	1.043	17.298***	.017**	2	(Intercept)	15.399	1.027	15.001***	.135***
	Sex (Female)	2.366	1.039	2.277*			Biological Sex (Female)	1.807	.974	1.855	
	Race (Black/African American)	-.996	.972	-1.0243			Race (Black/African American)	-.689	.910	-0.757	
	Race (Asian)	-1.089	1.174	-.9270			Race (Asian)	.124	1.110	.112	
	Race (Native Hawaiian/Other Pacific Islander)	17.589	7.733	2.275*			Race (Native Hawaiian/Other Pacific Islander)	19.843	7.24	2.741**	
	Race (Multiracial/More Than One Race)	.573	1.581	.363			Race (Multiracial/More Than One Race)	1.406	1.466	.959	
	Race (Other)	2.871	2.640	1.087			Race (Other)	2.886	2.453	1.177	
	STRAIN-Early Adversity	.292	.109	2.688**			STRAIN-Recent Stress	0.951	.117	8.131***	
	PROMIS-Depression						PROMIS-Depression				
1	(Intercept)	18.117	.494	36.703***	.015*	1	(Intercept)	15.168	.590	25.721***	.134***
	STRAIN-Early Adversity	.281	.111	2.543*			STRAIN-Recent Stress	.970	.120	8.074***	
	PWB-Psychological Well Being						PWB-Psychological Well-Being				
1	(Intercept)	170.458	1.668	102.171***	<.001	1	(Intercept)	174.852	2.106	83.025***	.019**
	STRAIN-Early Adversity	-.082	.374	-.218			STRAIN-Recent Stress	-1.209	.429	-2.819**	

Note. STRAIN = Stress and Adversity Inventory for Adults; PROMIS = Patient Reported Outcomes Measurement Information Systems; PWB = Scale of Psychological Well-Being; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Primary Aim 2: Does Psychological Flexibility Moderate the Association Between Stress Exposure and Psychological Functioning?

Hierarchical multiple regression analyses examined whether psychological flexibility moderated the association between stress exposure and psychological functioning (see Table 4).

Consistent with the results from Primary Aim 1, there were significant main effects of stress exposure on psychological functioning, such that greater early adversity was associated with greater depressive ($p = 0.003$) and anxiety ($p = 0.002$) symptoms and greater recent life stress was associated with greater depressive ($p < 0.001$) and anxiety ($p < 0.001$) symptoms and lower psychological well-being ($p = 0.004$). There also was a significant main effect of psychological flexibility on psychological functioning, such that greater psychological flexibility was associated with lower depressive and anxiety symptoms and greater psychological well-being (ps < 0.001).

There was no significant interaction between psychological flexibility and early adversity predicting anxiety symptoms ($p = 0.337$), controlling for biological sex and race. There also was no significant interaction between psychological flexibility and recent life stress predicting anxiety symptoms ($p = 0.188$), controlling for biological sex and race. There also was no significant interaction between psychological flexibility and either early adversity ($p = 0.738$) or recent stress ($p = 0.961$) predicting depressive symptoms. Likewise, psychological flexibility did not moderate the associations between early adversity ($p = 0.827$) and recent life stress ($p = 0.906$) with psychological well-being.

Table 4

Interaction Between Stress Exposure and Psychological Flexibility Predicting Psychological Functioning Among Emerging Adults

STRAIN-Early Adversity						STRAIN-Recent Stress					
Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
	PROMIS-Anxiety						PROMIS-Anxiety				
1	(Intercept)	18.859	1.006	18.747***	.037*	1	(Intercept)	18.859	1.006	18.746***	.037*
	Biological Sex (Female)	2.315	1.047	2.212*			Biological Sex (Female)	2.315	1.047	2.280*	
	Race (Asian)	-1.316	1.180	-1.115			Race (Asian)	-1.316	1.181	-1.115	
	Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.160*			Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*	
	Race (Multiracial/More Than One Race)	1.157	1.578	.733			Race (Multiracial/More Than One Race)	1.157	1.578	2.161	
	Race (Other)	3.785	2.638	1.435			Race (Other)	3.785	2.638	1.435	
2	(Intercept)	18.829	.972	19.380***	.069**	2	(Intercept)	19.031	.910	20.906***	.179***
	Biological Sex (Female)	2.308	1.011	2.283*			Biological Sex (Female)	1.761	.949	1.856	
	Race (Black/African American)	-.676	.948	-.713			Race (Black/African American)	-.414	.888	-.466	
	Race (Asian)	-1.205	1.143	-1.055			Race (Asian)	-.029	1.082	-.026	
	Race (Native Hawaiian/Other Pacific Islander)	16.039	7.531	2.130*			Race (Native Hawaiian/Other Pacific Islander)	18.306	7.061	2.593**	
	Race (Multiracial/More Than One Race)	.495	1.539	.321			Race (Multiracial/More Than One Race)	1.371	1.428	.960	
	Race (Other)	3.490	2.572	1.357			Race (Other)	3.537	2.393	1.478	
	STRAIN-Early Adversity	.315	.106	2.977**			STRAIN-Recent Stress	.931	.114	8.169***	
	MPFI-Flexibility	-2.384	.488	-4.885***			MPFI-Flexibility	-2.186	.457	-4.781***	
3	(Intercept)	18.817	.972	19.365***	.002	3	(Intercept)	19.089	.911	20.965***	.003
	Biological Sex (Female)	2.360	1.013	2.331			Biological Sex (Female)	1.748	.948	1.844	
	Race (Black/African American)	-.771	.953	-.809			Race (Black/African American)	-.501	.890	-.563	
	Race (Asian)	-1.277	1.145	-1.115			Race (Asian)	-.098	1.082	-.091	
	Race (Native Hawaiian/Other Pacific Islander)	15.767	7.537	2.092*			Race (Native Hawaiian/Other Pacific Islander)	17.899	7.061	2.535*	
	Race (Multiracial/More Than One Race)	.402	1.542	.261			Race (Multiracial/More Than One Race)	1.396	1.427	.978	
	Race (Other)	2.991	2.624	1.140			Race (Other)	3.158	2.408	1.311	
	STRAIN-Early Adversity	.306	.106	2.885**			STRAIN-Recent Stress	.923	.114	8.090***	
	MPFI-Flexibility	-2.398	.488	-4.911***			MPFI-Flexibility	-2.110	.460	-4.585***	

Table 4 (continued)

Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
	STRAIN-Early Adversity*MPFI-Flexibility	.108	.112	.962			STRAIN-Recent Stress*MPFI-Flexibility	.199	.151	1.320	
	PROMIS-Depression						PROMIS-Depression				
					.164**						
1	(Intercept)	18.865	.366	51.621***	*	1	(Intercept)	18.865	.342	55.176***	.268***
	STRAIN-Early Adversity	.321	.102	3.142**			STRAIN-Recent Stress	.933	.111	8.434***	
	MPFI-Flexibility	-4.190	.484	-8.652***			MPFI-Flexibility	-3.977	.453	-8.780***	
2	(Intercept)	18.87	.366	51.545***	<.001	2	(Intercept)	18.865	.343	55.068***	<.001
	STRAIN-Early Adversity	.325	.103	3.156**			STRAIN-Recent Stress	.933	.111	8.419***	
	MPFI-Flexibility	-4.183	.485	-8.621***			MPFI-Flexibility	-3.979	.456	-8.723***	
	STRAIN-Early Adversity*MPFI-Flexibility	.037	.109	-.335			STRAIN-Recent Stress*MPFI-Flexibility	-0.007	.149	-.050	
	PWB Psychological Well-Being						PWB Psychological Well-Being				
					.307**						
1	(Intercept)	170.241	1.117	152.327***	*	1	(Intercept)	170.241	1.107	153.799***	.319***
	STRAIN-Early Adversity	-.272	.313	-.153			STRAIN-Recent Stress	-1.024	.358	-2.860**	
	MPFI-Flexibility	20.155	1.480	13.580***			MPFI-Flexibility	19.938	1.466	13.598***	
2	(Intercept)	170.232	1.119	152.180***	<.001	2	(Intercept)	170.236	1.109	153.450***	<.001
	STRAIN-Early Adversity	-.279	.314	-.888			STRAIN-Recent Stress	-1.023	.359	-2.850**	
	MPFI-Flexibility	20.141	1.483	13.586***			MPFI-Flexibility	19.919	1.477	13.489***	
	STRAIN-Early Adversity*MPFI-Flexibility	.073	.334	.219			STRAIN-Recent Stress*MPFI-Flexibility	-.057	.481	-.119	

Note. STRAIN = Stress and Adversity Inventory for Adults; MPFI = Multidimensional Psychological Flexibility Inventory; PROMIS = Patient Reported Outcomes Measurement Information Systems; PWB = Scale of Psychological Well-Being; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Study 1 Discussion

The results of Study 1 support the conceptualization of stress exposure as a transdiagnostic risk factor among emerging adults. Greater early adversity (i.e., stressful life events occurring prior to age 18 years) and greater recent life stress (i.e., stressful life events occurring in the past six months) emerged as significant predictors of higher anxiety and depressive symptoms. Additionally, greater recent life stress, but not greater early adversity, was associated with lower overall psychological well-being. Contrary to study hypotheses, however, there was no evidence of psychological flexibility providing a buffering effect against the deleterious impacts of stress exposure on psychological functioning.

Importantly, these findings represent between-person effects. They characterize the impact of having greater stress exposure on psychological functioning relative to other emerging adults and describe the role of varying levels of psychological functioning within this association across all participants. Although examining these between-person effects is beneficial, it is also imperative to explore the within-person effects. The within-person effects would clarify the intraindividual processes involved in the associations between stress exposure, psychological flexibility, and psychological functioning. In other words, they will help to understand what happens within an individual. For example, when an emerging adult is exposed to greater levels of stress, does that emerging adult subsequently experience poorer psychological functioning? Further, when a psychologically flexible emerging adult is exposed to greater levels of stress, does that psychological flexible adult experience poorer psychological functioning? Study 2 was designed to investigate these intraindividual processes.

Study 2

Methods

Participants and Procedures

Study 2 included a subset of undergraduate participants recruited to participate in the larger Flexibility and Life Experiences (FLEX) Project. Recruitment criteria for the FLEX Project included being: (1) between the ages of 18 and 25 years, (2) able to complete written assessments in English, and (3) currently enrolled in an undergraduate course. FLEX Project participants were eligible to participate in the present study if they indicated that they would be interested in participating and were available to begin the study within two weeks of completing the FLEX Project. The present study was approved by the Institutional Review Board of Temple University, and prior to initiating data collection, all participants provided written informed consent.

Participants enrolled in the present study completed a brief battery of questionnaires every day for two weeks. The daily battery included questionnaires assessing stress exposure, affect, and internalizing symptoms experienced during that day. Participants received the daily battery via email each night at 8pm and received hourly reminder emails until the daily battery was completed. Participants were instructed to complete the daily battery as close to their bedtime as possible. Participants earned SONA credit for their participation in the study.

Measures

Psychological Flexibility. The *Multidimensional Psychological Flexibility Inventory* (MPFI; Rolffs et al., 2018) was described in detail above. Participants completed the MPFI during their participation in the FLEX Project. In the present study,

a Psychological Flexibility Composite score was created by averaging the six subscales representing flexibility. The MPFI Psychological Flexibility Composite score demonstrated excellent internal consistency ($\alpha = 0.95$) in the current sample.

Stress Exposure. The *Stress and Adversity Inventory for Daily Stress* (Daily STRAIN; Shields et al., 2017) assesses the frequency of 17 stressors over a two-week period. In the present study, the Daily STRAIN was modified to evaluate the occurrence and frequency of the stressors over a one-day period. At each daily signal alert, participants were asked to indicate whether any of the 17 stressors had occurred that day. For endorsed stressors, participants were asked tailored follow-up questions assessing frequency, severity, and whether it was a new or ongoing stressor. In the present study, daily stress exposure was operationalized as the number of stressors occurring each day.

Internalizing Symptoms. The *Patient Health Questionnaire-4* (PHQ-4; Kroenke et al., 2009) adapted for daily administration (Mattos et al., 2019) is a 6-item self-report questionnaire assessing daily symptoms of depression and anxiety. At each daily signal, participants rated two anxiety items (e.g., "Feeling nervous, anxious, or on edge"), two depression items (e.g., "Feeling down, depressed, or hopeless"), and 2 "positively worded" items (e.g., "I enjoy my friends") on a 4-point scale from 0 (Not At All) to 3 (Nearly All Of The Time) indicating how often they felt the symptoms during that day. The anxiety items were summed to create an Anxiety Symptom subscale, with higher scores representing greater daily anxiety severity. The Anxiety Symptom subscale demonstrated good to excellent internal consistency ($\alpha = 0.81 – 0.93$) in the current sample. The depression items were summed to create a Depression Symptom subscale, with higher scores representing greater daily depression severity. The Depression

Symptom subscale demonstrated adequate to excellent internal consistency (α = 0.70 - 0.90) in the current sample.

Affect. Items from the *Positive and Negative Affect Scales* (PANAS; Watson et al., 1988) were adapted for daily administration to assess affect. At each daily signal, participants were asked to rate four negative affect items (upset, guilty, hostile, scared) and four positive affect items (excited, interested, determined, active) on a 5-point scale from 0 (Very Slightly or Not At All) to 4 (Extremely) indicating how much they felt each affect that day. The negative affect items were summed to create a Negative Affect subscale, with higher scores representing higher levels of daily negative affect. The Negative Affect subscale demonstrated questionable to good internal consistency (α = 0.63 - 0.81) in the current sample.

Data Analytic Plan

All analyses were performed in R (R Core Team, 2018) with R Studio (RStudio Team, 2016). In the preliminary analyses, 14-day aggregates of daily stress, anxiety symptoms, depressive symptoms, and negative affect were utilized. Descriptive statistics were examined for the variables of interest, including means, standard deviations, and bivariate correlations. Bivariate correlational analyses also were conducted between demographic variables (i.e., age, biological sex, race) and measures of psychological functioning (i.e., anxiety symptoms, depressive symptoms, and negative affect). Based on these preliminary analyses, potential covariates that were at least marginally significantly ($p < 0.10$) associated with psychological functioning were included as covariates in the respective primary analyses.

Multilevel modeling was necessary for the present study because the daily diary data contained multiple observations nested within individuals. Using traditional hierarchical multiple regression techniques would have resulted in downwardly biased estimates of standard errors, which would have increased the likelihood of Type I error and yielded less efficient parameter estimates. Multilevel modeling allowed for the partitioning of the within- and between-residuals, which allowed for unbiased estimates of standard errors and t-tests, thus reducing the chances of Type I error. Furthermore, multilevel modeling provided more efficient parameter estimates by removing sampling variability.

Daily stress was disaggregated into within-person and between-person components based on recommendations by Curran and Bauer (2011) to examine the within-person effects of daily stress on psychological functioning. To create the within-person component of daily stress, daily stress was person-mean centered, and thus, reflected within-person variability (i.e., the extent to which each person's daily stress deviated from their individual mean). Each participant's average daily stress level across the fourteen-day period was calculated to create the between-person component of daily stress, which reflected between-person variability. The within-person component of daily stress was the focal predictor in all analyses, and the between-person component of daily stress was included as a covariate. To ensure temporal precedence in the analyses predicting next-day psychological functioning, the daily stress variables were lagged by one day.

Multilevel linear models were estimated to examine the association between daily stress exposure and same-day and next-day psychological functioning. Six sets of

multilevel models were estimated: (1) same-day anxiety symptoms regressed on daily stress, (2) next-day anxiety symptoms regressed on daily stress, (3) same-day depressive symptoms regressed on daily stress, (4) next-day depressive symptoms regressed on daily stress, (5) same-day negative affect regressed on daily stress, and (6) next-day negative affect regressed on daily stress.

Multilevel linear models also were estimated to examine whether psychological flexibility moderated the association between daily stress exposure and same-day and next-day psychological functioning. The same six sets of multilevel models described above were estimated with the inclusion of cross-level interactions. The first step included the within- and between-components of daily stress, psychological flexibility, and any additional covariates identified in the preliminary analyses. The second step included two cross-level interactions: (1) the focal interaction between within-person daily stress and psychological flexibility and (2) the interaction between between-person daily stress and psychological flexibility, which was included as a covariate.

All variables were z-standardized, and models were estimated using restricted maximum likelihood. Furthermore, all models included a random intercept. The inclusion of a random slope for daily stress in each model was determined based on a deviance test comparing the random intercept models with and without random slopes. Family-wise Holm-Bonferroni corrections were utilized to control for multiple comparisons, with families of analyses identified within each primary aim based on the outcome variable.

Results

Preliminary Analyses

The present sample included 676 observations from 52 participants. All 52 participants completed at least one daily diary assessment, and, on average, participants completed 13 of the 14 daily diary assessments (*SD* = 2.794). Specifically, one participant completed only one daily diary assessment, two participants completed only three daily diary assessments, one participant completed only nine daily diary assessments, one participant completed only 12 daily dairy assessments, 10 participants completed only 13 daily diary participants, and 37 participants completed all 14 daily diary assessments.

Participants ranged in age from 18 to 25 years (*M* = 19.42; *SD* = 1.545). Most of the sample, 90.4% (*n* = 47), were assigned female at birth, and 9.6% (*n* = 5) were assigned male at birth. With regards to gender identity, 88.5% (*n* = 46) self-identified as female, 9.6% (*n* = 5) as male, and 1.9% (*n* = 1) as non-binary. Within the sample, 55.8% (*n* = 29) self-identified as white, 15.4% (*n* = 8) as Black/African American, 13.5% (*n* = 7) as Asian, 11.5% (*n* = 6) as multiracial/more than one race, 1.9% (*n* = 1) selected “other” for race, and 1.9% (*n* = 1) preferred not to answer. Additionally, 94.2% (*n* = 49) self-identified as Non-Hispanic/Non-Latinx, 3.8% (*n* = 2) identified as Hispanic/Latinx, and 1.9% (*n* = 1) preferred not to answer. See Table 5 for additional demographic characteristics.

Table 5

Demographic Characteristics of Emerging Adults Included in Study 2

Variable		Study 2 Sample (N = 52)
Age, years (mean [*SD*])		19.42 (1.45)
Sex Assigned at Birth		
	Male	5 (9.6%)
	Female	47 (90.4%)
	Not Reported	0 (0.0%)
Gender, n (%)		
	Male	5 (9.6%)
	Female	46 (88.5%)
	Transgender	0 (0.0%)
	Non-Binary	1 (1.9%)
	Other	0 (0.0%)
	Not Reported	0 (0.0%)
Race, n (%)		
	White	29 (55.8%)
	Black	8 (15.4%)
	Asian	7 (13.5%)
	Native Hawaiian/Other Pacific Islander	0 (0.0%)
	Multiracial or More Than One Race	6 (11.5%)
	Other	1 (1.9%)
	Not Reported	1 (1.9%)
Ethnicity, n (%)		
	Hispanic/Latinx	2 (3.8%)
	Non-Hispanic/Non-Latinx	49 (94.2%)
	Not Reported	1 (1.9%)
Marital Status, n (%)		
	Single	40 (76.9%)
	In a Relationship (Not Married)	12 (23.1%)
	Married	0 (0.0%)
	Not Reported	0 (0.0%)

Note. SD = standard deviation.

Descriptive statistics and intercorrelations among all primary study variables, including person-level aggregates for observation-level variables, are presented in Table 6. Daily stress was significantly positively correlated with depressive symptoms and

negative affect. Psychological flexibility was significantly negatively correlated with anxiety symptoms, depressive symptoms, and negative affect. Depressive symptoms, anxiety symptoms, and negative affect all were significantly positively correlated with each other.

Table 6

Correlations and Descriptive Statistics for Continuous Primary Variables in Study 2

	STRAIN-Daily Stress	MPFI-Psychological Flexibility	PHQ-Anxiety	PHQ-Depression	PANAS-Negative Affect
STRAIN-Daily Stress	-				
MPFI-Psychological Flexibility	-.273	-			
PHQ-Anxiety	.200	-.307*	-		
PHQ-Depression	.405**	-.448***	.761***	-	
PANAS-Negative Affect	.305*	-.351*	.848***	.800***	-
Mean	4.824	3.917	1.806	1.478	6.914
SD	5.110	.768	1.312	1.155	2.267

Note. STRAIN = Stress and Adversity Inventory for Adults; MPFI = Multidimensional Psychological Flexibility Inventory; PHQ = Patient Health Questionnaire-4; PANAS = Positive and Negative Affect Scales; SD = standard deviation; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Analyses also were conducted to examine whether there were associations between the outcome variables (i.e., depressive symptoms, anxiety symptoms, and negative affect) and potential covariates (i.e., age, biological sex, race). Person-level aggregates of the observation-level outcome variables were utilized in these analyses. Age was not significantly correlated with anxiety symptoms (r = -0.163, p = 0.247), depressive symptoms (r = -0.123, p = 0.384), or negative affect (r = -0.170, p = 0.227). There were no significant biological sex differences in anxiety symptoms ($t(50)$ = -1.247, p = 0.128, d = 0.587), depressive symptoms ($t(50)$ = -1.063, p = 0.293, d = 0.500), or negative affect ($t(50)$ = -0.935, p = 0.355, d = 0.440). There were no significant racial differences in anxiety symptoms ($F(4, 46)$ = 0.531, p = 0.721), depressive symptoms ($F(4, 46)$ = 0.678, p = 0.611), or negative affect (F(4, 46) = 0.415, p = 0.797). Given that none of the potential covariates were significantly (ps < 0.05) or marginally significantly (ps < 0.10) associated with any of the outcome variables, none of the potential covariates were retained as covariates in the analyses.

Primary Analyses

Primary Aim 1: Is Daily Stress Exposure Associated with Same-Day and Next-Day Psychological Functioning?

Multilevel linear models were estimated to examine whether daily stress exposure was associated with same-day and next-day psychological functioning (see Table 7). For each model, a deviance test was conducted to test for the inclusion of a random slope for within-person daily stress. The deviance test did not support the inclusion of the random slope for within-person daily stress in the models for same-day anxiety symptoms ($\chi^2(2)$ = 1.152, p = 0.562), next-day anxiety symptoms ($\chi^2(2)$ = 0.904, p = 0.636), next-day

depression symptoms ($\chi^2(2) = 1.178$, $p = 0.555$), and next-day negative affect ($\chi^2(2) = 1.140$, $p = 0.566$). Thus, the random intercept model without a random slope was interpreted for these models. Conversely, the deviance test indicated inclusion of the random slope for within-person daily stress in the models for same-day depression ($\chi^2(2) = 17.534$, $p < 0.001$) and same-day negative affect ($\chi^2(2) = 11.609$, $p = 0.003$). For these models, the random intercept model with a random slope was interpreted.

Greater within-person daily stress was significantly associated with greater same-day anxiety symptoms ($p < 0.001$), but not next-day anxiety symptoms ($p = 0.320$). Within-person daily stress remained a significant predictor of same-day anxiety symptoms after the family-wise Holm-Bonferroni correction was applied.

Similarly, greater within-person daily stress was significantly associated with greater same-day depressive symptoms ($p < 0.001$), but not next-day depressive symptoms ($p = 0.283$). Within-person daily stress remained a significant predictor of same-day depressive symptoms after the family-wise Holm-Bonferroni correction was applied.

Finally, greater within-person daily stress was a significant predictor of greater same-day negative affect ($p < 0.001$), but not next-day negative affect ($p = 0.753$). Within-person daily stress remained a significant predictor of same-day negative affect after the family-wise Holm-Bonferroni correction was applied.

Table 7

Daily Stress Exposure Predicting Same-Day and Next-Day Psychological Functioning Among Emerging Adults

	Same-Day Stress				Prior-Day Stress			
	Random Intercept Only Model		Random Intercept & Slope Model		Random Intercept Only Model		Random Intercept & Slope Model	
Variable	b	SE	b	SE	b	SE	b	SE
	PHQ-4 Anxiety							
Observation-Level								
STRAIN-Daily Stress (within)	.222***	.030	.239***	.040	.033	.033	.052	.038
Person-Level								
STRAIN-Daily Stress (between)	.575***	.159	.574***	.159	.453**	.153	.467**	.152
Participants	52		52		51		51	
Observations	671		671		619		619	
Variance Components								
Observation-Level Variance	.394		.388		.412		.410	
Individual-Level Variance	.464ϕ		.465ϕ		.478ϕ		.478ϕ	
Stress Slope Variance			.009				.004	
Nakagawa & Schielzeth R^2	.149		.153		.080		.085	
	PHQ-4 Depression							
Observation-Level								
STRAIN-Daily Stress (within)	.220***	.033	.221***	.055	.038	.036	.042	.037
Person-Level								
STRAIN-Daily Stress (between)	.635***	.143	.591***	.139	.529***	.140	.510***	.138
Participants	52		52		51		51	
Observations	671		671		619		619	
Variance Components								
Observation-Level Variance	.467		.443		.490		.489	
Individual-Level Variance	.362ϕ		.423ϕ		.376ϕ		.379ϕ	
Stress Slope Variance			.040+				.002	
Nakagawa & Schielzeth R^2	.175		.158		.108		.102	
	PANAS Negative Affect							
Observation-Level								
STRAIN-Daily Stress (within)	.294***	.032	.319***	.057	.011	.035	.038	.042
Person-Level								

Table 7 (continued)

	Random Intercept Only Model		Random Intercept & Slope Model		Random Intercept Only Model		Random Intercept & Slope Model	
Variable	b	SE	b	SE	b	SE	b	SE
STRAIN-Daily Stress (between)	.697***	.138	.683***	.137	.551***	.138	.546***	.137
Participants	52		52		51		61	
Observations	665		665		612		612	
Variance Components								
Observation-Level Variance	.443		.420		.476		.472	
Individual-Level Variance	.334$^{\phi}$		.335$^{\phi}$		.366$^{\phi}$		.366$^{\phi}$	
Stress Slope Variance			.046^{+}				.006	
Nakagawa & Schielzeth R^2	.228		.229		.120		.118	

Note. STRAIN = Stress and Adversity Inventory for Adults; PHQ = Patient Health Questionnaire-4; PANAS = Positive and Negative Affect Scales; all variables were z-standardized; STRAIN-Daily Stress (within) is centered on each participant's mean; STRAIN-Daily Stress (between) is an aggregate mean across each participants' daily observations; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$; $^{\phi}p < .05$ according to deviance test; $^{+}p < .05$ according to profile confidence interval.

Primary Aim 2: Does Psychological Flexibility Moderate the Association Between Daily Stress and Same-Day and Next-Day Psychological Functioning?

Multilevel linear models were estimated to examine whether psychological flexibility moderates the association between within-person daily stress exposure and same-day and next-day psychological functioning (see Table 8). Based on the results of the deviance tests, the random intercept models without a random slope for daily stress was interpreted for the models predicting same-day anxiety symptoms ($x^2(2) = 0.782$, $p = 0.676$), next-day anxiety symptoms ($x^2(2) = 2.226$, $p = 0.329$), next-day depressive symptoms ($x^2(2) = 1.100$, $p = 0.577$), and next-day negative affect ($x^2(2) = 1.564$, $p = 0.457$). Significant deviance tests supported the inclusion of a random slope for within-person daily stress in the models predicting same-day depressive symptoms ($x^2(2) = 15.917$, $p < 0.001$) and same-day negative affect ($x^2(2) = 13.250$, $p = 0.001$). Thus, the random intercept models with a random slope for within-person daily stress were interpreted for these models.

Consistent with Primary Aim 1, there were significant main effects of within-person daily stress on same-day anxiety symptoms, depressive symptoms, and negative affect ($ps < 0.001$). The main effects of within-person daily stress on next-day psychological outcomes were non-significant ($ps > 0.05$).

There were significant main effects of psychological flexibility on same-day ($p = 0.022$) and next-day ($p = 0.040$) depressive symptoms, such that greater psychological flexibility was associated with lower depressive symptoms. Conversely, the main effects of psychological flexibility on same-day and next-day anxiety symptoms and negative affect were not significant ($ps > 0.05$).

Psychological flexibility did not significantly moderate the associations between within-person daily stress and same-day ($p = 0.071$) or next-day anxiety symptoms ($p = 0.570$). Similarly, psychological flexibility was not a significant moderator of the associations between within-person daily stress and same-day ($p = 0.535$) or next-day ($p = 0.966$) depressive symptoms. Finally, the cross-level interactions between psychological flexibility and within-person daily stress did not significantly predict same-day ($p = 0.361$) or next-day ($p = 0.283$) negative affect.

Table 8

Interaction Between Daily Stress Exposure and Psychological Flexibility Predicting Same-Day and Next-Day Psychological Functioning Among Emerging Adults

	Same-Day Stress								Prior-Day Stress							
	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
Variable	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
	PHQ-4 Anxiety															
Observation-Level																
STRAIN-Daily Stress (within)	.222***	.030	.236***	.031	.240	.040	.257***	.041	.033	.033	.036	.034	.052	.038	.068	.042
Person-Level																
STRAIN-Daily Stress (between)	.506**	.167	.505*	.199	.507**	.167	.505*	.199	.392*	.160	.455*	.196	.407*	.159	.496*	.199
MPFI-Flexibility	-.136	.105	-.136	.107	-.139	.105	-.136	.107	-.133	.108	-.125	.111	-.135	.108	-.115	.109
Cross-Level Interactions																
STRAIN-Daily Stress (within) *MPFI-Flexibility			.066	.036			.071	.045			.018	.039			.026	.046
STRAIN-Daily Stress (between) *MPFI-Flexibility			-.002	.214			-.002	.214			.116	.202			.076	.206
Participants	52		52		52		52		51		51		51		51	
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.394		.392		.388		.388		.412		.413		.410		.409	
Individual-Level Variance	.457ϕ		.468ϕ		.458ϕ		.468ϕ		.472ϕ		.482ϕ		.471ϕ		.470ϕ	
Stress Slope Variance					.010		.008						.004		.007	
Nakagawa & Schielzeth R^2	.161		.160		.166		.165		.093		.101		.099		.116	
	PHQ-4 Depression															
Observation-Level																
STRAIN-Daily Stress (within)	.220***	.033	.234***	.034	.220***	.056	.232***	.059	.038	.036	.044	.037	.044	.037	.056	.041
Person-Level																
STRAIN-Daily Stress (between)	.528***	.145	.462**	.171	.491**	.141	.434*	.167	.439**	.142	.443*	.173	.425**	.037	.429*	.172
MPFI-Flexibility	-.215*	.092	-.225*	.093	-.213*	.090	-.231*	.093	-.202*	.096	-.202*	.098	-.197*	.095	-.204*	.098
Cross-Level Interactions																

Table 8 (continued)

	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
Variable	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
STRAIN-Daily Stress (within) *MPFI-Flexibility			.065	.040			.039	.062			.028	.043			.031	.047
STRAIN-Daily Stress (between) *MPFI-Flexibility			-.135	.186			-.117	.181			.008	.180			.011	.179
Participants	52		52		52		52		51		51		51		51	
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.467		.466		.442		.442		.490		.490		.488		.488	
Individual-Level Variance	.331$^{\phi}$		.334$^{\phi}$		.333$^{\phi}$		.336$^{\phi}$		.350$^{\phi}$		.358$^{\phi}$		.352$^{\phi}$		.360$^{\phi}$	
Stress Slope Variance					.043^{+}		.044^{+}						.002		.004	
Nakagawa & Schielzeth R^2	.208		.207		.193		.196		.141		.140		.134		.137	
	PANAS Negative Affect															
Observation-Level																
STRAIN-Daily Stress (within)	.294***	.032	.295***	.033	.319***	.057	.336***	.061	.011	.035	.002	.036	.037	.042	.029	.045
Person-Level																
STRAIN-Daily Stress (between)	.635***	.145	.600*	.171	.626***	.144	.584**	.001	.511***	.145	.564**	.177	.499**	.144	.560**	.177
MPFI-Flexibility	-.123	.091	-.128	.093	-.119	.091	-.132	.093	-.087	.098	-.079	.100	-.098	.098	-.080	.100
Cross-Level Interactions																
STRAIN-Daily Stress (within) *MPFI-Flexibility			.007	.039			.059	.063			-.045	.042			-.054	.100
STRAIN-Daily Stress (between) *MPFI-Flexibility			-.072	.186			-.082	.184			.100	.183			.109	.183
Participants	52		52		52		52		51		51		51		51	
Observations	665		665		665		665		612		612		612		612	
Variance Components																
Observation-Level Variance	.443		.443		.420		.420		.476		.475		.472		.470	
Individual-Level Variance	.330$^{\phi}$		.336$^{\phi}$		.331$^{\phi}$		.337$^{\phi}$		.369$^{\phi}$		.378$^{\phi}$		.369$^{\phi}$		.372$^{\phi}$	
Stress Slope Variance					.047^{+}		.050^{+}						.006		.008	
Nakagawa & Schielzeth R^2	.237		.234		.238		.238		.124		.131		.124		.130	

Table 8 (continued)

Note. STRAIN = Stress and Adversity Inventory for Adults; MPFI = Multidimensional Psychological Flexibility Inventory; PHQ = Patient Health Questionnaire-4; PANAS = Positive and Negative Affect Scales; all variables were z-standardized; STRAIN-Daily Stress (within) is centered on each participant's mean; STRAIN-Daily Stress (between) is an aggregate mean across each participants' daily observations; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$; $^{\phi}p < .05$ according to deviance test; $^{+}p < .05$ according to profile confidence interval.

Study 2 Discussion

Overall, the findings from Study 2 are consistent with the pattern of results from Study 1. Study 2 builds on Study 1 to offer further evidence for stress exposure as a transdiagnostic risk factor among emerging adults. Specifically, greater daily stress, relative to each participant's own average level of stress, was significantly associated with elevated same-day, but not next-day, anxiety symptoms, depressive symptoms, and negative affect. Importantly, Study 2 confirms that the interindividual processes identified in Study 2 also occur at the intraindividual level. Consistent with Study 1, psychological flexibility did not emerge as a moderator of the within-person associations between daily stress exposure and psychological functioning in Study 2.

General Discussion

Stress exposure has long been identified as a robust predictor of depressive symptomatology (e.g., Hammen et al., 2005), including the onset (Daley et al., 2000; Kender, 1999; Lewinsohn et al., 1999), severity (Hammen at al., 1992), and course (Kender et al., 1997) of depression. More recently, a growing literature has extended the original stress-depression association and put forth evidence supporting stress exposure as a transdiagnostic risk factor for psychopathology (March-Llanes et al., 2017). In the current investigation, stress exposure emerged as a risk factor for poorer psychological functioning across various psychological outcomes. Specifically, emerging adults who experienced greater stress exposure also reported greater anxiety symptoms, depressive symptoms, and negative affect. Moreover, those with greater stress exposure also indicated lower overall psychological well-being. Overall, these results contribute to the

extant literature and provide further evidence that stress exposure is a transdiagnostic risk factor for psychopathology among emerging adults ages 18 to 25 years.

In addition to examining stress exposure as a risk factor across various psychological outcomes, the current investigation also considered the impact of different types of stress exposure, including early adversity, recent life stress, and daily stress. Consistent with the prior literature, in the present investigation, early adversity was defined as stress exposure occurring throughout childhood and adolescence before the individual turned age 18 years (e.g., Gilman et al., 2003; Kessler et al., 1997). Early adversity emerged as a significant risk factor for greater anxiety and depressive symptoms among emerging adults. Recent life stress, defined as stress exposure occurring over the past six months, also conferred risk for greater anxiety and depressive symptoms and lower overall psychological well-being among the sample of emerging adults. Finally, daily stress, defined as stress occurring over the day, was significantly associated with greater same-day anxiety and depressive symptoms and negative affect. Importantly, daily stress was identified as a significant risk factor for poorer same-day psychological functioning at both the within-person and between-person levels. Moreover, daily stress also conferred significant risk for poorer next-day psychological functioning at the between-person level. Taken together, these results demonstrate that various forms of stress exposure serve as a transdiagnostic risk factor among emerging adults.

Although the evidence demonstrates that early adversity, recent life stress, and daily stress all confer risk for poorer psychological functioning among emerging adults, the unique risk contribution of each form of stress exposure in the present study remains

unknown. Different forms of stress exposure often correlate with each other, as was true in the present investigation, and can be causally related. For example, exposure to early adversity has been shown to predict increases in exposure to recent life stress (Stroud et al., 2021). Similarly, early adversity has been found to confer depressogenic risk indirectly via increased recent life stress rather than directly (Hazel et al., 2008). Thus, when the different forms of stress are examined in separate models, as was true in the present investigation, it is impossible to identify which forms of stress are truly serving as the risk factor. Future work should examine early adversity, recent life stress, and daily stress in multivariate models to investigate whether each serves as a unique transdiagnostic risk factor for poorer psychological outcomes.

Although stress exposure has been identified as a transdiagnostic risk factor for poor psychological functioning in the present investigation and existing literature, it is also known that not all individuals who are exposed to stress experiences are impacted by the deleterious consequences (e.g., Rutter, 2000; Silberg & Rutter, 2002). Some individuals may have qualities or characteristics that confer resilience against stress exposure. In the present investigation, psychological flexibility was hypothesized to be one such resilience factor. Specifically, it was hypothesized that psychological flexibility would moderate the association between stress exposure and psychological functioning, such that as psychological flexibility increased, the magnitude of the association between stress exposure and psychological outcomes would decrease. Contrary to this hypothesis, psychological flexibility did not provide a buffering effect against the deleterious impacts of stress exposure on psychological functioning. The lack of buffering effect was consistent across all analyses in the present investigation.

Not only are these findings counter to the studies' hypotheses, but they also are inconsistent with the limited extant literature. First, Gloster and colleagues (2017) found that psychological flexibility moderated the associations between daily stress and several psychological outcomes (e.g., anxiety symptoms, depressive symptoms, emotional well-being, and psychological well-being) in a sample of adults across the lifespan. Additionally, psychological flexibility also was found to moderate the associations between life-threatening events and anxiety and depressive symptoms, but not emotional or psychological well-being. Second, Fonseca and colleagues (2020) found evidence that psychological flexibility moderated the association between stressful life events occurring over the past year and depressive symptoms in a sample of adults across the lifespan. Although it is not possible to definitively identify the reasons for the discrepant findings between the present investigation and limited extant literature, a few potential explanations were considered.

Several methodological differences may explain these inconsistent results. First, the present investigation focused explicitly on emerging adults, whereas the two extant studies examined adults across the lifespan. It is possible that unique characteristics of the emerging adult developmental period, such as the heightened level of instability and uncertainty (Arnett et al., 2014), the significant mental health risk (e.g., Auerbach et al., 2018), or the occurrence of frontolimbic fine-tuning (Taber-Thomas & Pérez-Edgar, 2014), may contribute to these discrepancies. Second, the present investigation assessed anxiety and depressive symptoms utilizing the Patient Reported Outcomes Measurement Information Systems (PROMIS) and the Patient Health Questionnaire-4 (PHQ-4), whereas both existing studies used the Depression, Anxiety and Stress Scale – 21 (DASS-

21; Henry & Crawford, 2005). Although both the PROMIS and the DASS-21 assess the presence of symptoms over the past seven days, and all three measures have demonstrated good to excellent internal consistency, nuances in the wording of these measures may underly the contradicting findings. Third, with regard to the findings involving daily stress, the present investigation measured the frequency of daily stress, whereas Gloster and colleagues (2017) assessed the perceived impact of daily stress. It is important to highlight this difference as prior work has documented differences in the impact of objective versus perceived stress (e.g., Shields et al., 2023). Fourth, within the daily diary study, it is possible that the analyses did not have sufficient statitical power to observe the interaction effect between psychological flexibility and daily stress given the relatively small sample size (i.e., 676 observations from 52 participants).

Although the evidence for the buffering effect of psychological flexibility has been found within two independent samples, it is also possible that these findings do not represent a generalizable effect. Due to the phenomenon known as "publication bias," where investigations with statistically significant findings are more likely to be published than those with null findings, it is impossible to discern whether other researchers also have failed to find support for this effect. Given that both prior studies were cross-sectional and relied on self-report measures of stress exposure, psychological flexibility, and psychological outcomes, the results should be interpreted cautiously. Further investigations should attempt to replicate these findings in a longitudinal design utilizing other assessment modalities, such as interviews.

Additional research also should examine a more nuanced role of psychological flexibility in the association between stress exposure and psychological functioning.

According to the Psychological Flexibility Model (Hayes et al., 2006; Hayes et al., 2011), psychologically flexible individuals can be fully present in the moment, including remaining in contact with uncomfortable thoughts, feelings, and/or sensations, while engaging in the behaviors that are aligned with their personal values and promote progress towards their goals. These individuals are in contrast to those who are psychologically inflexible; psychologically inflexible individuals prioritize avoiding uncomfortable thoughts, feelings, and/or sensations over being fully present in the moment and acting in accordance with their values and goals. Thus, when faced with stress, it may be that psychologically flexible individuals experience some transient symptoms of anxiety, depression, etc., but are less distressed and impaired by these symptoms because they can adapt their behavior in the continued pursuit of their values and goals. Given that the present investigation assessed symptoms across both one-day and seven-day timeframes, it is possible that these assessments captured "transient" symptoms. To test this alternative hypothesis, future studies should investigate whether psychological flexibility moderates the association between stress exposure and functional impairment. Or, because functional impairment and persistent symptoms are part of the diagnostic criteria for mood and anxiety disorders, future investigations also could explore whether psychological flexibility moderates the association between stress exposure and mood and/or anxiety diagnoses.

Limitations and Strengths

Although the present study contributes to the extant literature supporting stress exposure as a transdiagnostic risk factor for psychopathology, it is important to note the following limitations. First, Study 1 is limited by the use of a cross-sectional design,

which precludes the ability to draw causal inferences about stress exposure and psychological functioning. Furthermore, in Study 2, the associations between stress exposure and psychological functioning were supported in the same-day analyses but not the next-day analyses. Given the robust evidence supporting the stress generation hypotheses (e.g., Meyer & Curry, 2017; Liu & Alloy, 2010), it is possible that the significant associations between stress exposure and psychological functioning could be explained by a reciprocal causal effect, whereby psychological functioning increases stress generation and exposure. Thus, the results of the current investigation must be replicated in a longitudinal design to clarify the direction of the effect.

Second, the present investigation relied on self-report measures to assess stress exposure, psychological flexibility, and psychological functioning. Using a monomethod design increases the common method variance (i.e., the variance attributable to the self-report method rather than the constructs being measured), which can bias the validity of the results. The current investigation, particularly Study 1, would be strengthened by interview measures of stress exposure and psychological functioning.

Third, the current investigation examined the number of reported stressful life events rather than examining the objective impact of the reported stress exposure. Research has documented that the effect of stress exposure on psychological functioning differs based on the objective impact, for example, “major” versus “minor” stressful life events (e.g., Brown & Harris, 1978; Kendler et al., 1995; Monroe, 2008). Moreover, the limited research on the role of psychological flexibility suggests that the role of psychological flexibility also differs based on the objective impact, with psychological flexibility more consistently buffering against the deleterious impacts of daily stress

versus threatening life events (Gloster et al., 2017). Future investigations should aim to replicate the present investigation utilizing measures of the objective impact of stress exposure and further explore whether the role of psychological flexibility differs depending on the objective impact of the stress exposure.

Fourth, although Study 1 utilized a relatively large and diverse sample of emerging adults, the generalizability of Study 2 was hindered by the relatively small and predominantly (90.4%) biologically female sample of emerging adults. It will be necessary for future research endeavors to replicate the findings in a larger, more representative sample.

Fifth, the present study only examined one facet of flexibility—the ACT-based construct of psychological flexibility. Given that other facets of flexibility have been identified in the literature (e.g., coping flexibility, explanatory flexibility, cognitive flexibility), future studies should utilize structural equation modeling to both examine flexibility as a latent factor representing the multiple facets of flexibility and simultaneously examine the multiple facets of flexibility.

Despite these limitations, the results of the present study are bolstered by several strengths. First, the racial, gender, and biological sex diversity of the emerging adults within Study 1 allowed for a more nuanced understanding of the results. Second, the current investigation tested and replicated the primary hypotheses in two methodological designs, including cross-sectional and daily diary methodologies. Third, the daily diary methodology allowed for the investigation of the intraindividual processes involved in the associations between stress exposure and psychological functioning. Fourth, although self-report measures were utilized, most measures demonstrated excellent internal

consistency. Moreover, the Stress and Adversity Inventory for Adults (STRAIN) and the Multidimensional Psychological Flexibility Inventory (MPFI) offer several advantages over previous self-report measures of stress exposure and psychological flexibility, respectively. The STRAIN, which is recommended by NIMH/RDoC to assess stress exposure, is an online, interview-based self-report tool that evaluates all of the primary life domains covered by gold-standard life stress interviews (e.g., the Life Events and Difficulties Schedule; Brown & Harris, 1978) and extends previous checklist-based tools (e.g., List of Threatening Experiences; Brugha et al., 1985) by utilizing a series of tailored follow-up questions to assess each endorsed stressor further. Additionally, in the present investigation, additional stressors from the Transition to College module were included, as these stressors were thought to be particularly relevant to the emerging adult population. The MPFI improves on prior measures of psychological flexibility (e.g., AAQ-II; Bond et al., 2011) by comprehensively assessing each of the six subprocesses involved in psychological flexibility (e.g., acceptance, cognitive defusion, self-as-context, present moment awareness, values, and committed action) rather than focusing on only one subprocess. These notable strengths permit greater confidence in the validity of the current findings.

Conclusions

Although emerging adulthood is often characterized as a period of exploration (Arnett, 2000), it is also a developmental stage marked by heightened instability and uncertainty (Arnett et al., 2014) and increased risk for psychopathology (e.g., Auerbach et al., 2018). Given the accumulation of stressors that occurs during emerging adulthood (Hankin et al., 2016) and recent research supporting stress exposure as a transdiagnostic

risk factor for psychopathology, stress exposure during emerging adulthood may account, in part, for the increased risk for psychopathology. The present investigation supported this supposition. Stress exposure was associated with poorer psychological functioning among emerging adults at both interindividual and intraindividual levels.

Integrating the principles of RFT (Barnes-Holms & Roche, 2011) and ACT (e.g., Hayes et al., 2004) with the burgeoning body of literature demonstrating the association between psychological flexibility and adaptive psychological outcomes (see Bluett et al., 2014 for a review), psychological flexibility has been considered as a protective factor in the association between stress exposure and poor psychological functioning. Surprisingly, psychological flexibility did not buffer against the deleterious effects of stress exposure among emerging adults in the present investigation.

Overall, the present investigation highlights that stress exposure is one factor that may be part of the explanation for the increased risk of psychopathology during emerging adulthood. In light of the stress-psychological functioning association, research must identify malleable characteristics that protect against the consequences of stress exposure. Identifying these protective factors would allow for the development of more effective prevention and intervention programs designed to build and promote resilience among emerging adults. The present investigation tested psychological flexibility as a potential buffer against the deleterious impacts of stress, and surprisingly, this hypothesis was not supported. Additional work is needed to more fully understand the role of psychological flexibility in the stress-psychological functioning association during emerging adulthood, as well as identify other qualities that confer resilience during this developmental period.

CHAPTER 2

ADDITIONAL ANALYSES

Results

Additional Analyses Related to Main Analyses

Additional Aim 1: Does Biological Sex Moderate the Buffering Effect of Psychological Flexibility on the Associations Between Stress Exposures and Psychological Functioning?

Building on the results of Study 1, hierarchical multiple regression analyses were conducted to examine whether biological sex moderated the buffering effect of psychological flexibility on the associations between stress exposure and psychological functioning (see Table 9). Six separate stress exposure-psychological functioning associations were examined: (1) anxiety symptoms regressed on early adversity, (2) anxiety symptoms regressed on recent life stress, (3) depressive symptoms regressed on early adversity, (4) depressive symptoms repressed on recent life stress, (5) psychological well-being regressed on early adversity, and (6) psychological well-being regressed on recent life stress. In each of these stress exposure-psychological functioning pairs, the first step included covariates identified in the preliminary analyses of Study 1. The second step (or first if no covariates were identified) included the stress exposure variable, psychological flexibility, and biological sex. The third step included the interactions between stress exposure and psychological flexibility, stress exposure and biological sex, and psychological flexibility and biological sex. The fourth step included the three-way interaction between stress exposure, psychological flexibility, and

biological sex. The stress exposure and psychological flexibility variables were centered in these analyses. Family-wise Holm-Bonferroni corrections were utilized to control for multiple comparisons, with families of analyses identified within each primary aim based on the outcome variable.

There was no significant three-way interaction between biological sex, psychological flexibility, and early adversity predicting anxiety symptoms, controlling for race ($p = 0.288$). Additionally, there was no significant three-way interaction between biological sex, psychological flexibility, and recent life stress predicting anxiety symptoms, controlling for race ($p = 0.402$).

There was no significant three-way interaction between biological sex, psychological flexibility, and early adversity predicting depressive symptoms ($p = 0.536$). Likewise, there was no significant three-way interaction between biological sex, psychological flexibility, and recent life stress predicting depressive symptoms ($p = 0.100$).

There was no significant three-way interaction between biological sex, psychological flexibility, and early adversity predicting psychological well-being ($p = 0.312$). There also was no significant three-way interaction between biological sex, psychological flexibility, and recent life stress predicting psychological well-being ($p = 0.272$).

Table 9

Three-Way Interaction Between Stress Exposure, Psychological Flexibility, and Biological Sex Predicting Psychological Functioning Among Emerging Adults

	STRAIN-Early Adversity					STRAIN-Recent Stress				
Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
	PROMIS-Anxiety						PROMIS-Anxiety				
1	(Intercept)	20.787	.505	41.173***	.025	1	(Intercept)	20.79	.505	41.173***	.025
	Race (Black/African American)	-1.008	.981	-1.027			Race (Black/African American)	-1.008	.981	-1.027	
	Race (Asian)	-1.409	1.185	-1.189			Race (Asian)	-1.409	1.185	-1.189	
	Race (Native Hawaiian/Other Pacific Islander)	17.213	7.821	2.201*			Race (Native Hawaiian/Other Pacific Islander)	17.21	7.821	2.201*	
	Race (Multi-Racial/More Than One Race)	1.287	1.585	.813			Race (Multi-Racial/More Than One Race)	1.287	1.585	.813	
	Race (Other)	3.658	2.65	1.380			Race (Other)	3.658	2.650	1.380	
2	(Intercept)	18.829	.972	19.380***	.081***	2	(Intercept)	19.03	.910	20.906***	.190***
	Race (Black/African American)	-.676	.948	-.713			Race (Black/African American)	-0.414	.888	-.466	
	Race (Asian)	-1.205	1.143	-1.055			Race (Asian)	-.029	1.082	-.027	
	Race (Native Hawaiian/Other Pacific Islander)	16.039	7.531	2.130*			Race (Native Hawaiian/Other Pacific Islander)	18.31	7.061	2.593**	
	Race (Multi-Racial/More Than One Race)	.495	1.539	.321			Race (Multi-Racial/More Than One Race)	1.371	1.428	.960	
	Race (Other)	3.490	2.572	1.357			Race (Other)	3.537	2.393	1.478	
	Sex (Female)	2.308	1.011	2.283*			Sex (Female)	1.761	.949	1.856	
	STRAIN-Early Adversity	.315	.106	2.977**			STRAIN-Recent Stress	.931	.114	8.169***	
	MPFI-Flexibility	-2.384	.488				MPFI-Flexibility	-2.185	.457	-4.781***	
3	(Intercept)	18.808	.974	19.307***	.003	3	(Intercept)	19.25	.926	20.780***	.006
	Race (Black/African American)	-.814	.957	-.850			Race (Black/African American)	-.548	.892	-.615	
	Race (Asian)	-1.260	1.150	-1.095			Race (Asian)	-.004	1.088	-0.004	
	Race (Native Hawaiian/Other Pacific Islander)	15.671	7.553	2.075*			Race (Native Hawaiian/Other Pacific Islander)	17.67	7.070	2.499*	
	Race (Multi-Racial/More Than One Race)	.436	1.545	.282			Race (Multi-Racial/More Than One Race)	1.400	1.428	.981	
	Race (Other)	2.708	2.653	1.021			Race (Other)	2.935	2.418	1.214	
	Sex (Female)	2.379	1.015	2.344*			Sex (Female)	1.598	.962	1.660	
	STRAIN-Early Adversity	.511	.280	1.828			STRAIN-Recent Stress	1.281	.359	3.565***	
	MPFI-Flexibility	-2.535	1.182	-2.146*			MPFI-Flexibility	-1.449	1.116	-1.299	

Table 9 (continued)

Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
	STRAIN-Early Adversity*MPFI-Flexibility	.108	.113	0.952			STRAIN-Recent Stress*MPFI-Flexibility	.220	.154	1.426	
	STRAIN-Early Adversity*Sex (Female)	-.238	.300	-.793			STRAIN-Recent Stress*Sex (Female)	-.396	.377	-1.049	
	MPFI-Flexibility*Sex (Female)	.139	1.301	.107			MPFI-Flexibility*Sex (Female)	-.777	1.219	-.637	
4	(Intercept)	19.071	1.005	18.979***	.003	4	(Intercept)	19.22	.927	20.727***	.001
	Race (Black/African American)	-.796	.957	-.831			Race (Black/African American)	-.509	.893	-.570	
	Race (Asian)	-1.223	1.151	-1.062			Race (Asian)	-.078	1.092	-.071	
	Race (Native Hawaiian/Other Pacific Islander)	15.606	7.552	2.066*			Race (Native Hawaiian/Other Pacific Islander)	17.570	7.073	2.484*	
	Race (Multi-Racial/More Than One Race)	.404	1.545	.261			Race (Multi-Racial/More Than One Race)	1.332	1.431	.931	
	Race (Other)	2.416	2.666	.906			Race (Other)	2.841	2.421	1.174	
	STRAIN-Early Adversity	.610	.295	2.071*			STRAIN-Recent Stress	1.287	.360	3.578***	
	MPFI-Flexibility	-2.939	1.241	-2.369*			MPFI-Flexibility	-2.129	1.379	-1.544	
	STRAIN-Early Adversity*MPFI-Flexibility	-.377	.469	-.804			STRAIN-Recent Stress*MPFI-Flexibility	-.188	.510	-.369	
	STRAIN-Early Adversity*Sex (Female)	-.338	.314	-1.075			STRAIN-Recent Stress*Sex (Female)	-.404	.378	-1.070	
	MPFI-Flexibility*Sex (Female)	.532	1.352	.394			MPFI-Flexibility*Sex (Female)	-.095	1.465	-.065	
	STRAIN-Early Adversity*MPFI-Flexibility*Sex (Female)	.515	.484	1.065			STRAIN-Recent Stress*MPFI-Flexibility*Sex (Female)	.449	.535	.840	
	PROMIS-Depression						PROMIS-Depression				
1	(Intercept)	17.785	.926	19.212***	.167***	1	(Intercept)	18.26	.869	21.022***	.269***
	Biological Sex (Female)	1.275	1.008	1.265			Sex (Female)	.713	.946	.753	
	STRAIN-Early Adversity	.323	.102	3.159**			STRAIN-Recent Stress	.927	.111	8.348***	
	MPFI-Flexibility	-4.180	.485	-8.626***			MPFI-Flexibility	-3.972	.454	-8.753***	
2	(Intercept)	17.777	.930	19.119***	.003	2	(Intercept)	18.39	.887	20.742***	.001
	Sex (Female)	1.283	1.012	1.269			Sex (Female)	.590	.962	.613	
	STRAIN-Early Adversity	.637	.276	2.309*			STRAIN-Recent Stress	1.197	.358	3.341***	
	MPFI-Flexibility	-4.567	1.178	-3.877***			MPFI-Flexibility	-3.766	1.111	-3.390***	
	STRAIN-Early Adversity*MPFI-Flexibility	-.036	.110	-.329			STRAIN-Recent Stress*MPFI-Flexibility	-.003	.152	-.019	
	STRAIN-Early Adversity*Sex (Female)	-.359	.297	-1.212			STRAIN-Recent Stress*Sex (Female)	-.298	.377	-.792	

Table 9 (continued)

Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
	MPFI-Flexibility*Sex (Female)	.427	1.297	.329			MPFI-Flexibility*Sex (Female)	-.243	1.217	-.200	
3	(Intercept)	17.930	.963	18.626***	.001	3	(Intercept)	18.31	.886	20.663***	.005
	Sex (Female)	1.130	1.042	1.084			Sex (Female)	.676	.962	.703	
	STRAIN-Early Adversity	.691	.290	2.386*			STRAIN-Recent Stress	1.211	.358	3.386***	
	MPFI-Flexibility	-4.802	1.238	-3.878***			MPFI-Flexibility	-5.076	1.364	-3.723***	
	STRAIN-Early Adversity*MPFI-Flexibility	-.318	.469	-.679			STRAIN-Recent Stress*MPFI-Flexibility	-.802	.507	-1.580	
	STRAIN-Early Adversity*Sex (Female)	-.415	.310	-1.338			STRAIN-Recent Stress*Sex (Female)	-.315	.376	-.837	
	MPFI-Flexibility*Sex (Female)	.655	1.350	.486			MPFI-Flexibility*Sex (Female)	1.071	1.453	.737	
	STRAIN-Early Adversity*MPFI-Flexibility*Sex (Female)	.298	.482	.619			STRAIN-Recent Stress*MPFI-Flexibility*Sex (Female)	.877	.532	1.650	
	PWB-Psychological Well Being						PWB-Psychological Well-Being				
1	(Intercept)	168.65	2.831	59.565***	.308***	1	(Intercept)	168.1	2.810	59.820***	.320***
	Sex (Female)	1.846	3.083	.599			Sex (Female)	2.469	3.061	.807	
	STRAIN-Early Adversity	-.268	.313	-.857			STRAIN-Recent Stress	-1.048	.359	-2.917**	
	MPFI-Flexibility	20.186	1.482	13.620***			MPFI-Flexibility	19.97	1.468	13.604***	
2	(Intercept)	168.57	2.832	59.516***	.008	2	(Intercept)	167.1	2.851	58.607***	.009
	Sex (Female)	1.921	3.081	0.624			Sex (Female)	3.497	3.094	1.130	
	STRAIN-Early Adversity	-1.504	.840	-1.790			STRAIN-Recent Stress	-3.033	1.152	-2.632**	
	MPFI-Flexibility	26.348	3.588	7.343***			MPFI-Flexibility	24.5	3.573	6.857***	
	STRAIN-Early Adversity*MPFI-Flexibility	.157	.336	.468			STRAIN-Recent Stress*MPFI-Flexibility	.087	.489	.179	
	STRAIN-Early Adversity*Sex (Female)	1.383	.904	1.530			STRAIN-Recent Stress*Sex (Female)	2.198	1.212	1.814	
	MPFI-Flexibility*Sex (Female)	-7.318	3.952	-1.852			MPFI-Flexibility*Sex (Female)	-5.526	3.915	-1.411	
3	(Intercept)	167.81	2.930	57.273***	.002	3	(Intercept)	167.2	2.854	58.594***	.002
	Sex (Female)	2.684	3.172	.846			Sex (Female)	3.312	3.098	1.069	
	STRAIN-Early Adversity	-1.774	.882	-2.012*			STRAIN-Recent Stress	-3.062	1.152	-2.658**	
	MPFI-Flexibility	27.516	3.769	7.300***			MPFI-Flexibility	27.31	4.393	6.216***	
	STRAIN-Early Adversity*MPFI-Flexibility	1.560	1.427	1.093			STRAIN-Recent Stress*MPFI-Flexibility	1.801	1.635	1.102	
	STRAIN-Early Adversity*Sex (Female)	1.659	.944	1.757			STRAIN-Recent Stress*Sex (Female)	2.233	1.212	1.842	
	MPFI-Flexibility*Sex (Female)	-8.454	4.108	-2.058*			MPFI-Flexibility*Sex (Female)	-8.345	4.680	-1.783	

Table 9 (continued)

Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
	STRAIN-Early Adversity*MPFI-Flexibility*Sex (Female)	-1.485	1.468	-1.011			STRAIN-Recent Stress*MPFI-Flexibility*Sex (Female)	-1.883	1.713	-1.099	

Note. STRAIN = Stress and Adversity Inventory for Adults; MPFI = Multidimensional Psychological Flexibility Inventory; PROMIS = Patient Reported Outcomes Measurement Information Systems; PWB = Scale of Psychological Well-Being; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Additional Aim 2: Do the Six Subprocesses of Psychological Flexibility Moderate the Association Between Stress Exposure and Psychological Functioning?

Extending the results of Study 1, hierarchical multiple regression analyses were conducted to examine whether the six subprocesses of psychological flexibility (e.g., acceptance, cognitive defusion, self-as-context, present moment awareness, values, and committed action) moderated the associations between stress exposure and psychological functioning. Six separate stress exposure-psychological functioning associations were examined: (1) anxiety symptoms regressed on early adversity, (2) anxiety symptoms regressed on recent life stress, (3) depressive symptoms regressed on early adversity, (4) depressive symptoms repressed on recent life stress, (5) psychological well-being regressed on early adversity, and (6) psychological well-being regressed on recent life stress. The first step included covariates identified in the preliminary analyses of Study 1. The second step (or first if no covariates were identified) included the stress exposure variable and the psychological flexibility subprocess variable. The third step included the interaction between stress exposure and the psychological flexibility subprocess. The stress exposure and psychological flexibility subprocess variables were mean-centered in these analyses. Family-wise Holm-Bonferroni corrections were utilized to control for multiple comparisons, with families of analyses identified based on the outcome variable.

The results of the analyses predicting anxiety symptoms are included in Table 10. Consistent with Primary Aim 1, there were significant main effects of early adversity (*p*s = 0.007 – 0.012) and recent life stress (*p*s < 0.001) on anxiety symptoms in all models, such that greater stress exposure was associated with greater anxiety symptoms. There also were significant main effects of cognitive defusion (*p*s < 0.001), self-as-context (*p*s <

0.001), present moment awareness (*p*s = 0.003 – 0.007), values (*p*s = 0.003 – 0.004), and committed action (*p*s < 0.001) on anxiety symptoms, such that greater levels of the psychological flexibility subprocess was associated with lower anxiety symptoms.

There were no significant interactions between early adversity and acceptance (*p* = 0.620), cognitive defusion (*p* = 0.708), self-as-context (*p* = 0.642), present moment awareness (*p* = 0.165), values (*p* = 0.076), or committed action (*p* = 0.626) predicting anxiety symptoms, controlling for biological sex and race. There also were no significant interactions between recent life stress and acceptance (*p* = 0.171), cognitive defusion (*p* = 0.688), present moment awareness (*p* = 0.483), or committed action (*p* = 0.436) predicting anxiety symptoms, controlling for biological sex and race.

Conversely, there was a significant interaction between recent life stress and self-as-context predicting anxiety symptoms (*p* = 0.014), controlling for biological sex and race. The Johnson-Neyman region of significance for self-as-context ranges from -14.71 to -1.56, indicating that the effect of recent life stress on anxiety symptoms would be significant outside this range. The observed range for self-as-context in the current sample is -2.77 to 2.23, demonstrating that greater recent life stress is significantly associated with greater anxiety symptoms among all emerging adults except for those with a self-as-context score that is 1.6 points below the mean. There was also a significant interaction between recent life stress and values predicting anxiety symptoms (*p* = 0.038), controlling for biological sex and race. The Johnson-Neyman region of significance for values ranges from -72.18 to -1.83, indicating that the effect of recent life stress on anxiety symptoms would be significant outside this range. The observed range for values is -3.04 to 1.96, demonstrating that greater recent life stress is significantly

associated with greater anxiety symptoms among all emerging adults except those with a score of 1.9 points below the mean. Importantly, after the family-wise Holm-Bonferroni correction is applied, neither interaction remained significant.

Table 10

Interaction Between Stress Exposure and the Six Subprocesses of Psychological Flexibility Predicting Anxiety Symptoms Among Emerging Adults

	STRAIN-Early Adversity						STRAIN-Recent Stress					
Step	Variable	b	SE	t	ΔR^2		Step	Variable	b	SE	t	ΔR^2
	MPFI-Acceptance							MPFI-Acceptance				
1	(Intercept)	18.859	1.006	18.746***	.037*		1	(Intercept)	18.859	1.006	18.746***	.037*
	Sex (Female)	2.315	1.047	2.280*				Sex (Female)	2.315	1.047	2.280*	
	Race (Black/African American)	-1.126	.978	-1.151				Race (Black/African American)	-1.126	.978	-1.151	
	Race (Asian)	-1.316	1.181	-1.115				Race (Asian)	-1.316	1.181	-1.115	
	Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*				Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*	
	Race (Multi-Racial/More Than One Race)	1.157	1.578	2.161				Race (Multi-Racial/More Than One Race)	1.157	1.578	2.161	
	Race (Other)	3.785	2.638	1.435				Race (Other)	3.785	2.638	1.435	
2	(Intercept)	18.812	.999	18.826***	.018*		2	(Intercept)	19.017	.935	20.335***	.135***
	Sex (Female)	2.383	1.040	2.292*				Sex (Female)	1.820	.975	1.867	
	Race (Black/African American)	-.980	.973	-1.007				Race (Black/African American)	-.677	.911	-.743	
	Race (Asian)	-1.100	1.175	-.936				Race (Asian)	.113	1.111	.102	
	Race (Native Hawaiian/Other Pacific Islander)	17.482	7.740	2.259*				Race (Native Hawaiian/Other Pacific Islander)	19.744	7.248	2.724**	
	Race (Multi-Racial/More Than One Race)	.508	1.585	.320				Race (Multi-Racial/More Than One Race)	1.362	1.469	.927	
	Race (Other)	2.967	2.646	1.122				Race (Other)	2.981	2.460	1.212	
	STRAIN-Early Adversity	.298	.109	2.733**				STRAIN-Recent Stress	.952	.117	8.133***	
	MPFI-Acceptance	-.278	.412	-.676				MPFI-Acceptance	-.232	.384	-.603	
3	(Intercept)	18.834	1.001	18.812***	.001		3	(Intercept)	19.031	.934	20.370***	.004
	Sex (Female)	2.352	1.043	2.255*				Sex (Female)	1.807	.974	1.855	
	Race (Black/African American)	-.937	.978	-.959				Race (Black/African American)	-.686	.910	-.754	
	Race (Asian)	-1.074	1.177	-.912				Race (Asian)	.018	1.112	.016	
	Race (Native Hawaiian/Other Pacific Islander)	17.555	7.748	2.266*				Race (Native Hawaiian/Other Pacific Islander)	19.521	7.242	2.696**	
	Race (Multi-Racial/More Than One Race)	.504	1.587	.317				Race (Multi-Racial/More Than One Race)	1.481	1.470	1.008	
	Race (Other)	3.234	2.702	1.197				Race (Other)	2.701	2.465	1.095	
	STRAIN-Early Adversity	.300	.109	2.747**				STRAIN-Recent Stress	.940	.117	8.027***	

Table 10 (continued)

Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
	MPFI-Acceptance	-.267	.413	-.648			MPFI-Acceptance	-.242	.384	-.631	
	STRAIN-Early Adversity*MPFI-Acceptance	-.049	.099	-.497			STRAIN-Recent Stress*MPFI-Acceptance	.160	.117	1.372	
	MPFI-Defusion						MPFI-Defusion				
1	(Intercept)	18.859	1.006	18.746***	.037*	1	(Intercept)	18.859	1.006	18.746***	.037*
	Sex (Female)	2.315	1.047	2.280*			Sex (Female)	2.315	1.047	2.280*	
	Race (Black/African American)	-1.126	.978	-1.151			Race (Black/African American)	-1.126	.978	-1.151	
	Race (Asian)	-1.316	1.181	-1.115			Race (Asian)	-1.316	1.181	-1.115	
	Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*			Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*	
	Race (Multi-Racial/More Than One Race)	1.157	1.578	2.161			Race (Multi-Racial/More Than One Race)	1.157	1.578	2.161	
	Race (Other)	3.785	2.638	1.435			Race (Other)	3.785	2.638	1.435	
2	(Intercept)	19.002	.921	20.642***	.161***	2	(Intercept)	19.145	.876	21.847***	.236***
	Sex (Female)	1.817	.960	1.894			Sex (Female)	1.433	.915	1.567	
	Race (Black/African American)	-.069	.903	-.076			Race (Black/African American)	.043	.859	.050	
	Race (Asian)	-.442	1.085	-.407			Race (Asian)	.451	1.042	.432	
	Race (Native Hawaiian/Other Pacific Islander)	17.340	7.127	2.433*			Race (Native Hawaiian/Other Pacific Islander)	19.188	6.790	2.826**	
	Race (Multi-Racial/More Than One Race)	.560	1.458	.384			Race (Multi-Racial/More Than One Race)	1.282	1.375	.933	
	Race (Other)	3.395	2.434	1.395*			Race (Other)	3.385	2.301	1.4715	
	STRAIN-Early Adversity	.252	.100	2.513***			STRAIN-Recent Stress	.783	.112	6.999***	
	MPFI-Defusion	-2.983	.349	-8.551***			MPFI-Defusion	-2.554	.339	-7.543***	
3	(Intercept)	19.017	.922	20.617***	.000	3	(Intercept)	19.101	.884	21.600***	.000
	Sex (Female)	1.821	.961	1.895			Sex (Female)	1.441	.916	1.573	
	Race (Black/African American)	-.092	.905	-.101			Race (Black/African American)	.056	.860	.065	
	Race (Asian)	-.451	1.086	-.415			Race (Asian)	.446	1.043	.427	
	Race (Native Hawaiian/Other Pacific Islander)	17.305	7.135	2.425*			Race (Native Hawaiian/Other Pacific Islander)	19.230	6.798	2.829**	
	Race (Multi-Racial/More Than One Race)	.535	1.461	.366			Race (Multi-Racial/More Than One Race)	1.297	1.377	.942	
	Race (Other)	3.259	2.464	1.322			Race (Other)	3.493	2.319	1.507	
	STRAIN-Early Adversity	.251	.100	2.501*			STRAIN-Recent Stress	.778	.113	6.892***	
	MPFI-Defusion	-2.976	.350	-8.508***			MPFI-Defusion	-2.577	.344	-7.494***	

Table 10 (continued)

Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
	STRAIN-Early Adversity*MPFI-Defusion	.035	.093	.375			STRAIN-Recent Stress*MPFI-Defusion	-.050	.125	-.401	
	MPFI-Self-As-Context						MPFI-Self-As-Context				
1	(Intercept)	18.859	1.006	18.746***	.037*	1	(Intercept)	18.859	1.006	18.746***	.037*
	Sex (Female)	2.315	1.047	2.280*			Sex (Female)	2.315	1.047	2.280*	
	Race (Black/African American)	-1.126	.978	-1.151			Race (Black/African American)	-1.126	.978	-1.151	
	Race (Asian)	-1.316	1.181	-1.115			Race (Asian)	-1.316	1.181	-1.115	
	Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*			Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*	
	Race (Multi-Racial/More Than One Race)	1.157	1.578	2.161			Race (Multi-Racial/More Than One Race)	1.157	1.578	2.161	
	Race (Other)	3.785	2.638	1.435			Race (Other)	3.785	2.638	1.435	
2	(Intercept)	19.144	.983	19.468	.052***	2	(Intercept)	19.312	.922	20.951***	.164***
	Sex (Female)	1.974	1.024	1.926			Sex (Female)	1.462	.962	1.520	
	Race (Black/African American)	-.805	.955	-.842			Race (Black/African American)	-.533	.896	-.595	
	Race (Asian)	-1.325	1.154	-1.148			Race (Asian)	-.127	1.094	-.116	
	Race (Native Hawaiian/Other Pacific Islander)	16.543	7.595	2.178			Race (Native Hawaiian/Other Pacific Islander)	18.808	7.124	2.640**	
	Race (Multi-Racial/More Than One Race)	.521	1.552	.336			Race (Multi-Racial/More Than One Race)	1.387	1.441	.962	
	Race (Other)	3.180	2.593	1.227			Race (Other)	3.229	2.413	1.338	
	STRAIN-Early Adversity	.310	.107	2.902**			STRAIN-Recent Stress	.933	.115	8.109***	
	MPFI-SAC	-1.511	.373	-4.049***			MPFI-SAC	-1.354	.350	-3.871***	
3	(Intercept)	19.133	.985	19.432***	.000	3	(Intercept)	19.357	.916	21.129***	.012*
	Sex (Female)	2.003	1.027	1.950			Sex (Female)	1.518	.956	1.587	
	Race (Black/African American)	-.844	.960	-.880			Race (Black/African American)	-.742	.894	-.830	
	Race (Asian)	-1.356	1.157	-1.172			Race (Asian)	-.223	1.087	-.205	
	Race (Native Hawaiian/Other Pacific Islander)	16.410	7.608	2.157*			Race (Native Hawaiian/Other Pacific Islander)	18.105	7.085	2.555*	
	Race (Multi-Racial/More Than One Race)	.471	1.557	.303			Race (Multi-Racial/More Than One Race)	1.538	1.434	1.073	
	Race (Other)	2.907	2.661	1.093			Race (Other)	2.681	2.408	1.113	
	STRAIN-Early Adversity	.304	.108	2.821**			STRAIN-Recent Stress	.927	.114	8.104***	
	MPFI-SAC	-1.516	.374	-4.056***			MPFI-SAC	-1.250	.350	-3.568***	
	STRAIN-Early Adversity*MPFI-SAC	.046	.099	.465			STRAIN-Recent Stress*MPFI-SAC	.308	.124	2.480*	

Table 10 (continued)

Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
	MPFI-Present Moment Awareness						MPFI-Present Moment Awareness				
1	(Intercept)	18.859	1.006	18.746***	.037*	1	(Intercept)	18.859	1.006	18.746***	.037*
	Sex (Female)	2.315	1.047	2.280*			Sex (Female)	2.315	1.047	2.280*	
	Race (Black/African American)	-1.126	.978	-1.151			Race (Black/African American)	-1.126	.978	-1.151	
	Race (Asian)	-1.316	1.181	-1.115			Race (Asian)	-1.316	1.181	-1.115	
	Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*			Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*	
	Race (Multi-Racial/More Than One Race)	1.157	1.578	2.161			Race (Multi-Racial/More Than One Race)	1.157	1.578	2.161	
	Race (Other)	3.785	2.638	1.435			Race (Other)	3.785	2.638	1.435	
2	(Intercept)	18.752	.995	18.852***	.027**	2	(Intercept)	18.945	.928	20.421***	.149***
	Sex (Female)	2.454	1.035	2.371*			Sex (Female)	1.904	.967	1.968*	
	Race (Black/African American)	-.947	.968	-.979			Race (Black/African American)	-.624	.903	-.690	
	Race (Asian)	-1.107	1.169	-.946			Race (Asian)	.128	1.102	.116	
	Race (Native Hawaiian/Other Pacific Islander)	16.893	7.706	2.192*			Race (Native Hawaiian/Other Pacific Islander)	19.070	7.190	2.652**	
	Race (Multi-Racial/More Than One Race)	.525	1.575	.333			Race (Multi-Racial/More Than One Race)	1.351	1.455	.929	
	Race (Other)	2.935	2.629	1.116			Race (Other)	2.944	2.434	1.210	
	STRAIN-Early Adversity	.291	.108	2.694**			STRAIN-Recent Stress	.967	.116	8.319***	
	MPFI-PMA	-.808	.379	-2.134*			MPFI-PMA	-.958	.353	-2.709**	
3	(Intercept)	18.755	.994	18.877***	.004	3	(Intercept)	18.963	.929	20.420***	.001
	Sex (Female)	2.519	1.035	2.434*			Sex (Female)	1.883	.968	1.944	
	Race (Black/African American)	-1.048	.970	-1.081			Race (Black/African American)	-.652	.905	-.720	
	Race (Asian)	-1.210	1.170	-1.034			Race (Asian)	.073	1.105	.066	
	Race (Native Hawaiian/Other Pacific Islander)	16.555	7.701	2.150*			Race (Native Hawaiian/Other Pacific Islander)	18.848	7.202	2.617**	
	Race (Multi-Racial/More Than One Race)	.449	1.574	.286			Race (Multi-Racial/More Than One Race)	1.389	1.457	.953	
	Race (Other)	2.194	2.680	.819			Race (Other)	2.777	2.447	1.134	
	STRAIN-Early Adversity	.300	.108	2.769**			STRAIN-Recent Stress	.953	.118	8.080***	
	MPFI-PMA	-.826	.378	-2.184*			MPFI-PMA	-.950	.354	-2.684**	
	STRAIN-Early Adversity*MPFI-PMA	.124	.089	1.390			STRAIN-Recent Stress*MPFI-PMA	.082	.117	.702	
	MPFI-Values						MPFI-Values				

Table 10 (continued)

Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
1	(Intercept)	18.859	1.006	18.746***	.037*	1	(Intercept)	18.859	1.006	18.746***	.037*
	Sex (Female)	2.315	1.047	2.280*			Sex (Female)	2.315	1.047	2.280*	
	Race (Black/African American)	-1.126	.978	-1.151			Race (Black/African American)	-1.126	.978	-1.151	
	Race (Asian)	-1.316	1.181	-1.115			Race (Asian)	-1.316	1.181	-1.115	
	Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*			Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*	
	Race (Multi-Racial/More Than One Race)	1.157	1.578	2.161			Race (Multi-Racial/More Than One Race)	1.157	1.578	2.161	
	Race (Other)	3.785	2.638	1.435			Race (Other)	3.785	2.638	1.435	
2	(Intercept)	18.761	.990	18.951***	.036***	2	(Intercept)	18.970	.926	20.487***	.152***
	Sex (Female)	2.435	1.030	2.364*			Sex (Female)	1.869	.965	1.937	
	Race (Black/African American)	-.884	.964	-.916			Race (Black/African American)	-.588	.902	-.651	
	Race (Asian)	-1.229	1.165	-1.055			Race (Asian)	-.021	1.101	-.019	
	Race (Native Hawaiian/Other Pacific Islander)	16.482	7.675	2.148*			Race (Native Hawaiian/Other Pacific Islander)	18.743	7.183	2.610**	
	Race (Multi-Racial/More Than One Race)	.564	1.568	.360			Race (Multi-Racial/More Than One Race)	1.434	1.452	.987	
	Race (Other)	3.117	2.619	1.190			Race (Other)	3.176	2.432	1.306	
	STRAIN-Early Adversity	.311	.108	2.882**			STRAIN-Recent Stress	.954	.116	8.229***	
	MPFI-Values	-1.103	.385	-2.867**			MPFI-Values	-1.058	.359	-2.945**	
3	(Intercept)	18.739	.987	18.978***	.007	3	(Intercept)	19.001	.922	20.602***	.009*
	Sex (Female)	2.506	1.028	2.438*			Sex (Female)	1.884	.961	1.960	
	Race (Black/African American)	-1.053	.967	-1.089			Race (Black/African American)	-.741	.902	-.822	
	Race (Asian)	-1.389	1.165	-1.192			Race (Asian)	-.125	1.098	-.114	
	Race (Native Hawaiian/Other Pacific Islander)	15.881	7.662	2.073*			Race (Native Hawaiian/Other Pacific Islander)	17.983	7.163	2.511*	
	Race (Multi-Racial/More Than One Race)	.360	1.568	.230			Race (Multi-Racial/More Than One Race)	1.370	1.447	.947	
	Race (Other)	2.602	2.628	.990			Race (Other)	2.826	2.428	1.164	
	STRAIN-Early Adversity	.285	.109	2.628**			STRAIN-Recent Stress	.944	.116	8.177***	
	MPFI-Values	-1.086	.384	-2.829**			MPFI-Values	-1.026	.358	-2.866**	
	STRAIN-Early Adversity*MPFI-Values	.182	.102	1.781			STRAIN-Recent Stress*MPFI-Values	.247	.119	2.077*	
	MPFI-Committed Action						MPFI-Committed Action				
1	(Intercept)	18.859	1.006	18.746***	.037*	1	(Intercept)	18.859	1.006	18.746***	.037*

Table 10 (continued)

Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
	Sex (Female)	2.315	1.047	2.280*			Sex (Female)	2.315	1.047	2.280*	
	Race (Black/African American)	-1.126	.978	-1.151			Race (Black/African American)	-1.126	.978	-1.151	
	Race (Asian)	-1.316	1.181	-1.115			Race (Asian)	-1.316	1.181	-1.115	
	Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*			Race (Native Hawaiian/Other Pacific Islander)	16.826	7.786	2.161*	
	Race (Multi-Racial/More Than One Race)	1.157	1.578	2.161			Race (Multi-Racial/More Than One Race)	1.157	1.578	2.161	
	Race (Other)	3.785	2.638	1.435			Race (Other)	3.785	2.638	1.435	
2	(Intercept)	18.699	.978	19.113***	.058***	2	(Intercept)	18.912	.915	20.679***	.172***
	Sex (Female)	2.465	1.018	2.422*			Sex (Female)	1.895	.953	1.988*	
	Race (Black/African American)	-.762	.954	-.799			Race (Black/African American)	-.478	.892	-.537	
	Race (Asian)	-1.351	1.152	-1.173			Race (Asian)	-.148	1.088	-.136	
	Race (Native Hawaiian/Other Pacific Islander)	16.200	7.581	2.137*			Race (Native Hawaiian/Other Pacific Islander)	18.440	7.091	2.601**	
	Race (Multi-Racial/More Than One Race)	.805	1.550	.519			Race (Multi-Racial/More Than One Race)	1.692	1.436	1.179	
	Race (Other)	3.710	2.594	1.431			Race (Other)	3.786	2.408	1.572	
	STRAIN-Early Adversity	.326	.107	3.054**			STRAIN-Recent Stress	.953	.114	8.331***	
	MPFI-CA	-1.589	.372	-4.275***			MPFI-CA	-1.518	.346	-4.382***	
3	(Intercept)	18.683	.980	19.068***	.001	3	(Intercept)	18.930	.915	20.682***	.001
	Sex (Female)	2.498	1.021	2.446*			Sex (Female)	1.890	.954	1.982*	
	Race (Black/African American)	-.824	.963	-.856			Race (Black/African American)	-.525	.894	-.588	
	Race (Asian)	-1.392	1.156	-1.204			Race (Asian)	-.174	1.089	-.160	
	Race (Native Hawaiian/Other Pacific Islander)	16.028	7.596	2.110*			Race (Native Hawaiian/Other Pacific Islander)	18.192	7.101	2.562*	
	Race (Multi-Racial/More Than One Race)	.721	1.561	.462			Race (Multi-Racial/More Than One Race)	1.658	1.437	1.154	
	Race (Other)	3.528	2.623	1.345			Race (Other)	3.638	2.417	1.505	
	STRAIN-Early Adversity	.316	.109	2.901**			STRAIN-Recent Stress	.949	.115	8.277***	
	MPFI-CA	-1.594	.372	-4.284***			MPFI-Committed Action	-1.519	.347	-4.384***	
	STRAIN-Early Adversity*MPFI-CA	.049	.100	.489			STRAIN-Early Adversity*MPFI-CA	.083	.106	.780	

Note. STRAIN = Stress and Adversity Inventory for Adults; MPFI = Multidimensional Psychological Flexibility Inventory; SAC = Self-As-Context; PMA = Present Moment Awareness; CA = Committed Acton; Anxiety Symptoms were measured using the Patient Reported Outcomes Measurement Information Systems Anxiety 8-Item Short Form; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

The results of the analyses predicting depressive symptoms are included in Table 11. There were significant main effects of greater early adversity (*p*s < 0.001 – 0.010) and recent life stress (*p*s < 0.001) on greater depression symptoms in all models. Significant main effects also emerged for acceptance (*p*s = 0.021 – 0.026), cognitive defusion (*p*s < 0.001), self-as-context (*p*s < 0.001), present moment awareness (*p*s < 0.001), values (*p*s < 0.001), and committed action (*p*s < 0.001) on depressive symptoms, such that greater levels of the psychological flexibility subprocess were associated with lower depressive symptoms.

There were no significant interactions between early adversity and acceptance (*p* = 0.101), cognitive defusion (*p* = 0.364), self-as-context (*p* = 0.232), present moment awareness (*p* = 0.863), values (*p* = 0.342), or committed action (*p* = 0.966) predicting depressive symptoms. There also were no significant interactions between recent life stress and acceptance (*p* = 0.842), cognitive defusion (*p* = 0.374), self-as-context (*p* = 0.182), present moment awareness (*p* = 0.432), values (*p* = 0.168), or committed action (*p* = 0.606) predicting depressive symptoms.

Table 11

Interaction Between Stress Exposure and the Six Subprocesses of Psychological Flexibility Predicting Depressive Symptoms Among Emerging Adults

	STRAIN-Early Adversity						STRAIN-Recent Stress				
Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
	MPFI-Acceptance						MPFI-Acceptance				
1	(Intercept)	18.865	.394	47.837***	.027**	1	(Intercept)	18.865	.370	51.043***	.145***
	STRAIN-Early Adversity	.301	.111	2.720**			STRAIN-Recent Stress	.975	.119	8.161***	
	MPFI-Acceptance	-.951	.426	-2.231*			MPFI-Acceptance	-.926	.398	-2.325*	
2	(Intercept)	18.907	.394	47.939***	.006	2	(Intercept)	18.863	.370	50.972***	.000
	STRAIN-Early Adversity	.307	.110	2.781**			STRAIN-Recent Stress	.974	.120	8.141***	
	MPFI-Acceptance	-.905	.426	-2.123*			MPFI-Acceptance	-.929	.399	-2.327*	
	STRAIN-Early Adversity*MPFI-Acceptance	-.164	.100	-1.643			STRAIN-Recent Stress*MPFI-Acceptance	.024	.120	.200	
	MPFI-Defusion						MPFI-Defusion				
1	(Intercept)	18.865	.354	53.317***	.216***	1	(Intercept)	18.865	.339	55.706***	.282***
	STRAIN-Early Adversity	.222	.099	2.236*			STRAIN-Recent Stress	.743	.112	6.629***	
	MPFI-Defusion	-3.641	.351	-10.389***			MPFI-Defusion	-3.194	.343	-9.311***	
2	(Intercept)	18.847	.354	53.174***	.002	2	(Intercept)	18.789	.349	53.807***	.001
	STRAIN-Early Adversity	.226	.099	2.274*			STRAIN-Recent Stress	.732	.113	6.489***	
	MPFI-Defusion	-3.655	.351	-10.416***			MPFI-Defusion	-3.245	.348	-9.327***	
	STRAIN-Early Adversity*MPFI-Defusion	-0.085	.093	-0.909			STRAIN-Recent Stress*MPFI-Defusion	-.111	.125	-.889	
	MPFI-Self-As-Context						MPFI-Self-As-Context				
1	(Intercept)	18.865	.376	50.136***	.114***	1	(Intercept)	18.865	.353	53.452***	.220***
	STRAIN-Early Adversity	.311	.105	2.957**			STRAIN-Recent Stress	.937	.114	8.206***	
	MPFI-SAC	-2.571	.376	-6.841***			MPFI-SAC	-2.404	.352	-6.820***	
2	(Intercept)	18.883	.376	50.171***	.003	2	(Intercept)	18.887	.353	53.507***	.003
	STRAIN-Early Adversity	.330	.106	3.099**			STRAIN-Recent Stress	.934	.114	8.181***	
	MPFI-SAC	-2.553	.376	-6.792***			MPFI-SAC	-2.347	.355	-6.616***	
	STRAIN-Early Adversity*MPFI-SAC	-.117	.098	-1.198			STRAIN-Recent Stress*MPFI-SAC	.168	.126	1.338	

Table 11 (continued)

Step	Variable	b	SE	t	ΔR^2	Step	Variable	b	SE	t	ΔR^2
	MPFI-Present Moment Awareness						MPFI-Present Moment Awareness				
1	(Intercept)	18.865	.385	49.004***	.072***	1	(Intercept)	18.865	.358	52.741***	.199***
	STRAIN-Early Adversity	.277	.108	2.574*			STRAIN-Recent Stress	.997	.116	8.612***	
	MPFI-PMA	-1.973	.387	-5.096***			MPFI-PMA	-2.105	.360	-5.846***	
2	(Intercept)	18.865	.385	48.945***	.000	2	(Intercept)	18.876	.358	52.706***	.001
	STRAIN-Early Adversity	.276	.108	2.560*			STRAIN-Recent Stress	1.009	.117	8.636***	
	MPFI-PMA	-1.970	.388	-5.079***			MPFI-PMA	-2.107	.360	-5.850***	
	STRAIN-Early Adversity*MPFI-PMA	-.015	.089	-.173			STRAIN-Recent Stress*MPFI-PMA	-0.092	.117	-.786	
	MPFI-Values						MPFI-Values				
1	(Intercept)	18.865	.378	49.964***	.108***	1	(Intercept)	18.865	.352	53.599***	.225***
	STRAIN-Early Adversity	.326	.106	3.085**			STRAIN-Recent Stress	.981	.114	8.619***	
	MPFI-Values	-2.556	.387	-6.603***			MPFI-Values	-2.523	.360	-7.006***	
2	(Intercept)	18.844	.378	49.810***	.002	2	(Intercept)	18.858	.352	53.632***	.004
	STRAIN-Early Adversity	.312	.107	2.925**			STRAIN-Recent Stress	.976	.114	8.586***	
	MPFI-Values	-2.549	.387	-6.583***			MPFI-Values	-2.502	.360	-6.949***	
	STRAIN-Early Adversity*MPFI-Values	.097	.102	.951			STRAIN-Recent Stress*MPFI-Values	.165	.119	1.381	
	MPFI-Committed Action						MPFI-Committed Action				
1	(Intercept)	18.865	.372	50.736***	.135***	1	(Intercept)	18.865	.346	54.461***	.249***
	STRAIN-Early Adversity	.357	.104	3.419***			STRAIN-Recent Stress	.985	.112	8.798***	
	MPFI-CA	-2.832	.372	-7.619***			MPFI-CA	-2.765	.345	-8.018***	
2	(Intercept)	18.867	.347	50.475***	.000	2	(Intercept)	18.862	.346	54.397***	.000
	STRAIN-Early Adversity	.358	.107	3.347***			STRAIN-Recent Stress	.983	.112	8.757***	
	MPFI-CA	-2.831	.373	-7.601***			MPFI-CA	-2.767	.345	-8.018***	
	STRAIN-Early Adversity*MPFI-CA	-0.004	.099	-0.043			STRAIN-Recent Stress*MPFI-CA	.055	.107	.516	

Note. STRAIN = Stress and Adversity Inventory for Adults; MPFI = Multidimensional Psychological Flexibility Inventory; SAC = Self-As-Context; PMA = Present Moment Awareness; CA = Committed Acton; Depressive Symptoms were measured using the Patient Reported Outcomes Measurement Information Systems Depression 8-Item Short Form; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

The results of the analyses predicting psychological well-being are included in Table 12. There were no significant main effects of early adversity on psychological well-being in any of the models (*p*s > 0.05). Conversely, there was evidence of significant main effects of greater recent life stress on lower psychological well-being (*p*s < 0.001 – 0.003) in all models except for the model examining cognitive defusion (*p* = 0.342). Significant main effects emerged for acceptance (*p*s < 0.001), cognitive defusion (*p*s < 0.001), self-as-context (*p*s < 0.001), present moment awareness (*p*s < 0.001), values (*p*s < 0.001), and committed action (*p*s < 0.001) on psychological well-being, such that greater levels of each psychological flexibility subprocess was associated with greater psychological well-being.

There were no significant interactions between early adversity and acceptance (*p* = 0.113), cognitive defusion (*p* = 0.537), self-as-context (*p* = 0.828), present moment awareness (*p* = 0.196), values (*p* = 0.706), or committed action (*p* = 0.629) predicting psychological well-being. There also were no significant interactions between recent life stress and acceptance (*p* = 0.548), cognitive defusion (*p* = 0.653), self-as-context (*p* = 0.459), present moment awareness (*p* = 0.348), values (*p* = 0.174), or committed action (*p* = 0.185) predicting psychological well-being.

Table 12

Interaction Between Stress Exposure and the Six Subprocesses of Psychological Flexibility Predicting Psychological Well-Being Among Emerging Adults

Step	Variable	b	SE	t	ΔR^2
	STRAIN-Early Adversity				
	MPFI-Acceptance				
1	(Intercept)	170.241	1.304	130.584***	.055***
	STRAIN-Early Adversity	-.221	.366	-.605	
	MPFI-Acceptance	6.942	1.409	4.925***	
2	(Intercept)	170.106	1.304	130.439***	.006
	STRAIN-Early Adversity	-.241	.365	-.661	
	MPFI-Acceptance	6.794	1.410	4.819***	
	STRAIN-Early Adversity*MPFI-Acceptance	.526	.331	1.590	
	MPFI-Defusion				
1	(Intercept)	170.241	1.204	141.443	.194***
	STRAIN-Early Adversity	.116	.337	.345	
	MPFI-Defusion	11.994	1.192	10.061	
2	(Intercept)	170.283	1.206	141.155***	.001
	STRAIN-Early Adversity	.107	.338	.317	
	MPFI-Defusion	12.026	1.194	10.071***	
	STRAIN-Early Adversity*MPFI-Defusion	.196	.317	.618	
	MPFI-Self-As-Context				
1	(Intercept)	170.241	1.204	141.385***	.194***
	STRAIN-Early Adversity	-.221	.337	-.656	
	MPFI-SAC	12.073	1.203	10.039***	
2	(Intercept)	170.251	1.206	141.129***	
	STRAIN-Early Adversity	-.210	.340	-.617	.000
	MPFI-SAC	12.083	1.205	10.029***	
	STRAIN-Early Adversity*MPFI-SAC	-.068	.313	-.218	

Step	Variable	b	SE	t	ΔR^2
	STRAIN-Recent Stress				
	MPFI-Acceptance				
1	(Intercept)	170.241	1.291	131.916***	.074***
	STRAIN-Recent Stress	-1.251	.417	-2.998**	
	MPFI-Acceptance	6.959	1.391	5.002***	
2	(Intercept)	170.227	1.292	131.782***	.001
	STRAIN-Recent Stress	-1.259	.418	-3.013**	
	MPFI-Psychological Flexibility	6.932	1.393	4.977***	
	STRAIN-Recent Stress*MPFI-Acceptance	.251	.417	.601	
	MPFI-Defusion				
1	(Intercept)	170.241	1.203	141.576***	.196***
	STRAIN-Recent Stress	-.379	.398	-.951	
	MPFI-Defusion	11.719	1.218	9.622***	
2	(Intercept)	170.105	1.241	137.092***	.000
	STRAIN-Recent Stress	-.399	.401	-.994	
	MPFI-Defusion	11.626	1.236	9.403***	
	STRAIN-Recent Stress*MPFI-Defusion	-.200	.445	-.450	
	PWB-Psychological Well-Being				
1	(Intercept)	170.241	1.194	142.543***	.207***
	STRAIN-Recent Stress	-1.047	.386	-2.711**	
	MPFI-SAC	11.905	1.193	9.980***	
2	(Intercept)	170.200	1.196	142.281***	.001
	STRAIN-Recent Stress	-1.041	.387	-2.692**	
	MPFI-SAC	11.798	1.202	9.814***	
	STRAIN-Recent Stress*MPFI-SAC	-0.315	.425	-.742	

Table 12 (continued)

Step	Variable	b	SE	t	ΔR^2
	MPFI-Present Moment Awareness				
1	(Intercept)	170.241	1.238	137.490***	.147***
	STRAIN-Early Adversity	-.056	.346	-.163	
	MPFI-PMA	10.603	1.245	8.514***	
2	(Intercept)	170.253	1.237	137.607***	.003
	STRAIN-Early Adversity	-.036	.346	-.103	
	MPFI-PMA	10.538	1.245	8.462***	
	STRAIN-Early Adversity*MPFI-PMA	.372	.287	1.296	
	MPFI-Values				
1	(Intercept)	170.241	1.157	147.167***	.256***
	STRAIN-Early Adversity	-.330	.324	-1.019	
	MPFI-Values	14.245	1.186	12.011***	
2	(Intercept)	170.268	1.160	146.773***	.000
	STRAIN-Early Adversity	-.313	.328	-.957	
	MPFI-Values	14.236	1.187	11.989***	
	STRAIN-Early Adversity*MPFI-Values	-.118	.313	-.377	
	MPFI-Committed Action				
1	(Intercept)	170.241	1.137	149.774***	.281***
	STRAIN-Early Adversity	-.469	.319	-1.469	
	MPFI-CA	14.571	1.136	12.823***	
2	(Intercept)	170.291	1.142	149.077***	.000
	STRAIN-Early Adversity	-.436	.327	-1.333	
	MPFI-CA	14.595	1.139	12.820***	
	STRAIN-Early Adversity*MPFI-CA	-.146	.302	-.484	

Step	Variable	b	SE	t	ΔR^2
	MPFI-Present Moment Awareness				
1	(Intercept)	170.241	1.222	139.373***	.170***
	STRAIN-Recent Stress	-1.347	.395	-3.408***	
	MPFI-PMA	10.771	1.229	8.761***	
2	(Intercept)	170.287	1.223	139.281***	.002
	STRAIN-Recent Stress	-1.297	.399	-3.253	
	MPFI-PMA	10.762	1.230	8.752***	
	STRAIN-Recent Stress*MPFI-PMA	-.374	.398	-.940	
	MPFI-Values				
1	(Intercept)	170.241	1.142	149.046***	.274***
	STRAIN-Recent Stress	-1.272	.369	-3.444***	
	MPFI-Values	14.223	1.169	12.170***	
2	(Intercept)	170.263	1.141	149.202***	.003
	STRAIN-Recent Stress	-1.258	.369	-3.408***	
	MPFI-Values	14.157	1.169	12.114***	
	STRAIN-Recent Stress*MPFI-Values	-.527	.387	-1.362	
	MPFI-Committed Action				
1	(Intercept)	170.241	1.123	151.624***	.299***
	STRAIN-Recent Stress	-1.291	.363	-3.556***	
	MPFI-CA	14.482	1.118	12.958***	
2	(Intercept)	170.266	1.122	151.762***	.003
	STRAIN-Recent Stress	-1.269	.363	-3.495***	
	MPFI-CA	14.503	1.117	12.987***	
	STRAIN-Early Adversity*MPFI-CA	-.457	.345	-1.326	

Note. STRAIN = Stress and Adversity Inventory for Adults; MPFI = Multidimensional Psychological Flexibility Inventory; SAC = Self-As-Context; PMA = Present Moment Awareness; CA = Committed Acton; Psychological Well-Being was measured using the Scale of Psychological Well-Being; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Additional Aim 3: Do the Six Subprocesses of Psychological Flexibility Moderate the Association Between Daily Stress and Same-Day and Next-Day Psychological Functioning?

Further probing the results of Study 2, multilevel linear models were estimated using restricted maximum likelihood to examine whether the six subprocesses of psychological flexibility (e.g., acceptance, cognitive defusion, self-as-context, present moment awareness, values, or committed action) moderated the association between within-person daily stress exposure and same-day and next-day psychological functioning. Six daily stress-psychological functioning models were estimated: (1) same-day anxiety symptoms regressed on daily stress, (2) next-day anxiety symptoms regressed on daily stress, (3) same-day depressive symptoms regressed on daily stress, (4) next-day depressive symptoms regressed on daily stress, (5) same-day negative affect regressed on daily stress, and (6) next-day negative affect regressed on daily stress.

For each set of analyses, Step 1 included within-person daily stress, between-person daily stress, and the psychological flexibility subprocess. In Step 2, the cross-level interaction between within-person daily stress and the psychological flexibility subprocess was added. Step 2 also controlled for the cross-level interaction between between-person daily stress and the psychological flexibility subprocess. In each set of analyses, models were conducted with and without a random slope for within-person daily stress to determine whether the inclusion of a random slope for within-person daily stress was supported. All variables were z-standardized. Family-wise Holm-Bonferroni corrections were utilized to control for multiple comparisons, with families of analyses identified within each primary aim based on outcome variable.

Results of the multilevel linear models examining whether the six subprocesses of psychological flexibility moderated the association between within-person daily stress and same-day and next-day anxiety are reported in Table 13.

First, the models were estimated with same-day anxiety as the outcome. The deviance tests did not support the inclusion of a random slope in any of the six models, and thus the results from the random intercept models were interpreted. There were significant main effects of greater within-person daily stress on greater same-day anxiety symptoms (ps < 0.001) in all models. There were no significant main effects of acceptance, cognitive defusion, self-as-context, present moment awareness, values, or committed action on same-day anxiety symptoms (ps > 0.05).

Neither cognitive defusion (p = 0.994), self-as-context (p = 0.778), present moment awareness (p = 0.160), or committed action (p = 0.254) emerged as significant moderators of the association between within-person daily stress and same-day anxiety symptoms.

Results indicated that the cross-level interaction between within-person daily stress and acceptance was significantly associated with same-day anxiety symptoms (p = 0.013). The Johnson-Neyman region of significance for acceptance ranges from -14.85 to -1.81, indicating that the effect of within-person daily stress on same-day anxiety symptoms would be significant outside of this range. The observed range for acceptance in the current sample is -2.09 to 1.90, demonstrating that greater within-person daily stress was significantly associated with greater same-day anxiety symptoms among emerging adults whose acceptance score was greater than -1.81. The interaction between

within-person daily stress and acceptance was no longer significant after the family-wise Holm-Bonferroni correction was applied.

Values emerged as a significant moderator of the association between within-person daily stress and same-day anxiety symptoms ($p = 0.050$). The Johnson-Neyman region of significance for values ranges from -2.10 to 3280.00, indicating that the effect of within-person daily stress on same-day anxiety symptoms would be significant inside this range. The observed range for values in the current sample is -2.64 to 1.68, demonstrating that greater within-person daily stress is significantly associated with greater same-day anxiety symptoms for emerging adults whose values score is greater than -2.10. The interaction between within-person daily stress and values was no longer significant after the family-wise Holm-Bonferroni correction was applied.

The models then were estimated with next-day anxiety as the outcome variable. The deviance tests did not support the inclusion of a random slope in any of the six models, and thus the results from the random intercept models were interpreted. In these models, there were no significant main effects of within-person daily stress on next-day anxiety symptoms ($ps > 0.05$). Similarly, there were no significant main effects of acceptance, cognitive defusion, self-as-context, present moment awareness, values, or committed action on next-day anxiety symptoms ($ps > 0.05$).

None of the subprocesses of psychological flexibility, including acceptance ($p = 0.463$), cognitive defusion ($p = 0.599$), self-as-context ($p = 0.909$), present moment awareness ($p = 0.758$), values ($p = 0.724$), and committed action ($p = 0.216$), significantly moderated the association between within-person daily stress and next-day anxiety symptoms ($ps > 0.05$).

Table 13

Interaction Between Daily Stress Exposure and the Six Subprocesses of Psychological Flexibility Predicting Same-Day and Next-Day Anxiety Symptoms Among Emerging Adults

	Same-Day Stress								Prior-Day Stress							
	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
	MPFI-Acceptance															
Observation-Level																
STRAIN-Daily Stress (within)	.222***	.030	.236***	.031	.241***	.041	.249**	.034	.033	.033	.037	.033	.053	.038	.069	.042
Person-Level																
STRAIN-Daily Stress (between)	.517**	.166	.447*	.179]	.517**	.166	.426*	.176	.398*	.160	.349	.176	.411*	.158	.362*	.170
MPFI-Acceptance	-.121	.104	-.101	.106	-.130	.104	-.101	.106	-.128	.107	-.115	.109	-.141	.106	-.111	.108
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-Acceptance			.071*	.028			.083*	.031			.022	.031			.045	.038
STRAIN-Daily Stress (between)*MPFI-Acceptance			-.165	.158			-.184	.156			-.107	.157			-.119	.153
Participants	52		52		52		52		51		51		51		51	
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.393		.390		.388		.388		.412		.413		.410		.409	
Individual-Level Variance	.461ϕ		.460ϕ		.463ϕ		.461ϕ		.474ϕ		.477ϕ		.423ϕ		.473ϕ	
Stress Slope Variance					.010		.003						.005		.008	
Nakagawa & Schielzeth R^2	.158		.166		.165		.167		.093		.093		.103		.101	
	MPFI-Defusion															
Observation-Level																
STRAIN-Daily Stress (within)	.222***	.030	.222***	.031	.239***	.040	.253***	.046	.033	.033	.028	.034	.054	.038	.058	.042
Person-Level																
STRAIN-Daily Stress (between)	.470**	.166	.586**	.217	.470**	.166	.587**	.217	.35ϕ*	.160	.509*	.211	.374*	.159	.535*	.211
MPFI-Defusion	-.188	.105	-.162	.110	-.188	.105	-.162	.110	-.187	.108	-.152	.112	-.182	.107	-.145	.112
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-Defusion			.000	.037			.028	.053			-.021	.040			.000	.049
STRAIN-Daily Stress (between)*MPFI-Defusion			.192	.228			.193	.228			.240	.220			.253	.220

Table 13 (continued)

	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Participants	52		52		52		52		51		51		51		51	
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.394		.394		.388		.388		.412		.413		.410		.410	
Individual-Level Variance	.443$^{\phi}$		.446$^{\phi}$		.443$^{\phi}$		.447$^{\phi}$		.457$^{\phi}$		.458$^{\phi}$		.457$^{\phi}$		.458$^{\phi}$	
Stress Slope Variance					.010		.013						.004		.006	
Nakagawa & Schielzeth R^2	.174		.183		.178		.189		.109		.125		.112		.131	
	MPFI-Self-As-Context															
Observation-Level																
STRAIN-Daily Stress (within)	.222***	.030	.221***	.030	.239***	.040	.243***	.042	.033	.033	.033	.033	.052	.038	.059	.039
Person-Level																
STRAIN-Daily Stress (between)	.557**	.161	.627**	.183	.556**	.161	.628**	.183	.438**	.155	.553**	.177	.453**	.154	.572**	.176
MPFI-SAC	-.082	.101	-.086	.101	-.082	.101	-.086	.101	-.074	.104	-.082	.104	.071	.103	-.080	.103
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-SAC			.008	.028			.001	.039			-.003	.030			-.001	.036
STRAIN-Daily Stress (between)*MPFI-SAC			.196	.234			.196	.234			.294	.220			.300	.219
Participants	52		52		52		52		51		51		51		51	
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.394		.394		.388		.388		.412		.413		.410		.409	
Individual-Level Variance	.468$^{\phi}$		.472$^{\phi}$		.468$^{\phi}$		.473$^{\phi}$		.483$^{\phi}$		.480$^{\phi}$		.483$^{\phi}$		.480$^{\phi}$	
Stress Slope Variance					.009		.013						.004		.006	
Nakagawa & Schielzeth R^2	.152		.161		.156		.166		.083		.109		.088		.116	
	MPFI-Present Moment Awareness															
Observation-Level																
STRAIN-Daily Stress (within)	.222***	.030	.223***	.030	.239***	.040	.248***	.041	.033	.033	.033	.033	.052	.038	.054	.039
Person-Level																
STRAIN-Daily Stress (between)	.546**	.159	.585***	.157	.547**	.159	.623***	.162	.433**	.153	.472	.152	.449***	.152	.505**	.149
MPFI-PMA	-.144	.099	-.132	.097	-.145	.099	-.132	.096	-.137	.102	-.128	.100	-.142	.101	-.125	.100
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-PMA			.045	.032			.040	.043			.011	.034			.019	.041
STRAIN-Daily Stress (between)*MPFI-PMA			-.290	.158			-.355*	.163			-.266	.162			-.286	.159
Participants	52		52		52		52		51		51		51		51	

Table 13 (continued)

	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.393		.393		.388		.388		.412		.413		0.41		.410	
Individual-Level Variance	.455$^{\phi}$		.432$^{\phi}$		.455$^{\phi}$		.422$^{\phi}$		.470$^{\phi}$		.450$^{\phi}$		.469$^{\phi}$		.448$^{\phi}$	
Stress Slope Variance					.010		.012						.004		.006	
Nakagawa & Schielzeth R^2	.166		.189		.171		.216		.098		.119		.105		.132	
									MPFI-Values							
Observation-Level																
STRAIN-Daily Stress (within)	.222***	.030	.241***	.032	.239***	.040	.262***	.043	.033	.033	.036	.034	.052	.038	.062	.041
Person-Level																
STRAIN-Daily Stress (between)	.543**	.167	.722***	.197	.544**	.167	.726***	.197	.424*	.162	.680**	.194	.439**	.161	.701***	.193
MPFI-Values	-.067	.105	-.047	.105	-.069	.105	-.046	.105	-.063	.109	-.042	.106	-.061	.108	-.037	.106
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-Values			.058*	.030			.072	.040			.011	.032			.010	.038
STRAIN-Daily Stress (between)*MPFI-Values			.370	.223			.377	.223			.417*	.187			.420	.185
Participants	52		52		52		51		51		51		51		51	
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.394		.391		.388		.386		.412		.412		.410		.409	
Individual-Level Variance	.470$^{\phi}$		.457$^{\phi}$		.471$^{\phi}$		.458$^{\phi}$		.485$^{\phi}$		.456$^{\phi}$		.484		.456$^{\phi}$	
Stress Slope Variance					.010		.011						.004		.006	
Nakagawa & Schielzeth R^2	.150		.186		.155				.081		.143		.087		.150	
									MPFI-Committed Action							
Observation-Level																
STRAIN-Daily Stress (within)	.222***	.030	.238***	.033	.239***	.040	.262***	.044	.033	.033	.052	.036	.052	.038	.067	.040
Person-Level																
STRAIN-Daily Stress (between)	.569**	.167	.683**	.198	.569**	.167	.670**	.197	.447**	.161	.618**	.197	.460**	.160	.625**	.197
MPFI-CA	-.013	.104	.011	.106	-.013	.104	.008	.106	-.011	.106	.023	.108	-.015	.106	.025	.108
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-CA			.045	.040			.072	.048			.054	.043			.049	.046
STRAIN-Daily Stress (between)*MPFI-CA			.248	.231			.234	.230			.321	.216			.321**	.216
Participants	52		52		52		52		51		51		51		51	

Table 13 (continued)

	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.394		.393		.388		.386		.412		.411		.410		.410	
Individual-Level Variance	.474$^{\phi}$		.476$^{\phi}$		.475$^{\phi}$		.476$^{\phi}$		.489$^{\phi}$		.483$^{\phi}$		.489$^{\phi}$		.483$^{\phi}$	
Stress Slope Variance					.010		.013						.004		.003	
Nakagawa & Schielzeth R^2	.148		.160		.152		.162		.079		.109		.085		.111	

Note. STRAIN = Stress and Adversity Inventory for Adults; MPFI = Multidimensional Psychological Flexibility Inventory; SAC = Self-As-Context; PMA = Present Moment Awareness; CA = Committed Action; Anxiety Symptoms were measured using the Patient Health Questionnaire-4; all variables were z-standardized; STRAIN-Daily Stress (within) is centered on each participant's mean; STRAIN-Daily Stress (between) is an aggregate mean across each participants' daily observations; Step 1 models contained only main effects; Step 2 models included conditional main effects and interactions; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$; $^{\phi}p < .05$ according to deviance test; $^{+}p < .05$ according to profile confidence interval.

Results of the multilevel linear models examining whether the six subprocesses of psychological flexibility moderated the association between within-person daily stress and same-day and next-day depressive symptoms are reported in Table 14. First, models were estimated with same-day depressive symptoms as the outcome. The deviance test for the model examining acceptance as a moderator did not support the inclusion of a random slope for within-person daily stress; thus, the random intercept model without a random slope was interpreted. However, the deviance tests for the models examining cognitive defusion ($\chi^2(2) = 18.439$, $p < 0.001$), self-as-context ($\chi^2(2) = 17.720$, $p < 0.001$), present moment awareness ($\chi^2(2) = 9.477$, $p = 0.009$), values ($\chi^2(2) = 18.846$, $p < 0.001$), and committed action ($\chi^2(2) = 12.623$, $p = 0.002$) supported the inclusion of a random slope for within-person daily stress. Therefore, for those five models, the random intercept models with a random slope were interpreted.

There was a significant main effect of greater within-person daily stress on greater same-day depressive symptoms within all models (ps < 0.001). Additionally, there were significant main effects of cognitive defusion ($p = 0.014$) and present moment awareness ($p = 0.028$) on same-day depressive symptoms, such that greater levels of the psychological flexibility subprocess was associated with lower same-day depressive symptoms. There were no main effects of acceptance, self-as-context, values, or committed action on same-day depressive symptoms (ps > 0.05).

There were no significant cross-level interactions between within-person daily stress and cognitive defusion ($p = 0.277$), self-as-context ($p = 0.722$), present moment awareness ($p = 0.420$), values ($p = 0.499$), or committed action ($p = 0.384$) predicting same-day depressive symptoms.

Acceptance emerged as a significant moderator of the association between within-person daily stress and same-day depressive symptoms ($p < 0.001$). The Johnson-Neyman region of significance for acceptance ranges from -3.55 to -1.22, indicating that the effect of within-person daily stress on same-day depressive symptoms would be significant outside this range. The observed range for acceptance in the current sample was -2.09 to 1.90, demonstrating that greater within-person daily stress was significantly associated with greater same-day depressive symptoms for emerging adults whose acceptance score was greater than -1.22. The interaction between within-person daily stress and acceptance remained significant after the family-wise Holm Bonferroni correction was applied.

The models then were estimated with next-day depressive symptoms as the outcome. The deviance tests did not support inclusion of a random slope for within-person daily stress; therefore, the random intercept models without a random slope were interpreted.

There were not significant main effects of within-person daily stress on next-day depressive symptoms in any of the models (ps > 0.05). Additionally, there were not significant main effects of acceptance, self-as-context, values, or committed action on next-day depressive symptoms (ps > 0.05). However, there were significant main effects of greater cognitive defusion ($p = 0.022$) and present moment awareness ($p = 0.022$) on lower next-day depressive symptoms.

Neither acceptance ($p = 0.216$), cognitive defusion ($p = 0.684$), self-as-context ($p = 0.754$), present moment awareness ($p = 0.625$), values ($p = 0.927$), nor committed

action (p = 0.362) moderated the association between within-person daily stress and next-day depressive symptoms.

Table 14

Interaction Between Daily Stress Exposure and the Six Subprocesses of Psychological Flexibility Predicting Same-Day and Next-Day Depressive Symptoms Among Emerging Adults

	Same-Day Stress								Prior-Day Stress							
	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
	MPFI-Acceptance															
Observation-Level																
STRAIN-Daily Stress (within)	.220***	.033	.247***	.033	.221***	.058	.242***	.052	.038	.036	.046	.036	.045	.038	.057	.040
Person-Level																
STRAIN-Daily Stress (between)	.548***	.146	.473**	.156	.530***	.144	.474**	.155	.450**	.142	.387*	.154	.438**	.141	.383*	.154
MPFI-Acceptance	-.183	.092	-.162	.092	-.158	.091	-.164	.092	-.187	.095	-.170	.096	-.176	.094	-.171	.096
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-Acceptance			.129***	.031			.122*	.048			.041	.033			.040	.037
STRAIN-Daily Stress (between)*MPFI-Acceptance			-.181	.137			-.168	.137			-.141	.138			-.137	.138
Participants	52		52		52		52		51		51		51		61	
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.467		.455		.441		.443		.490		.490		.488		.488	
Individual-Level Variance	.342$^{\phi}$		.336$^{\phi}$		.344$^{\phi}$		.338$^{\phi}$		.354$^{\phi}$		.351$^{\phi}$		.356$^{\phi}$		.353$^{\phi}$	
Stress Slope Variance					.046^{+}		.026						.002		.003	
Nakagawa & Schielzeth R^2	.199		.218		.182		.213		.138		.141		.129		.140	
	MPFI-Defusion															
Observation-Level																
STRAIN-Daily Stress (within)	.220***	.033	.229***	.034	.218***	.056	.244***	.060	.038	.036	.035	.037	.044	.037	.046	.038
Person-Level																
STRAIN-Daily Stress (between)	.502**	.146	.416*	.190	.471**	.142	.367	.187	.415**	.143	.372	.189	.394**	.141	.336	.188
MPFI-Defusion	-.239*	.092	-.258**	.097	-.231*	.091	-.269**	.096	-.227*	.096	-.238*	.101	-.233*	.095	-.246*	.101
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-Defusion			.040	.041			.074	.067			-.018	-.044			.000	.045

Table 14 (continued)

	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
STRAIN-Daily Stress (between)*MPFI-Defusion			-.142	.200			-.168	.192			-.067	.198			-.089	.196
Participants	52		52		52		52		51		51		51		51	
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.467		.467		.442		.442		.490		.490		.488		.489	
Individual-Level Variance	.234$^{\phi}$		.328$^{\phi}$		.326$^{\phi}$		.330$^{\phi}$		.343$^{\phi}$		.350$^{\phi}$		.345$^{\phi}$		.352$^{\phi}$	
Stress Slope Variance					.042^{+}		.041^{+}						.002		.002	
Nakagawa & Schielzeth R^2	.217		.216		.200		.211		.151		.149		.146		.143	
	MPFI-Self-As-Context															
Observation-Level																
STRAIN-Daily Stress (within)	.220***	.033	.218***	.033	.221***	.056	.223***	.057	.038	.036	.037	.036	.044	.037	.049	.040
Person-Level																
STRAIN-Daily Stress (between)	.607***	.143	.630***	.163	.569***	.139	.588***	.158	.509***	.140	.580***	.160	.493***	.139	.558***	.159
MPFI-Self-As-Context	-.130	.090	-.131	.090	-.126	.087	-.135	.090	-.107	.093	-.112	.094	-.100	.092	-.112	.094
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-SAC			.029	.030			.019	.053			.011	.033			.014	.036
STRAIN-Daily Stress (between)*MPFI-SAC			.063	.209			.061	.204			.188	.200			.178	.199
Participants	52		52		52		52		51		51		51		51	
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.467		.467		.442		.442		.490		.490		.489		.488	
Individual-Level Variance	.355$^{\phi}$		.362$^{\phi}$		.357$^{\phi}$		.364$^{\phi}$		.374$^{\phi}$		.378$^{\phi}$		.376$^{\phi}$		.380$^{\phi}$	
Stress Slope Variance					.042^{+}		.045^{+}						.002		.005	
Nakagawa & Schielzeth R^2	.187		.188		.172		.174		.117		.129		.110		.123	
	MPFI-Present Moment Awareness															
Observation-Level																
STRAIN-Daily Stress (within)	.220***	.033	.223***	.033	.221***	.057	.226***	.058	.038	.036	.038	.036	.048	.039	.053	.041
Person-Level																
STRAIN-Daily Stress (between)	.595***	.139	.628***	.138	.560***	.135	.602***	.137	.499***	.135	.534***	.134	.480***	.113	.516***	.134
MPFI-PMA	-.201*	.087	-.192*	.086	-.192*	.085	-.195*	.086	-.212*	.089	-.204*	.088	-.212*	.088	-.206*	.088

Table 14 (continued)

	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-PMA			.099**	.034			.050	.061			.018	.037			.009	.043
STRAIN-Daily Stress (between)*MPFI-PMA			-.235	.139			.-202	.138			-.224	.142			-.198	.141
Participants	52		52		52		52		51		51		51		51	
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.467		.462		.442		.441		.490		.491		.488		.488	
Individual-Level Variance	.333$^{\phi}$		.319$^{\phi}$		.335$^{\phi}$		.321$^{\phi}$		.342$^{\phi}$		.329$^{\phi}$		.344$^{\phi}$		.331$^{\phi}$	
Stress Slope Variance					.044^{+}		.045^{+}						.003		.005	
Nakagawa & Schielzeth R^2	.210		.229		.194		.214		.152		.166		.146		.159	
									MPFI-Values							
Observation-Level																
STRAIN-Daily Stress (within)	.220***	.033	.215***	.035	.220***	.055	.211**	.058	.038	.036	.039	.037	.044	.038	.042	.039
Person-Level																
STRAIN-Daily Stress (between)	.579***	.149	.666***	.178	.521***	.143	.587**	.174	.484**	.146	.689***	.175	.466**	.145	.676***	.171
MPFI-Values	-.121	.094	-.110	.095	-.144	.090	-.123	.094	-.101	.098	-.011	.096	-.101	.097	-.083	.096
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-Values			-.016	.032			-.038	.055			.003	.035			.000	.037
STRAIN-Daily Stress (between)*MPFI-Values			.184	.204			.118	.199			.347*	.173			.354*	.168
Participants	52		52		52		52		51		51		51		51	
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.467		.468		.442		.442		.490		.490		.488		.489	
Individual-Level Variance	.358$^{\phi}$		.359$^{\phi}$		.360$^{\phi}$		.362$^{\phi}$		.376$^{\phi}$		.358$^{\phi}$		.378$^{\phi}$		.362$^{\phi}$	
Stress Slope Variance					.040^{+}		.044^{+}						.002		.002	
Nakagawa & Schielzeth R^2	.183		.196		.170		.177		.115		.162		.108		.157	
									MPFI-Committed Action							
Observation-Level																
STRAIN-Daily Stress (within)	.220***	.033	.183***	.036	.220***	.055	.205**	.058	.038	.036	.054	.039	.042	.037	.069	.043
Person-Level																

Table 14 (continued)

	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
STRAIN-Daily Stress (between)	.596***	.149	.699***	.176	.541***	.143	.635***	.173	.500**	.146	.682***	.175	.489**	.145	.646***	.170
MPFI-CA	-.091	.093	-.069	.095	-.113	.090	-.081	.095	-.069	.096	-.030	.097	-.056	.096	-.034	.096
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-CA			-.106*	.043			-.053	.061			.043	.047			.082	.050
STRAIN-Daily Stress (between)*MPFI-CA			.227	.205			.174	.202			.348	.194			.328	.189
Participants	52		52		52		52		51		51		51		51	
Observations	671		671		671		671		619		619		619		619	
Variance Components																
Observation-Level Variance	.467		.463		.443		.442		.490		.490		.489		.487	
Individual-Level Variance	.363ϕ		.362ϕ		.366ϕ		.365ϕ		.382ϕ		.367ϕ		.384ϕ		.369ϕ	
Stress Slope Variance					.093+		.041+						.002		.006	
Nakagawa & Schielzeth R^2	.181		.195		.167		.176		.112		.146		.104		.136	

Note. STRAIN = Stress and Adversity Inventory for Adults; MPFI = Multidimensional Psychological Flexibility Inventory; SAC = Self-As-Context; PMA = Present Moment Awareness; CA = Committed Action; Depressive Symptoms were measured using the Patient Health Questionnaire-4; all variables were z-standardized; STRAIN-Daily Stress (within) is centered on each participant's mean; STRAIN-Daily Stress (between) is an aggregate mean across each participants' daily observations; Step 1 models contained only main effects; Step 2 models included conditional main effects and interactions; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$; $^{\phi}p < .05$ according to deviance test; $^{+}p < .05$ according to profile confidence interval.

Results of the multilevel linear models examining whether the six subprocesses of psychological flexibility moderated the association between within-person daily stress and same-day and next-day negative affect are reported in Table 15. First, models were estimated with same-day negative affect as the outcome. The deviance tests for all six models were significant. Thus, the random intercept models with a random slope were interpreted for the models examining acceptance ($\chi^2(2) = 12.443$, $p = 0.002$), cognitive defusion ($\chi^2(2) = 9.926$, $p = 0.007$), self-as-context ($\chi^2(2) = 11.121$, $p = 0.004$), present moment awareness ($\chi^2(2) = 12.666$, $p = 0.002$), values ($\chi^2(2) = 12.860$, $p = 0.002$), and committed action ($\chi^2(2) = 14.660$, $p < 0.001$).

There were significant main effects of greater within-person daily stress on greater same-day negative affect (ps < 0.001). There were no significant main effects of acceptance, cognitive defusion, self-as-context, present moment awareness, values, or committed action on same-day negative affect (ps > 0.05).

None of the six subprocesses of psychological flexibility, including acceptance ($p = 0.257$), cognitive defusion ($p = 0.265$), self-as-context ($p = 0.641$), present moment awareness ($p = 0.796$), values ($p = 0.338$), and committed action ($p = 0.091$), moderated the association between within-person daily stress and same-day negative affect.

Next, models were estimated with next-day negative affect as the outcome. The deviance tests did not support the inclusion of a random slope in any of the six models, and thus the results from the random intercept models were interpreted. There were no significant main effects for within-person daily stress or any of the six psychological flexibility subprocesses on next-day negative affect (ps > 0.05).

Results indicated that none of the cross-level interactions between within-person daily stress and acceptance ($p = 0.788$), cognitive defusion ($p = 0.081$), self-as-context ($p = 0.104$), present moment awareness ($p = 0.545$), values ($p = 0.777$), or committed action ($p = 0.717$) were significantly associated with next-day negative affect.

Table 15

Interaction Between Daily Stress Exposure and the Six Subprocesses of Psychological Flexibility Predicting Same-Day and Next-Day Negative Affect Among Emerging Adults

	Same-Day Stress								Prior-Day Stress							
	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
	MPFI-Acceptance															
Observation-Level																
STRAIN-Daily Stress (within)	.294***	.032	.300***	.033	.320***	.058	.333***	.058	.011	.035	.013	.036	.038	.042	.045	.044
Person-Level																
STRAIN-Daily Stress (between)	.645***	.144	.597***	.156	.638***	.143	.593***	.155	.515***	.144	.491**	.159	.509***	.144	.489**	.158
MPFI-Acceptance	-.109	.090	-.096	.092	-.101	.090	-.096	.092	-.083	.096	-.077	.099	-.084	.096	-.079	.095
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-Acceptance			.035	.031			.064	.054			.009	.033			.006	.040
STRAIN-Daily Stress (between)*MPFI-Acceptance			-.115	.137			-.111	.136			-.051	.142			-.044	.141
Participants	52		52		52		52		51		51		51		51	
Observations	665		665		665		665		612		612		612		612	
Variance Components																
Observation-Level Variance	.442		.442		.420		.420		.476		.476		.472		.471	
Individual-Level Variance	.333$^{\phi}$		.335$^{\phi}$		.334$^{\phi}$		.336$^{\phi}$		.370$^{\phi}$		.376$^{\phi}$		.370$^{\phi}$		.377$^{\phi}$	
Stress Slope Variance					.047^{+}		.046^{+}						.006		.008	
Nakagawa & Schielzeth R^2	.234		.236		.235		.241		.124		.122		.122		.121	
	MPFI-Defusion															
Observation-Level																
STRAIN-Daily Stress (within)	.294***	.032	.309***	.033	.320***	.058	.341***	.060	.011	.035	-.004	.036	.034	.041	-.001	.036
Person-Level																
STRAIN-Daily Stress (between)	.607***	.145	.633**	.190	.599***	.144	.623**	.189	.478**	.145	.544**	.193	.462**	.144	.530**	.192
MPFI-Defusion	-.162	.091	-.156	.096	-.157	.091	-.157	.091	-.145	.098	-.129	.103	-.159	.097	-.133	.103
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-Defusion			.077	.040			.076	.067			-.075	.043			-.070	.044

Table 15 (continued)

	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
STRAIN-Daily Stress (between)*MPFI-Defusion			.044	.200			.039	.198			.108	.201			.103	.200
Participants	52		52		52		52		51		51		51		51	
Observations	665		665		665		665		612		612		612		612	
Variance Components																
Observation-Level Variance	.442		.440		.420		.421		.475		.474		.472		.473	
Individual-Level Variance	.321$^{\phi}$		.328$^{\phi}$		.322$^{\phi}$		.329$^{\phi}$		.359$^{\phi}$		.366		.359$^{\phi}$		.365$^{\phi}$	
Stress Slope Variance					.047^{+}		.044^{+}						.005		.001	
Nakagawa & Schielzeth R^2	.246		.248		.247		.252		.137		.142		.137		.139	
	MPFI-Self-As-Context (SAC)															
Observation-Level																
STRAIN-Daily Stress (within)	.294***	.032	.297***	.032	.319***	.057	.319***	.058	.011	.035	.016	.035	.038	.042	.044	.044
Person-Level																
STRAIN-Daily Stress (between)	.680***	.140	.720***	.158	.663***	.138	.700***	.157	.543***	.140	.637***	.159	.532***	.139	.635***	.159
MPFI-Self-As-Context	-.080	.087	-.083	.088	-.088	.087	-.085	.088	-.041	.093	-.048	.093	-.057	.092	-.048	.093
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-SAC			-.041	.030			-.026	.055			-.052	.032			-.069	.040
STRAIN-Daily Stress (between)*MPFI-SAC			.115	.203			-.097	.202			.250	.199			.252	.199
Participants	52		52		52		52		51		51		51		51	
Observations	665		665		665		665		612		612		612		612	
Variance Components																
Observation-Level Variance	.443		.442		.420		.420		.476		.474		.472		.469	
Individual-Level Variance	.337$^{\phi}$		.342$^{\phi}$		.337$^{\phi}$		.343$^{\phi}$		.374$^{\phi}$		.374$^{\phi}$		.374$^{\phi}$		.374$^{\phi}$	
Stress Slope Variance					.046^{+}		.049^{+}						.006		.008	
Nakagawa & Schielzeth R^2	.232		.236		.232		.234		.119		.141		.119		.142	
	MPFI-Present Moment Awareness (PMA)															
Observation-Level																
STRAIN-Daily Stress (within)	.294***	.032	.294***	.032	.318***	.057	.321***	.060	.011	.035	.011	.035	.038	.042	.048	.046
Person-Level																
STRAIN-Daily Stress (between)	.668***	.137	.695***	.137	.652***	.135	.682***	.136	.533***	.138	.555***	.139	.523***	.136	.548***	.139
MPFI-PMA	-.145	.086	-.137	.085	-.149	.085	-.138	.085	-.126	.091	-.121	.091	-.137	.091	-.122	.091

Table 15 (continued)

	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-PMA			-.008	.034			-.016	.063			-.022	.037			-.054	.048
STRAIN-Daily Stress (between)*MPFI-PMA			-.194	.138			-.178	.137			-.154	.147			-.135	-.147
Participants	52		52		52		52		51		51		51		51	
Observations	665		665		665		665		612		612		612		612	
Variance Components																
Observation-Level Variance	.442		.443		.420		.420		.475		.476		.472		.469	
Individual-Level Variance	.323$^{\phi}$		.317$^{\phi}$		.324$^{\phi}$		.319$^{\phi}$		.360$^{\phi}$		.359$^{\phi}$		.360$^{\phi}$		.359$^{\phi}$	
Stress Slope Variance					.046$^{\div}$		.052$^{\div}$						.006		.012	
Nakagawa & Schielzeth R^2	.245		.252		.245		.252		.134		.139		.135		.139	
									MPFI-Values							
Observation-Level																
STRAIN-Daily Stress (within)	.294***	.032	.286***	.034	.319***	.057	.337***	.061	.110	.035	.008	.037	.038	.042	.036	.046
Person-Level																
STRAIN-Daily Stress (between)	.692**	.146	.775***	.174	.681	.145	.745***	.173	.566***	.146	.788***	.174	.559***	.145	.785***	.173
MPFI-Values	-.011	.092	-.001	.092	-.005	.091	-.006	.092	.036	.097	.058	.095	.031	.097	.056	.095
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-Values			-.022	.032			-.056	.058			-.010	.034			-.025	.043
STRAIN-Daily Stress (between)*MPFI-Values			-.177	.199			.135	.198			.375*	.171			.381*	.171
Participants	52		52		52		52		51		51		51		51	
Observations	665		665		665		665		612		612		612		612	
Variance Components																
Observation-Level Variance	.443		.443		.420		.419		.476		.475		.412		.470	
Individual-Level Variance	.342$^{\phi}$		.344$^{\phi}$		.343$^{\phi}$		.346$^{\phi}$		.374$^{\phi}$		.352$^{\phi}$		.374$^{\phi}$		.373$^{\phi}$	
Stress Slope Variance					.046$^{\div}$		.056$^{\div}$						.006		.009	
Nakagawa & Schielzeth R^2	.226		.237		.227		.236		.120		.171		.118		.171	
									MPFI-Committed Action (CA)							
Observation-Level																
STRAIN-Daily Stress (within)	.294***	.032	.304***	.036	.319***	.057	.346***	.060	.011	.035	.005	.039	.038	.042	.036	.046
Person-Level																

Table 15 (continued)

	Random Intercept Only Model				Random Intercept & Slope Model				Random Intercept Only Model				Random Intercept & Slope Model			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
STRAIN-Daily Stress (between)	.678***	.144	.692***	.173	.670***	.143	.663***	.170	.539***	.145	.616**	.178	.532***	.144	.613**	.178
MPFI-CA	-.044	.090	-.040	.093	-.034	.089	-.047	.093	-.027	.095	-.011	.098	-.030	.095	-.012	.098
Cross-Level Interaction																
STRAIN-Daily Stress (within)*MPFI-CA			.029	.043			.109	.063			-.017	.047			-.015	.051
STRAIN-Daily Stress (between)*MPFI-CA			.031	.202			-.006	.199			.149	.197			.154	.197
Participants	52		52		52		52		51		51		51		51	
Observations	665		665		665		665		612		612		612		612	
Variance Components																
Observation-Level Variance	.443		.443		.420		.418		.476		.476		.472		.472	
Individual-Level Variance	.341$^{\phi}$		.349$^{\phi}$		.341$^{\phi}$		.349$^{\phi}$		.375$^{\phi}$		.381$^{\phi}$		.375$^{\phi}$		.382$^{\phi}$	
Stress Slope Variance					.046^{+}		.042^{+}						.006		.007	
Nakagawa & Schielzeth R^2	.228		.227		.229		.227		.119		.127		.118		.126	

Note. STRAIN = Stress and Adversity Inventory for Adults; MPFI = Multidimensional Psychological Flexibility Inventory; SAC = Self-As-Context; PMA = Present Moment Awareness; CA = Committed Action; Negative Affect was measured using the Positive and Negative Affect Scales; all variables were z-standardized; STRAIN-Daily Stress (within) is centered on each participant's mean; STRAIN-Daily Stress (between) is an aggregate mean across each participants' daily observations; Step 1 models contained only main effects; Step 2 models included conditional main effects and interactions; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$; $^{\phi}p < .05$ according to deviance test; $^{+}p < .05$ according to profile confidence interval.

Exploratory Analyses

Exploratory Aim 1: Is psychological flexibility associated with coping flexibility, explanatory flexibility, and cognitive flexibility?

Given that the extant literature has identified and examined flexibility within a number of psychological processes, including coping flexibility, explanatory flexibility, and cognitive flexibility (for a review, see Kashden & Rottenberg, 2010), it is important to understand the association between psychological flexibility and these other measures of flexibility. As part of their participation in the FLEX Project, participants also completed measures assessing coping flexibility, explanatory flexibility, and cognitive flexibility.

Coping Flexibility. *The Coping Flexibility* Scale (CFS; Kato, 2012) is a 10-item self-report questionnaire assessing one's ability to evaluate and recognize ineffective coping strategies (e.g., "I am aware of how successful or unsuccessful my attempts to cope with stress have been") and to implement alternative coping strategies (e.g., "When I haven't coped with a stressful situation well, I use other ways to cope with that situation"). Participants rated items on a 4-point scale from 1 (Not Applicable) to 4 (Very Applicable), with higher scores indicating greater coping flexibility. The CFS demonstrated adequate internal consistency ($\alpha = 0.71$) in the current sample.

Explanatory Flexibility. The *Cognitive Style Questionnaire – Short Form* (CSQ-SF; Meins et al., 2012) is a 72-item self-report questionnaire assessing the five dimensions of negative cognitive style: internality (e.g., "It is my fault that people reacted negatively"), globality (e.g., "The reason that caused people to react negatively applies to

all of my endeavors"), stability (e.g., "The reason people reacted negatively to this talk means that others will react negatively to talks I give in the future"), negative consequences (e.g., "People reacting negatively to my talk will lead to other negative things happening to me"), and self-worth implications (e.g., "The fact that people reacted negatively to this talk says a lot about me as a person"). Participants were presented with eight hypothetical negative life events, instructed to imagine the reason why that specific negative scenario happened to them, and asked to make inferences about the causes, consequences, and self-worth implications of each event on a 5-point Likert-type scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Explanatory flexibility was computed as the standard deviation of the 16 stability and globality items, with higher scores indicating greater explanatory flexibility (Moore & Fresco, 2007).

Cognitive Flexibility. The *Behavior Rating Inventory of Executive Functioning – Adult Version* (BRIEF-A; Roth et al., 2005) is a 75-item self-report questionnaire assessing nine dimensions of executive functioning: inhibit (e.g., "I have problems waiting my turn"), shift (e.g., "I have trouble thinking of a different way to solve a problem when stuck"), emotional control (e.g., "I overreact emotionally"), self-monitor (e.g., "I don't notice when I cause others to feel bad or get mad until it's too late"), initiate (e.g., "I have trouble getting started on tasks"), working memory (e.g., "I forget instructions easily"), plan/organize (e.g., "I have trouble prioritizing activities"), task-monitor (e.g., "I misjudge how difficult or easy tasks will be"), and organization of materials (e.g., "I don't pick up after myself"). Participants rated items on a 3-point scale from 1 (Never) to 3 (Often). The items within each dimension were summed, and the raw scores were converted to T-scores. The raw scores for the BRIEF-A Shift subscale

demonstrated good internal consistency ($\alpha = 0.80$) in the current sample. In the present study, the T-score for the BRIEF-A Shift subscale was utilized to measure cognitive flexibility, with greater scores indicating greater cognitive inflexibility.

Bivariate correlations were conducted to examine the association between psychological flexibility and other measures of flexibility (see Table 16). Psychological flexibility was significantly positively correlated with coping flexibility ($p < 0.001$) and explanatory flexibility ($p < 0.001$). Psychological flexibility was significantly negatively correlated with cognitive flexibility ($p < 0.001$).

Table 16

Correlations and Descriptive Statistics for Measures of Flexibility

	MPFI-Psychological Flexibility	BRIEF-Cognitive Flexibility	CFS-Coping Flexibility	CSQSF-Explanatory Flexibility
MPFI-Psychological Flexibility	-			
BRIEF-Cognitive Flexibility	-.314***	-		
CFS-Coping Flexibility	.447***	-.227***	-	
CSQSF-Explanatory Flexibility	.182 ***	.007	.224 ***	-
Mean	3.696	58.026	16.143	.926
SD	.756	12.102	4.992	.321

Note. MPFI = Multidimensional Psychological Flexibility Inventory; BRIEF = Behavior Rating Inventory of Executive Functioning – Adult Version; CFS = Coping Flexibility Scale; CSQSF = Cognitive Style Questionnaire – Short Form; SD = standard deviation; $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

CHAPTER 3
ASSOCIATED LITERATURE REVIEW

Introduction

Since the debut of the term "psychological flexibility" in the clinical literature (Hayes, Strosahl, Bunting, et al., 2004), there has been a rapid growth in interest in the topic. This burgeoning curiosity is reflected in the recent surge of published articles relating to psychological flexibility. To illustrate this point, a PubMed inquiry for "psychological flexibility" returns 589 results (published since 2004), with 23.9% of results published in 2020 and 19.0% published in the first half of 2021. Although the growing popularity of psychological flexibility has resulted in countless informative findings, the aggregation of this scientific knowledge has been hindered by the "myriad" of language and theory used to conceptualize and operationalize the construct (Cherry et al., 2021).

Defining Psychological Flexibility

Psychological flexibility is used both as a generic term and as a specialized term with a more specific meaning. When referred to generically, psychological flexibility often is understood from a neuropsychological framework (e.g., Schultz & Searleman, 2002) and includes various constructs, such as cognitive flexibility, affective flexibility, coping flexibility, and explanatory flexibility (for a review, see Stange et al., 2017). However, as a specialized term, psychological flexibility, which is derived from Relational Frame Theory (Barnes-Holmes & Roche, 2001) and Acceptance and Commitment Therapy (ACT), is defined as "the ability to contact the present moment more fully as a conscious human being, and to either change or persist [in behavior] when

doing so serves valued ends" (Hayes, Strosahl, Bunting, et al., 2004, p. 5). In other words, psychological flexibility is the ability to remain in contact with (unwanted) internal experiences (e.g., bodily sensations, thoughts, feelings) in order to engage in behavior that is consistent with one's values and long-term goals. The present review focuses specifically on this specialized conceptualization and operationalization of psychological flexibility.

According to ACT theory, psychological flexibility is comprised of six interacting core processes: acceptance, cognitive defusion, present moment awareness, self-as-context, values, and committed action (Hayes et al., 2006). Acceptance involves being willing and open to experiencing one's internal experiences (e.g., bodily sensations, thoughts, feelings) without attempting to modify or reduce them. Cognitive defusion is the ability to create space between oneself and one's thoughts in order to recognize thoughts as part of the natural language process, rather than as messages containing absolute truths. Present moment awareness, as is implied, is the process of being mindful of both psychological and environmental experiences as they occur in the present moment. Self-as-context is the perspective that one is not the content of their inner experiences (e.g., bodily sensations, thoughts, and feelings), and instead is a context from which these experiences can be observed. Values, which are the qualities that one holds as most important, serve to guide behavior and provide direction in life. Committed action is the decision to engage in value-driven behavior even while experiencing unwanted internal experiences.

Importantly, because these processes are interrelated, lacking any of the six processes poses risk for psychological *in*flexibility (Hayes et al., 2011). In contrast to

psychological flexibility, psychological inflexibility is defined as "the rigid dominance of psychological reactions over chosen values and contingencies in guiding action" (Bond et al., 2011, p. 678). In the literature, the terms "psychological inflexibility" and "experiential avoidance" often are used interchangeably (e.g., Spendelow & Joubert, 2018) and popular measures often are interpreted by anchoring scores with experiential avoidance at one end and psychological flexibility at the other (e.g., Acceptance and Action Questionaire [AAQ]; Hayes et al., 2006).

The Psychological Flexibility Model

The Psychological Flexibility Model is a transdiagnostic model that posits that pain (e.g., distressing thoughts and emotions) is an inherent and transient part of life (Hayes et al., 2006; Hayes et al., 2011). Although the experience of pain is assumed to be ubiquitous, suffering and the development of psychopathology are not viewed as inevitable consequences. Instead, according to the model, psychopathology is rooted in psychological inflexibility. Specifically, a psychologically inflexible individual responds to painful experiences by attempting to control or reduce them. However, these attempts at control ultimately prolong the experience of pain, keep the individual trapped within it, and cause suffering. Furthermore, the focus on controlling the pain often leads to avoidance, interferes with the individual's adaptive functioning, and distracts from their goal pursuits. Thus, rather than aiming to reduce pain, the ultimate goal of ACT is to increase psychological flexibility (Hayes et al., 2006).

The Psychological Flexibility Model has received substantial empirical support. Psychological inflexibility is associated with numerous forms of psychopathology (Hayes et al., 2006; Levin et al., 2014), including depression (e.g., Leahy et al., 2012), anxiety

(e.g., Tavakoli et al., 2019), obsessive-compulsive disorder (e.g., Xiong et al., 2021), posttraumatic stress disorder (e.g., Boykin et al., 2020), eating disorders (e.g., Masuda & Latzman, 2012), and substance use (e.g., Rosen et al., 2020). Furthermore, consistent with the Psychological Flexibility Model, research demonstrates that psychological flexibility is a significant mechanism of change in ACT (Hayes et al., 2006; Stockton et al., 2019).

Relevance of Psychological Flexibility to Depression

Although psychological flexibility has been conceptually and empirically established as a transdiagnostic risk factor, it may be particularly relevant to depression. A systematic review investigating the role of inflexibility (operationalized as cognitive flexibility, affective flexibility, cardiac vagal control, explanatory flexibility, and coping flexibility) in depression found that the extant literature suggested that inflexibility served as a risk factor for depression (Stange et al., 2017). Specifically, the review found that flexibility was reduced among individuals with Major Depressive Disorder (MDD), and inflexibility was positively associated with depression symptoms severity. However, the existing review on inflexibility and depression excluded research examining the specialized, ACT-based conceptualization of psychological flexibility. Thus, to date, there has not been a comprehensive review concerning the role of the specialized, ACT-based conceptualization of psychological flexibility in depression.

Specific Aims of Current Review

The current review sought to provide a comprehensive evaluation of the role of the ACT-based conceptualization of psychological flexibility in depression. In particular, this review focused on research examining psychological flexibility as (1) a correlate of

depression, (2) a mediator of the associations between established risk (and resilience) factors and depressive outcomes, (3) a moderator of the associations between established risk (and resilience) factors and depressive outcomes, and (4) a mechanism of change in therapeutic interventions.

This review complements and extends the important review by Stange and colleagues (2017). As Stange and colleagues (2017) did not review literature examining psychological flexibility, the present study fills that critical gap. Furthermore, given that research exploring psychological flexibility is burgeoning currently, but aggregation of the individual findings is challenging due to inconsistencies in definitions and terms, this synthesis of the existing literature will serve as a foundation for future advancements in research.

Methods

Search Strategy and Inclusion and Exclusion Criteria

A comprehensive literature search was conducted in PsychINFO and PubMed using the following search terms: *("psychological flexibility" or "psychological inflexibility" or "experiential avoidance") AND (depression or depressive or dysphoric or dysphoria)*. Duplicate articles were removed from the results of the comprehensive literature search to create a list of unique articles.

The list of unique articles then was screened for relevancy by reviewing the titles and abstracts. Articles were excluded if they (1) did not examine psychological flexibility/depression, (2) only examined psychological flexibility/depression in the context of a medical condition/other psychiatric disorder, (3) were a case study/had an $n < 20$, (4) utilized latent profile/cluster analysis or network analyses methodologies, (5)

were a scale/software validation study, (6) were a pre-registration/trial protocol, (7) were a theoretical article, commentary, book chapter, review paper, or meta-analysis, (8) were unpublished (including theses and dissertations), (9) were not in English.

The methods and results sections of the relevant articles then were reviewed to screen for inclusion in the current review. Articles were excluded if they: (1) did not include a measure of general psychological flexibility/depression, (2) only examined psychological flexibility/depression in the context of a medical condition/other psychiatric disorder, (3) did not examine a statistical relationship between psychological flexibility/depression, (4) only examined depression as a predictor (and not as an outcome or correlate), (5) had an $n < 20$, (6) utilized latent profile/cluster analysis or network analyses methodologies, (6) were a scale validation study, (7) were a pre-registration/trial protocol, (8) were a theoretical article, commentary, book chapter, review paper, or meta-analysis, (9) were not English. Articles also were excluded if the full-text article could not be accessed ($n = 3$). The results of the search strategy and article selection are summarized in Figure 1.

Results

Description of Studies

After a full-text review of 303 relevant articles, 165 were selected for inclusion in the current review. The results for the included articles from this full-text review are presented in Table 17.

Study Design

Of the 165 included studies, the majority ($n = 104$; 63.03%) were cross-sectional, 31 (18.79%) were intervention studies, 27 (16.63%) utilized a longitudinal design, and

three (1.82%) were experimental. A version of the Acceptance and Action Questionnaire (AAQ; Bond et al., 2011; Hayes, Strosahl, Wilson, et al., 2004) was the most commonly used (*n* = 136; 82.42%) measure for assessing psychological flexibility. The remainder of the studies assessed psychological flexibility using the Avoidance and Fusion Questionnaire for Youth (n = 11; 6.67%; AFQ-Y; Greco et al., 2008), the Brief Experiential Avoidance Questionnaire (n = 4; 2.42%; BEAQ; Gámez et al., 2014), the Multidimensional Experiential Avoidance Questionnaire (n = 4; 2.42%; MEAQ; Gámez et al., 2011), the Multidimensional Psychological Flexibility Inventory (n = 4; 2.42%; MPFI; Rolffs et al., 2018), the Comprehensive Assessment of Acceptance and Commitment Therapy Processes (n = 3; 1.82%; CompACT; Francis et al., 2016), the Behavioral Activation for Depression – Avoidance/Rumination subscale (n = 1; 0.60%; BADS; Kanter et al., 2007), the Change and Growth Experiences Scale (n = 1; 0.60%; CHANGE Hayes et al., 2007), and the Psychological Flexibility Questionnaire (n = 1; 0.60%; PFQ; Ben-Itzhak et al., 2014). Additionally, one study (0.60%; Kashdan et al., 2010) assessed psychological flexibility by coding an autobiographic narrative written by participants, and another (0.60%; McMahon & Naragon-Gainey, 2018) utilized a single question to assess psychological flexibility ("I tried to get rid of negative thoughts, feelings, or situations"). With regards to depression, few studies (n = 6; 3.64%) used depressive disorder diagnoses, and the majority (n = 161; 97.58%) assessed depressive symptoms.

Sample Characteristics

Eighty-six percent (*n* = 142) of the included studies utilized a community sample, and only 15.76% (*n* = 26) included a clinical sample recruited from a treatment setting.

Across all samples, only ten studies (6.06%) included children and/or adolescents. Regarding the demographic composition, the included samples were predominantly White (in [*n* = 74] 79.57%[1] of studies, the majority of participants were White) and female (in [*n* = 132] 83.01%[2] of studies, the majority of participants were female). Notably, eight studies examined the role of psychological flexibility in depression within samples of racial/ethnic minority individuals, including individuals who identify as Asian American, Latinx, Black, and persons of color/minorities broadly (Bhambhani et al., 2020; Martinez et al., 2020; Masuda et al., 2014; Mendoza et al., 2016; Mendoza et al., 2018; Raines et al., 2018; Zvolensky et al., 2015; Zvolensky et al., 2016). Only one study examined psychological flexibility in a sample of transgender and gender-nonconforming individuals, specifically (Lloyd et al., 2019). However, six other studies recruited samples of LGBT+ individuals (Bhambhani et al., 2020; Gold et al., 2009; Gold et al., 2011; Gold et al., 2007; Leleux-Labarge et al., 2015; Matos et al., 2017).

Psychological Flexibility as a Correlate

Seventy-eight percent (*n* = 129) of included studies reported a correlation between a measure of psychological flexibility and a measure of depression. Across these studies, greater psychological flexibility was associated with lower depressive symptoms (for exceptions, see Cheavens & Heiy, 2011; Edwards & Lowe, 2021; Fiorillo et al., 2017). Only three studies failed to find a significant correlation between psychological flexibility and depression ([in community sample] Barajas & Garra, 2016; [longitudinally] Kashdan et al., 2010; Moyer et al., 2018). The magnitude of effect sizes

[1] Seventy-two studies did not report relevant demographic information.
[2] Six studies did not report relevant demographic information.

for these correlations ranged from $r = 0.01$ to $r = 0.83$, with an average of $r = 0.55$. See Table 18 for all effect sizes.

Psychological Flexibility as a Mediator

Twenty-five percent ($n = 42$) of included studies examined psychological flexibility as a mediator of the relationship between a predictor variable and a depressive outcome. Unless otherwise noted, the percentages reported in this section refer to the proportion of studies out of the studies that examined psychological flexibility as a mediator and are not meant to convey the proportion of studies out of all studies included in the present review. In general, lower psychological flexibility served as a pathway through which risk factors negatively impacted depressive outcomes. Notably, only 23.81% ($n = 10$) of studies examined psychological flexibility as a mediator within a longitudinal design. Thus, most studies ($n = 32$; 76.19%) examining the mediating role of psychological flexibility do not fulfill the temporal precedence criterion, which is a requirement for proper statistical mediation.

Symptoms and Depression

Two (4.76%) studies examined psychological flexibility as a mediator of the relationship between psychological symptoms and depressive outcomes. First, Landi and colleagues (2020) found that psychological flexibility mediated the association between trait health anxiety and depressive symptoms during the COVID-19 pandemic. However, higher trait anxiety was associated with lower psychological flexibility, and somewhat surprisingly, lower psychological flexibility, in turn, was associated with lower levels of depressive symptoms. Second, psychological flexibility was identified as a significant mediator of the relationship between depressive symptoms at baseline and depressive

symptoms two and five months later (Stotts et al., 2019). This finding suggests that lower psychological flexibility may partially account for the persistence of depressive symptoms.

Cognitive Vulnerability Factors and Depression

Thirty-three percent (n = 14) of articles tested psychological flexibility as a mediator of the association between cognitive vulnerabilities and depressive symptoms. Studies (n = 3) support decreased psychological flexibility as a pathway through which rumination confers risk for depressive symptoms. In a longitudinal study, higher levels of grief rumination predicted decreased psychological flexibility, which, in turn, predicted increased depressive symptoms at follow-up (Eisma et al., 2013). Similarly, psychological flexibility mediated the relationship between passive coping (i.e., ruminating, being overwhelmed by problems) and depressive symptoms (Fledderus et al., 2010). When assessed both cross-sectionally and prospectively, Cookson and colleagues (2020) failed to find support for psychological flexibility as a mediator of the relationship between rumination and depressive symptoms; however, they did demonstrate a significant serial mediation from rumination to depressive symptoms via cognitive fusion and psychological flexibility.

Decreased psychological flexibility also has been shown to mediate the association between negative cognitive beliefs and depressive symptoms (n = 7). Depressogenic schemas confer risk for increased depressive symptoms, in part via psychological flexibility (Ruiz & Odriozola-Gonzalez, 2015; Ruiz & Odriozola-González, 2016). Findings also suggest that psychological flexibility mediates the association between dysfunctional beliefs (e.g., implicit theories of anxiety, emotion, and

personality; metacognitive beliefs; beliefs related to motherhood; anxiety sensitivity) and depressive symptoms (Fonseca et al., 2018; Ruiz & Odriozola-Gonzalez, 2015; Stein et al., 2020; Sung et al., 2020; Tull & Gratz, 2008). Of note, when examined prospectively, psychological flexibility did not mediate the relationship between anxiety sensitivity and depressive symptoms (Stein et al., 2020). Interestingly, there also is evidence demonstrating that psychological flexibility mediates the association between cognitive flexibility (i.e., flexibility in the attributions made about events) and depressive symptoms (Palm & Follette, 2010), such that decreased cognitive flexibility was associated with decreased psychological flexibility, which, in turn, was associated with increased depressive symptoms.

Research (n = 4) also suggests that psychological flexibility is a mechanism through which additional cognitive factors confer risk (or resilience) for depressive outcomes. Vine and Marroquin (2018) demonstrated that low emotional clarity was associated with decreased psychological flexibility, which, in turn, was associated with higher depression. However, this mediated pathway only was significant among individuals with low to high, but not very high, negative affect intensity. Research also demonstrated that the association between lower self-regulation abilities and increased depressive symptoms was mediated by lower psychological flexibility (Berzonsky & Kinney, 2019). Further, the association between delayed discounting (i.e., reward processing and valuation) and depressive symptoms was also mediated by psychological flexibility, with steeper discounting related to lower psychological flexibility, which, in turn, was associated with greater depressive symptoms (Levin et al., 2018). Regarding resilience factors, greater psychological flexibility mediated the relationship between

greater self-compassion and lower depressive symptoms among a sample of adults with recurrent depression (Bakker et al., 2018).

Personality Vulnerability Factors and Depression

Seventeen percent (*n* = 7) of studies explored psychological flexibility as a mediator of the relationship between personality factors and depressive outcomes. Specifically, research tested psychological flexibility as a mechanism through which neuroticism (*n* = 2) and perfectionism (*n* = 2) impact depressive outcomes. Psychological flexibility mediated the relationship between neuroticism and depressive symptom severity cross-sectionally (Paulus et al., 2016) and prospectively (Spinhoven et al., 2016). With regards to perfectionism, lower psychological flexibility mediated the association between greater self-critical perfectionism and greater depressive symptoms (Moroz & Dunkley, 2015). These cross-sectional findings also were replicated in a longitudinal design that controlled for baseline neuroticism (Moroz & Dunkley, 2019). Of note, Moroz and Dunkley (2015) also examined psychological flexibility as a mediator of the relationship between self-esteem and depressive symptoms but failed to find support for this mediational pathway.

Studies (*n* = 3) also explored psychological flexibility as a mediator of the association between personality/identity types and depressive symptoms. For example, Berzonsky and Kinney (2019) found that participants with a greater diffuse-avoidant identity (i.e., greater tendency to procrastinate/avoid identity-related conflicts) reported lower psychological flexibility, which, in turn, predicted greater depressive symptoms. Contrary to expectations, participants with a greater informational identity style (i.e., greater tendency to engage in proactive efforts aimed at improving self-insight) also

reported lower psychological flexibility, which, in turn, predicted greater depressive symptoms. Further, Elliot and colleagues (2015) demonstrated that the impact of personality type on depressive symptoms at follow-up was partially explained by psychological flexibility. Specifically, lower psychological flexibility mediated the relationship between both Overcontrolled (i.e., high negative emotionality and low positive emotionality) and Undercontrolled (i.e., low constraint) personality types and increased depressive symptoms, whereas greater psychological flexibility mediated the relationship between the Resilient (i.e., high positive emotionality, low negative emotionality) personality type and decreased depressive symptoms. Finally, psychological flexibility was examined as a mediator of the association between a sense of self defined by self-as-hierarchy and depressive symptoms, but there was no evidence to support a mediating role (Moran & McHugh, 2019).

Shame and Depression

Nineteen percent (n = 8) of studies assessed psychological flexibility as a mediator of the association between shame and depression. Three studies demonstrate that psychological flexibility mediates the association between self-concealment (i.e., intentionally concealing personal information that one perceives as negative or is ashamed of) and depressive symptoms (Leleux-Labarge et al., 2015; Mendoza et al., 2016; Mendoza et al., 2018). This finding remained significant for individuals who identify as White, Black, Asian, and Latinx (Mendoza et al., 2016; Mendoza et al., 2018). Furthermore, Gold and colleagues (2007) demonstrated that psychological flexibility mediated the relationship between internalized homophobia (i.e., negative feelings and

beliefs about homosexuality in oneself and other people) and depressive symptoms among gay men.

Findings suggest that psychological flexibility mediates the association between the frequency and perceived impact of early shame experiences with caregivers (i.e., being humiliated, criticized, degraded, or shamed by caregivers) and depressive symptoms (Dinis et al., 2015; Matos et al., 2017). Of note, Dinis and colleagues (2015) also found evidence of serial mediation for the perceived impact of shame, such that the perceived impact of shame was associated with increased cognitive fusion, which was associated with decreased psychological flexibility, which, in turn, was associated with increased depressive symptoms. Further, there is evidence that the early shame experiences that are central to an individual's life story and identity impact depressive symptoms via psychological flexibility (Carvalho et al., 2015). Conversely, psychological flexibility also mediated the relationship between early memories of warmth and safeness (opposite of shame experiences) and depressive symptoms. However, early memories of warmth/safety were associated with greater psychological flexibility, which, in turn, was associated with lower depressive symptoms.

In addition to mediating the association between early shame experiences and depressive symptoms, psychological flexibility serves as an indirect path between later shame experiences and depressive symptoms. For example, women who received a victim-blaming response after disclosing an unwanted sexual experience (which occurred after age 18) reported greater shame related to that experience, and this shame was associated with lower psychological flexibility, which, in turn, was associated with greater depressive symptoms (Bhuptani et al., 2019).

Discrimination and Depression

Five percent *(n* = 2) of studies examined psychological flexibility as a mediator of the relationship between discrimination and depression. Overall, the reviewed studies demonstrated that psychological flexibility is a mechanism through which discrimination negatively impacts depressive outcomes. For example, Bhambhani and colleagues (2019) found that psychological flexibility mediated the relationship between experiences of sexual racism (i.e., discriminatory acts carried out against people of color in dating/sexual contexts on the basis of race/ethnicity) and depressive symptoms among Black, Asian, and Latinx men who have sex with other men. That is, experiences of sexual racism were associated with lower psychological flexibility, which, in turn, was associated with higher depressive symptoms. A similar pattern of results was observed in a study examining psychological flexibility as a mediator of the relationship between gender-related discrimination and depressive symptoms among transgender and gender-nonconforming individuals (Lloyd et al., 2019).

Stress and Depression

Nineteen percent (*n* = 8) of studies explored psychological flexibility as a mediator of the relationship between stress (e.g., early adversity, life stress) and depression. With regard to early adversity (*n* = 6), there is mixed support for psychological flexibility as a mediator of the association with later depressive outcomes. In support, Makriyianis and colleagues (2019) found that frequency of adverse childhood experiences was associated with greater psychological *in*flexibility, which, in turn, was associated with higher depressive symptoms. Similarly, psychological flexibility mediated the association between childhood emotional abuse and the course of

depressive symptoms (i.e., remitting versus persistent; Barnhofer et al., 2014), as well as the associations between general childhood trauma, childhood abuse, and childhood neglect and depressive symptoms (Ghazanfari et al., 2018). Furthermore, psychological flexibility mediated the association between sexual victimization during adolescence and depressive symptoms in adulthood (Polusny et al., 2004). Conversely, there was no support for the mediating role of psychological flexibility in the associations between childhood physical abuse (Gold et al., 2011) or total number of early traumas (Richardson & Jost, 2019) and depressive outcomes. However, psychological flexibility did emerge as a significant mediator of the association between the impact of early traumas (i.e., impact on emotional/work/academic/social functioning) and depressive symptoms (Richardson & Jost, 2019).

With regard to life stress (n = 2), there also was support for the mediating role of psychological flexibility. For example, in a sample of adolescents, daily peer hassles were associated with lower psychological flexibility, which, in turn, was associated with higher depressive symptoms (Xavier et al., 2017). Further, whereas psychological flexibility did not mediate the association between life events and depressive symptoms alone, there was evidence of serial mediation involving cognitive fusion (Cookson et al., 2020). That is, stressful life events were associated with lower psychological flexibility, which was associated with higher cognitive fusion, which, in turn, was associated with greater depressive symptoms. Importantly, these results were significant both when examined cross-sectionally and prospectively.

Other

Psychological flexibility was evaluated as a mediator of the association between other predictors (n = 3) and depressive outcomes. First, changes in psychological *in*flexibility (from baseline to two-month follow-up) mediated the relationship between changes in sleep disturbances (from baseline to two-month follow-up) and changes in depressive symptoms (from baseline to two-month follow-up), such that increases in sleep disturbances were associated with increases in psychological *inflexibility*, which, in turn, was associated with increased depressive symptoms (Peltz et al., 2020). Second, psychological flexibility mediated the association between parenting behaviors (e.g., helicopter parenting, autonomy support) and depressive symptoms (Wenze et al., 2019). Of note, helicopter parenting was associated with higher depressive symptoms via psychological flexibility measured using the BEAQ, but not the AAQ-II. Third, psychological flexibility was found to mediate the association between materialism (i.e., a strong desire for wealth/physical possessions) and depressive symptoms (Kashdan & Breen, 2007).

Psychological Flexibility as a Moderator

Fifteen percent (n = 24) of included studies assessed the interaction between psychological flexibility and another predictor variable on depressive outcomes. All studies that included an interaction involving psychological flexibility are summarized, regardless of whether psychological flexibility was labeled as the "moderating" or "focal" variable. In general, high levels of psychological flexibility protected individuals against the depressogenic impact of the risk factors, whereas low flexibility amplified the depressogenic consequences. Unless otherwise indicated, the percentages reported in this

section refer to the proportion of studies out of the studies that examined an interaction involving psychological flexibility and are not meant to convey the proportion of studies out of all studies included in the present review.

Cognitive Vulnerability and Depression

Seventeen percent (n = 4) of studies examined the interactive association between psychological flexibility and cognitive vulnerability factors on depressive outcomes. For example, Trindade and colleagues (2020) found that lower psychological flexibility potentiated the relationship between learned helplessness and depressive symptoms, such that those with the highest levels of learned helplessness and lowest levels of psychological flexibility reported the most depressive symptoms. The interaction between psychological flexibility and anxiety sensitivity was explored, but there was no evidence of an interactive effect on depressive symptoms (Bardeen et al., 2013). Interestingly, the evidence for the interactive association between psychological flexibility and rumination was mixed. Bjornsson and colleagues (2010) demonstrated a significant interactive association cross-sectionally, but not prospectively. Furthermore, Morina and colleagues (2011) also failed to find a significant interaction between psychological flexibility and rumination on depressive symptoms.

Emotion Regulation and Depression

Eight percent (n = 2) of studies explored the interactive impact of psychological flexibility and emotion regulation on depressive outcomes. In a daily diary study, there was evidence of a between-, but not within-, person interaction between psychological flexibility and reappraisal on depressive symptoms. Findings revealed that among individuals with low levels of psychological flexibility, reappraisal was associated with

lower concurrent depressive symptoms and was unrelated to depressive symptoms at average and high levels of psychological flexibility (McMahon & Naragon-Gainey, 2018). Moreover, holding the belief that one lacks emotional regulation strategies amplified the relationship between psychological flexibility and depressive symptoms (Fergus et al., 2013). Further, the authors also replicated this finding using an experimental paradigm.

Mindfulness-Related Psychological Flexibility Subprocesses and Depression

Thirteen percent (n = 3) of studies investigated the impact of the interaction between psychological flexibility and mindfulness-related psychological flexibility subprocesses on depressive outcomes. One study found that greater psychological flexibility attenuated the positive association between cognitive fusion (i.e., having a strong belief in the literal meaning of thoughts) and depressive symptoms (Bardeen & Fergus, 2016). There also is evidence that mindful attention (i.e., conscious attention to the present moment) buffered the impact of low levels of psychological flexibility on depressive symptoms, such that among those with greater mindful attention, high psychological flexibility was associated with relatively lower depressive symptoms compared to those with low mindful attention (Raines et al., 2018). However, there was no support for the interaction between psychological flexibility and awareness (i.e., awareness of present moment experiences), which is conceptually related to mindful attention, in predicting depressive symptoms (Long & Hayes, 2014; Masuda et al., 2020).

Discrimination and Depression

To date, only one study has tested the interactive association between psychological flexibility and discrimination on depressive outcomes. Martinez and

colleagues (2020) demonstrated that lower psychological flexibility moderated the relationship between frequency of racial discrimination and depressive symptoms among people of color. They found that among people of color with low, but not high, psychological flexibility, a greater frequency of racial discrimination was associated with higher depressive symptoms. However, psychological flexibility was not supported as a moderator of the association between the appraised stressfulness of the discrimination experiences and depressive symptoms.

Stress and Depression

Twenty-five percent (n = 6) of studies considered the interaction between psychological flexibility and stress on depressive symptoms. There is mixed support for psychological flexibility as a moderator of the association between stress and depressive outcomes. A few studies (n = 3) found support for the moderating role of psychological flexibility. For example, higher levels of psychological flexibility had a buffering effect on the impact between the frequency and appraised stressfulness of major life events (e.g., marriage, serious illness, being robbed) on depressive symptoms (Fonseca et al., 2020). Likewise, greater psychological flexibility also attenuated the negative effects of the number of life-threatening experiences and daily stressors on depressive symptoms (Gloster et al., 2017). In a recent investigation, Pakenham and colleagues (2020) also found support for the protective role of greater psychological flexibility in the association between COVID-19 related stress and depressive symptoms. Conversely, other studies (n = 3) failed to find support for the moderating role of psychological flexibility. For example, psychological flexibility failed to moderate the association between

acculturative stress (Zvolensky et al., 2016), interpersonal stress (Kato, 2016a), and war-zone stress (Cobb et al., 2017) on depressive outcomes.

Interpersonal Factors and Depression

Thirteen percent (n = 3) of studies examined whether psychological flexibility and interpersonal factors interacted to predict depressive outcomes. Recent findings suggest that higher levels of psychological flexibility were protective against the depressogenic impact of social isolation during the COVID-19 pandemic (Smith et al., 2020). Similarly, greater psychological flexibility attenuated the relationship between lower social support and higher depressive symptoms (Gloster et al., 2017). Finally, (Marroquín et al., 2019) found that lower psychological flexibility amplified the association between low levels of social connectedness and greater depressive symptoms cross-sectionally, but not prospectively.

Other

Psychological flexibility also was tested as a moderator of the association between other predictor variables (n = 5) and depressive outcomes. In an experimental paradigm, Gird and Zettle (2009) found that although there was no difference in dysphoric mood following a mood induction procedure, those with lower (versus higher) psychological flexibility reported significantly more psychological distress in response to the mood induction. These findings suggest that psychological flexibility moderates the association between changes in mood and reactive distress. Another study also demonstrates that lower psychological flexibility amplifies the association between lower self-reported health and greater depressive symptoms among elderly adults (Andrew & Dulin, 2007). However, several (n = 3) non-significant interactions involving

psychological flexibility were reported. For example, psychological flexibility did not moderate the impact of trait health anxiety (Landi et al., 2020), watching pornography (Levin et al., 2012), and spiritual struggles (Dworsky et al., 2016) on depressive outcomes.

Psychological Flexibility as a Mechanism of Change

Thirteen percent (n = 21) of included studies examined psychological flexibility as the mechanism of change in an intervention. Unless otherwise indicated, the percentages reported in this section refer to the proportion of studies that examined psychological flexibility as a mechanism of change and are not meant to convey the proportion of studies out of all studies included in the present review.

Acceptance and Commitment Therapy

As expected, given that ACT aims to increase psychological flexibility, 65% (n = 13) of studies tested that hypothesis and examined whether psychological flexibility is a mechanism of change in ACT therapies and interventions. Research demonstrates that psychological flexibility is a mechanism of change in traditional ACT administered in both individual (A-Tjak et al., 2021; Forman et al., 2007) and group (Ostergaard et al., 2020) formats. Kohtala and colleagues (2015) found that changes in psychological flexibility were significantly correlated with changes in depressive symptoms during a brief four-session ACT intervention. Similarly, Keinonen and Lappalaine (2020) also found that early increases in psychological flexibility predicted decreased depression after a brief six-session ACT intervention. There also was evidence that changes in psychological flexibility during a six-hour ACT workshop mediated changes in

depressive symptoms between prior to the workshop and approximately nine weeks later (Yadavaia et al., 2014).

In addition to these ACT therapies, a number of studies also explored whether psychological flexibility was a mechanism of change in ACT self-help programs. Levin and colleagues (2015) found that psychological flexibility was a significant mechanism of change in a three-lesson self-help ACT add-on (ACT on College Life) that was tested in conjunction with regular therapy at a college counseling center . Changes in psychological flexibility also were significantly related to depressive symptoms at post-intervention and one-month follow-up when the ACT on College self-help program was tested as a three-week standalone program (Levin et al., 2016). Two other studies examining web-based ACT self-help programs also demonstrated that psychological flexibility was a significant mechanism of change (Fiorillo et al., 2017; Pots et al., 2016).

Of note, psychological flexibility was not supported as a mechanism of change in all studies examining ACT therapies and interventions. Specifically, among studies (n = 2) investigating a hybrid (i.e., online self-help program supplemented with a coach) model, changes in psychological flexibility did not mediate changes in depressive symptoms (Rasanen et al., 2020; Sairanen et al., 2020). Conversely, however, Fleudderus and colleagues (2013) found that increases in psychological flexibility did significantly mediate the effect of a web-based ACT self-help program with email support on decreases in depressive symptoms.

Mindfulness-Based Therapy

Ten percent of studies (n = 2) explored psychological flexibility as a mechanism of change in mindfulness-based therapies (n = 1) and interventions (n = 1). Pots and

colleagues (2014) found that mindfulness-based cognitive therapy (MBCT) was significantly more effective at reducing depressive symptoms than the waitlist, in part because individuals in the MBCT condition experienced significant increases in psychological flexibility, which, in turn, predicted decreased depressive symptoms. Likewise, findings support psychological flexibility as a mechanism of change underlying the decreases in depressive symptoms following a six-week mindfulness-based group intervention (Duarte & Pinto-Gouveia, 2017).

Cognitive-Behavioral Therapy

Twenty percent (n = 4) of studies assessed whether psychological flexibility served as a mechanism of change in cognitive behavior therapy (CBT). The existing body of literature is mixed on whether or not psychological flexibility is a significant mechanism of change in CBT. For example, two studies failed to find a significant relationship between changes in psychological flexibility and changes in depressive symptoms during CBT (A-Tjak et al., 2021; Forman et al., 2007). Similarly, Fonseca and colleagues (2019) found that psychological flexibility was not a significant mechanism of change in their web-based CBT intervention aimed at preventing postpartum depression. However, Yasinski and colleagues (2020) found that during the course of CBT, changes in psychological flexibility prior to a sudden gain predicted lower depressive symptoms at the one-year follow-up.

Psychedelics

Fourteen percent (n = 3) of studies examined psychological flexibility as a mechanism of change in psychedelic experiences. Given that psychedelics (e.g., psilocybin, ibogaine, 5-MeO-DMT, lysergic acid diethylamide) are presently categorized

by the Drug Enforcement Administration as Schedule I substances, there is limited ability to rigorously investigate psychedelic-assisted therapies. Preliminary evidence supports psychological flexibility as a mechanism of action in psychedelic experiences. In a retroactive, "then-test" study design involving veterans who participated in a psychedelic clinical program in Mexico, before-to-after increases in reported psychological flexibility were significantly correlated with before-to-after decreases in reported depressive symptoms (Davis et al., 2020). A similar pattern was demonstrated in a prospective cohort design assessing individuals who had plans to take a psychedelic drug (Close et al., 2020). Furthermore, among adults who had plans to take a psychedelic drug, changes in psychological flexibility were associated with changes in depressive symptoms at two and four weeks after the psychedelic experience (Zeifman et al., 2020).

Other

Psychological flexibility also was tested as a mechanism of change in a study examining the efficacy of the Unified Protocol (n = 1). In this study, Khakpoor and colleagues (2019) found that changes in experiential avoidance were significantly correlated with changes in depressive symptoms.

Discussion

Summary of Findings

A substantial and rapidly growing literature has examined the role of psychological flexibility, operationalized specifically as the concept derived from ACT (Hayes, Strosahl, Bunting, et al., 2004) and Relational Frame Theory (Barnes-Holmes & Roche, 2001), in depression. This systematic review sought to evaluate and synthesize the literature investigating four primary roles of psychological flexibility in depression:

psychological flexibility as a correlate, psychological flexibility as a mediator, psychological flexibility as a moderator, and psychological flexibility as a mechanism of change. Overall, the extant studies highlight the importance of psychological flexibility in depression.

Lower psychological flexibility is consistently associated with greater depressive outcomes. The magnitude of these associations ranges from $r = 0.01$ to $r = 0.83$, with a mean of $r = 0.55$, indicating a moderate-to-large effect between psychological flexibility and depressive outcomes. Furthermore, in the literature to date, only three studies have failed to find this significant association (Barajas & Garra, 2016; Kashdan et al., 2010; Moyer et al., 2018).

Psychological flexibility also emerged as a significant mediator of the associations between known risk (and resilience) factors and depressive outcomes. A general pattern for risk factors was noted, such that greater levels of the risk factor were associated with lower psychological flexibility, which, in turn, was associated with increased depressive symptoms. This pattern was supported in the majority of studies examining cognitive vulnerabilities (for an exception, see Cookson et al., 2020), including rumination (e.g., Eisma et al., 2013), depressogenic schemas (e.g., Ruiz & Odriozola-Gonzalez, 2015; Ruiz & Odriozola-González, 2016), dysfunctional beliefs (e.g., Sung et al., 2020), cognitive flexibility (Palm & Follette, 2010), emotional clarity (Marroquín et al., 2019), reward processing and valuation (Levin et al., 2018), and self-regulation (Berzonsky & Kinney, 2019). Similarly, this general pattern was demonstrated in several studies investigating personality vulnerabilities (for an exception, see Moran & McHugh, 2019), such as neuroticism (e.g., Spinhoven et al., 2016), perfectionism (e.g.,

Moroz & Dunkley, 2019), and personality and identity types (e.g., Elliott et al., 2015). Additionally, the general pattern also was found in studies assessing the impacts of shame (e.g., Dinis et al., 2015), discrimination (e.g., Bhambhani et al., 2020), and stress (Makriyianis et al., 2019) on depressive outcomes. With regard to resilience factors, a study investigating self-compassion demonstrated a significant resilience pattern, such that greater self-compassion was associated with greater psychological flexibility, which, in turn, predicted lower depressive symptoms (Bakker et al., 2018). Taken together, this body of research suggests that psychological flexibility may be a higher-order process through which lower-order factors confer risk or resilience for depressogenic outcomes.

Studies testing the moderating role of psychological flexibility provide some evidence that lower psychological flexibility amplifies the associations between risk factors and depression, whereas greater psychological flexibility attenuates those associations. However, there are notable exceptions to this pattern. Research suggests that lower psychological flexibility strengthens the association between learned helplessness and depression (Trindade et al., 2020), but does not strengthen the association between other cognitive vulnerabilities, such as anxiety sensitivity (Bardeen et al., 2013) and rumination (Morina, 2011), and depressive outcomes. Further, whereas lower psychological flexibility amplified the association between negative beliefs regarding emotion regulation abilities and greater depressive outcomes (Fergus et al., 2013), it also strengthened the protective impact of reappraisal (an adaptive regulation strategy) on depressive outcomes (McMahon & Naragon-Gainey, 2018). The amplifying and attenuating roles of psychological flexibility were partially supported among studies examining the impact of mindfulness-related psychological flexibility subprocesses on

depression. For example, greater psychological flexibility attenuated the positive association between cognitive fusion and depressive outcomes (Bardeen & Fergus, 2016), but did not significantly interact with awareness (e.g., Masuda et al., 2020). There was evidence of the amplifying role of lower psychological flexibility in the sole study examining discrimination (Martinez et al., 2020). However, the findings examining the impact of stress on depression were mixed—half of the studies found higher psychological flexibility to be protective against the depressogenic effects of stress (e.g., Fonseca et al., 2020), whereas the other half of studies failed to find a significant interaction (e.g., Cobb et al., 2017). There was consistent support for the protective role of greater psychological flexibility on the impact of interpersonal factors, such as social isolation (Smith et al., 2020), lower social support (Gloster et al., 2017), and lower levels of social connectedness (Marroquín et al., 2019), on depressive symptoms. Overall, these findings are broadly consistent with the Psychological Flexibility Model (Hayes et al., 2006; Hayes et al., 2011) in demonstrating that pain (i.e., discrimination, stress, social isolation) does not inherently lead to suffering (i.e., depressive outcomes); rather low psychological flexibility in the context of pain is ultimately the risk factor for psychopathology.

Furthermore, in line with the Psychological Flexibility Model (Hayes et al., 2006; Hayes et al., 2011), the extant literature supports psychological flexibility as a mechanism of change within various interventions. Given that the goal of ACT is to increase psychological flexibility, the majority of studies in the existing literature investigated ACT, and most demonstrated that psychological flexibility was a significant mechanism of change within these therapies and interventions (e.g., A-Tjak et al., 2021).

Interestingly, there was a consistent lack of support for psychological flexibility as a mechanism of change in studies that investigated ACT delivered in a hybrid model involving online modules and a "coach" (e.g., Rasanen et al., 2020). However, ACT was not the only intervention for which psychological flexibility emerged as a significant mechanism of change. Findings suggest that psychological flexibility was a significant mechanism of change in mindfulness-based therapies (Pots et al., 2014), psychedelic experiences (e.g., Davis et al., 2020), and the Unified Protocol (Khakpoor et al., 2019). Findings were mixed in studies investigating cognitive behavioral therapy, although most of the research failed to find support for psychological flexibility as a mechanism of change (e.g., Forman et al., 2007; for an exception, see Yasinski et al., 2020).

Limitations and Future Directions

Although the existing literature substantiated the critical role of psychological flexibility in depression, these findings must be interpreted in the context of several notable limitations. Highlighting the limitations in the current research is crucial for guiding future studies.

Measurement of Psychological Flexibility

The overwhelming majority of articles in the present review measured psychological flexibility using a version of the AAQ (Bond et al., 2011; Hayes, Strosahl, Wilson, et al., 2004). This is problematic for several reasons (for a review, see Cherry et al., 2021). First, as noted by Cherry and colleagues (2021), several concerns have been raised regarding the psychometric properties of the AAQ. Second, although the AAQ was originally designed to measure the specific process of experiential avoidance (Hayes, Strosahl, Wilson, et al., 2004), which is the process that is the opposite of acceptance, it

has come to be used in the present literature as a general measure of psychological (in)flexibility. Thus, most research purporting to examine psychological flexibility or psychological inflexibility actually only is measuring one of the six processes that comprise psychological flexibility. However, as noted by the founders of ACT, "[i]ndividual ACT processes do not make sense disconnected from the others in the overall model—any more than the double helix of DNA makes sense without pairs of nucleotides" (Hayes et al., 2011, p. 97). Third, in addition to the need to measure reliably and validly each of the six component processes of psychological flexibility, research should aim to uncover which of these six processes are most important for the observed associations between psychological flexibility and depression or whether all six truly combine together (e.g., Landi et al., 2020; Makriyianis et al., 2019; Ostergaard et al., 2020; Peltz et al., 2020). Fourth, the current use of the AAQ interprets psychological flexibility and psychological inflexibility as existing on the same spectrum. However, in the present review, studies that utilized measures that assessed psychological flexibility and psychological inflexibility separately (e.g., MPFI) did not always find the same pattern of results for both psychological flexibility and psychological inflexibility (e.g., Makriyianis et al., 2019). These findings are consistent with current arguments against conceptualizing general rigidity and general flexibility as part of the same continuum (e.g., Kashdan & Rottenberg, 2010; Morris & Mansell, 2018). Thus, future research must aim to replicate the existing findings using multidimensional measures of psychological flexibility and inflexibility (e.g., MPFI).

Sample Demographics

The prototypical participant in the reviewed literature was a white female in her thirties. The lack of heterogeneity, both within and among, samples limit the ability to generalize the extant findings to males, racial and ethnic minorities, and individuals in other developmental stages (e.g., childhood, adolescence, emerging adulthood, late adulthood). Among the few studies examining the role of psychological flexibility within other specific populations, including males (e.g., Spendelow & Joubert, 2018), transgender and gender-nonconforming individuals (Lloyd et al., 2019), racial and ethnic minority individuals (e.g., Mendoza et al., 2016; Mendoza et al., 2018), LGBT+ individuals (e.g., Leleux-Labarge et al., 2015), children (Epkins, 2015), adolescents (e.g., Moyer & Sandoz, 2014), emerging adults (Moran & McHugh, 2019), older adults (Fernandez-Fernandez et al., 2020), there is preliminary evidence of the important role of psychological flexibility in depression. Given these promising early findings, further work should continue to examine the role of psychological flexibility among more diverse samples.

Cross-Sectional Study Designs

The current body of literature primarily is comprised of cross-sectional studies. Overall, because the predictor and outcome variables were measured at the same time, cross-sectional studies limited the ability to make predictive or causal claims due to the lack of temporal precedence. In the present review, it is essential to recognize the inherent limitations of cross-sectional studies when interpreting studies examining psychological flexibility as a mediator. To rigorously examine psychological flexibility as a mediator of the association between a predictor variable and depressive outcomes, a

three-wave study (the predictor measured at wave one, psychological flexibility measured at wave two, and depressive outcomes measured at wave three) is the gold standard methodology. Therefore, future research needs to use methods that establish temporal precedence when examining psychological flexibility as a mechanism of the prospective relationship between risk (and resilience) factors and depressive outcomes. Replication studies are needed to confirm that psychological flexibility truly mediates the associations established in the present cross-sectional research.

Clinical Samples

Although the Psychological Flexibility Model extends to general human functioning and adaptability (Hayes et al., 2006; Hayes et al., 2011), in order to understand the role of psychological flexibility in depression, the hypotheses need to be tested within clinical samples. Unfortunately, most of the existing research includes community samples and focuses on depressive symptoms rather than diagnoses. Moreover, the majority of *intervention* studies described in this review also utilized community samples, which greatly limits our understanding of psychological flexibility as a mechanism of action in interventions for individuals who have clinical depression. Considering these limitations, future research must examine the role of psychological flexibility using both depressive symptomatology and diagnoses among clinically depressed individuals.

Relationship with General Flexibility

Despite the robust literature demonstrating that general inflexibility is a potent risk factor for depression (for a reivew, see Stange et al., 2017), few studies have examined the relationship between ACT-based psychological flexibility and general

measures of inflexibility, such as cognitive flexibility, affective flexibility, cardiac vagal control, explanatory flexibility, and coping flexibility. Importantly, to date, one study has examined the relationship between ACT-based psychological flexibility and cognitive flexibility (Palm & Follette, 2010). Preliminary evidence suggests that lower cognitive flexibility confers risk for increased depressive symptoms via psychological flexibility. Future research should aim to examine the relationships between ACT-based psychological flexibility and general measures of flexibility.

Conclusion

To date, there is a considerable accumulation of research on the role of psychological flexibility in depression. However, this body of knowledge has been fragmented due to the overlapping and discrepant language and theory used in relation to the term "psychological flexibility." Given that research examining psychological flexibility and depression is flourishing, the present systematic review serves the necessary role of synthesizing the existing foundation of knowledge in order to guide emerging research at this critical juncture. Although evidence supports psychological flexibility as a correlate, mediator, moderator, and mechanism of change in relation to depression, several methodological limitations hinder these interpretations of the extant literature. Thus, it is necessary for researchers to upgrade their existing methodologies and prioritize replication.

Figure 1

Flow Chart for Article Selection

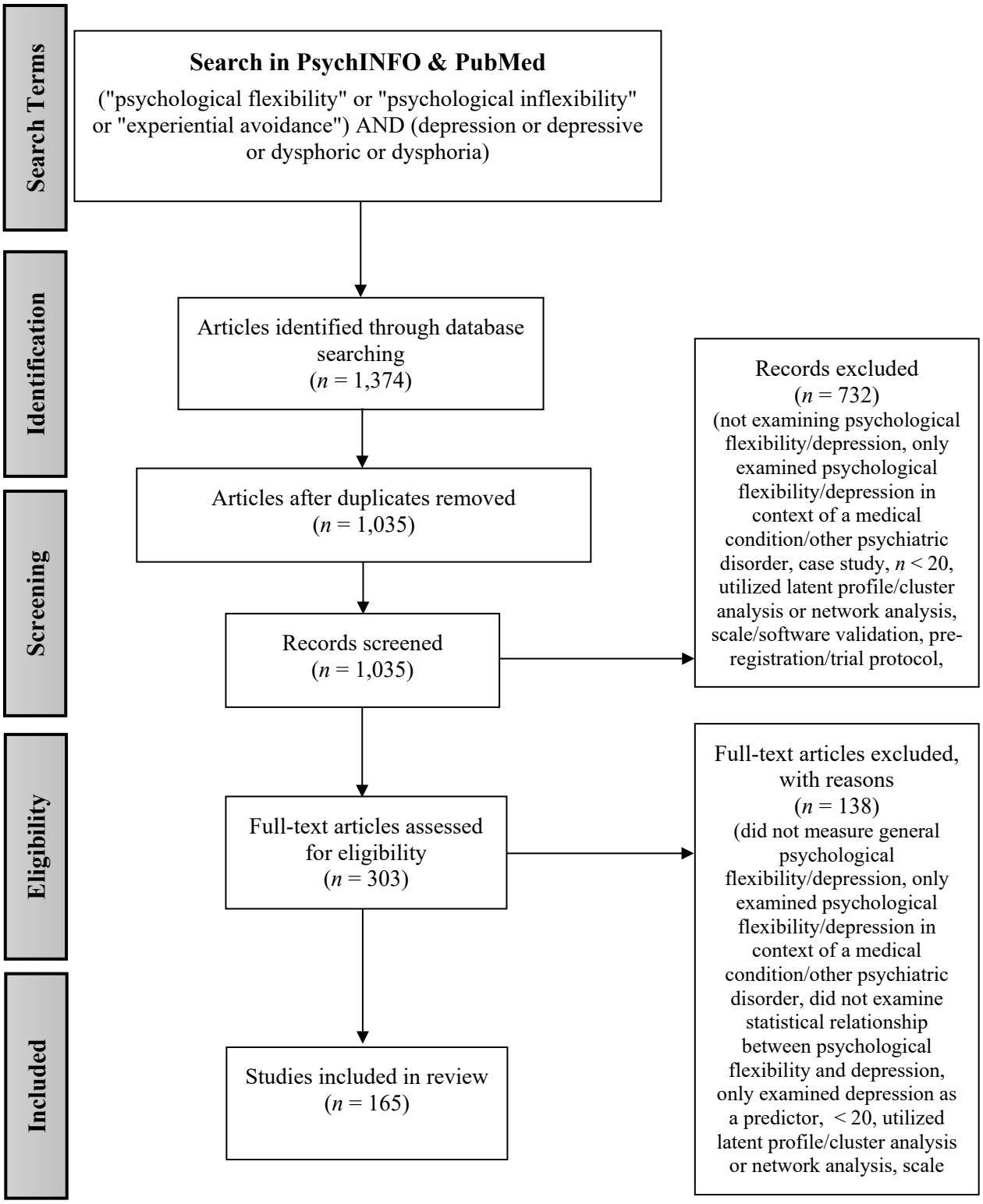

Table 17

Articles Selected for Review on the Role of Psychological Flexibility in Depression

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
A-Tjak et al. (2021)	82	Adult psychiatric outpatients	NR	NR	NR	In the ACT condition, changes in PF were associated with subsequent changes in depressive symptoms (*b*s = -0.31- -0.22). In the CBT condition, changes in PF were not associated with subsequent changes in depressive symptoms.
Andrew & Dulin (2007)	208	Adults over age 70 who live in their own home or a retirement community	NR	67.3%	New Zealand; NR	Higher PF was associated with lower depressive symptoms (r = 0.37). The interaction between PF and self-reported health was associated with depressive symptoms (β = 1.96). The impact of self-reported health on depressive symptoms increases as PF decreases.
Baker et al. (2021)	459	Police officers	42.0	15.3%	US; 64.2%	Higher PF was associated with lower depressive symptoms (r = -0.51).
Bakker et al. (2019)	100	Adults	38.6	70%	US; 80%	Higher PF was associated with lower depressive symptoms (r = 0.44). PF mediated the association between higher self-compassion and lower depressive symptoms (β = -0.10)
Barajas & Garra (2017)	200	Adult psychiatric outpatients & community adults	Adult psychiatric outpatients = 36.2; Community adults = 35.4	Adult psychiatric outpatients = 71%; Community adults = 58%	Spain; NR	Lower PF was associated with greater depressive reactivity among the patient sample (r = 0.20), but there was not a significant association among the non-patient group (r = 0.11).
Bardeen & Fergus (2016)	955	Adults	36.1	68.4%	US; 82%	Higher PF was associated with lower depressive symptoms (r = 0.74). The interaction between higher cognitive fusion and higher depressive symptoms became stranger as PF decreased from high (β = 0.07) to average (β = 0.14) to low (β = 0.21).
Bardeen et al. (2013)	838	Adults	34.1	60.5%	NR; 81.2%	Higher PF was associated with lower depressive symptoms (r = 0.75). The interaction between PF and anxiety sensitivity was not significant. The main effect of PF on depressive symptoms was significant (β = 0.63).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Barnhofer et al. (2014)	127	Adults with a history of major depressive episodes but currently in remission	Adults with a remitting depressive course = 41.2; Adults with a chronic depressive course = 44.0	Adults with a remitting depressive course = 71%; Adults with a chronic depressive course = 73%	UK; Adults with a remitting depressive course = 94%; Adults with a chronic depressive course = 96%	PF mediated the association between greater childhood emotional abuse and more persistent depressive symptoms (b = 0.02).
Berzonsky & Kinney (2019)	207	Undergraduates	20.5	63%	US; 66.8%	Higher PF was associated with lower depressive symptoms (r = 0.61). PF mediated the association between greater diffuse-avoidant identity style and higher depressive symptoms (β = 0.15). PF mediated the association between greater informational identity style and higher depressive symptoms, controlling for self-regulation (β = 0.19). PF mediated the association between lower self-regulatory resources and higher depressive symptoms (β = -0.16).
Bhambhani et al. (2020)	439	Adult men who have sex with other men	30.0	0%	US; 0%	Higher PF was associated with lower depressive symptoms (r = 0.68). PF mediated the association between greater experiences of sexual racism and higher depressive symptoms (b = 0.30). When examining racial groups separately, these results held for Black (b = 0.19), Asian (b = 0.40), and Hispanic (b = 0.47) men.
Bhuptani et al. (2019)	103	Adult women who experienced sexual assault after age 18	22.3	100%	US; 77.7%	Higher PF was associated with lower depressive symptoms (r = 0.51). PF did not mediate the association between receiving a victim-blaming response to disclosing a sexual assault and higher depressive symptoms (b = 1.33). There was a significant serial mediation of the association between receiving a victim-blaming response to disclosing a sexual assault and higher depressive symptoms via current shame and PF (b = 1.20).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Biglan et al. (2013)	42	Early Education Program staff and affiliated family consultants	NR	NR	US; NR	Higher PF was associated with lower depressive symptoms (r = -0.59).
Biglan et al. (2015)	3965	Middle school students	NR	50.3%	NR; 81.8%	Higher PF was associated with lower depressive symptoms cross-sectionally and longitudinally (rs = 0.22 – 0.71) at 6th, 7^{th,} and 8th grade.
Bird et al. (2013)	230	Undergraduates	20.0	82.6%	England; NR	Higher PF was associated with lower depressive symptoms cross-sectionally (r = 0.35) and longitudinally (r = 0.40).
Bjornsson et al. (2010)	Study 1 = 748; Study 2 = 887; Study 3 = 72	All Studies = Undergraduates	Study 1 = 18.8; Study 2 = 18.9; Study 3 = 18.8	Study 1 = 62.7%; Study 2 = 54.5%; Study 3 = 100%	US; 85.1% (across all studies)	Higher PF was associated with lower depressive symptoms in all three studies (rs = 0.55 – 0.70). The interaction between PF and rumination was associated with depressive symptoms cross-sectionally (βs = 1.20 – 3.17), but not longitudinally (β = 0.46).
Boelen et al. (2010)	82	Bereaved adults	42.5	89%	Netherlands; NR	Higher PF was associated with lower depressive symptoms at Time 1 (r = 0.68) and Time 2 (r = 0.39). PF was a significant predictor of depressive symptoms at Time 1 (β = 0.66), but not Time 2 (β = -0.10).
Bryan et al. (2015)	168	Active-duty US Air Force combat convoy operators	26.3	12.9%	US; NR	Higher PF was associated with lower depressive symptoms (r = -0.55).
Carvalho et al. (2015)	161	Staff of public institutions and private corporations	Men = 34.0; Women = 34.8	57.1%	Portugal; NR	Higher PF was associated with lower depressive symptoms (r = 0.67). PF mediated the association between greater shame experiences central to one's life story/identity and higher depressive symptoms (β = 0.25). PF mediated the association between greater recall of shame, criticism, and put-down experiences with caregivers and higher depressive symptoms (β = 0.23).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Cernvall et al. (2016)	79	Parents of children undergoing cancer treatment	NR	70%	Sweden; NR	Higher PF was associated with lower depressive symptoms (r = 0.72). PF was a significant predictor of depressive symptoms (β = 0.32).
Cheavens & Heiy (2011)	447	Undergraduates	19.4	50%	US; 72.3%	Higher PF was associated with higher depressive symptoms (r = 0.55).
Chong et al. (2017)	324	Parents of children with asthma	40.7	88.3%	Hong Kong; NR	Higher PF was associated with lower depressive symptoms (r = 0.51).
Chou et al. (2017)	500	College students	22.1	52.4%	Taiwan; NR	Higher PF was associated with lower depressive symptoms (r = 0.58).
Chou et al. (2018)	500	College students	22.1	52.4%	Taiwan; NR	PF at baseline was a significant predictor of significant depression (OR = 1.25).
Clifton et al. (2020)	307	Adults	33.0	49%	US; 78.5%	Higher PF was associated with lower depressive symptoms (r = 0.80).
Close et al. (2020)	260	Adults planning a psychedelic experience	31.7	30.8%	54 countries, including 70.8% US, 48.5% UK, 23.1% Denmark; NR	Higher PF was associated with lower depressive symptoms cross-sectionally at all time points (rs = 0.54 – 0.63). Changes in PF from baseline to two weeks after a psychedelic experience were correlated with decreases in depressive symptoms at two weeks (r = 0.31) and four weeks (r = 0.21) after the psychedelic experience.
Cobb et al. (2017)	161	US Soldiers preparing for deployment	NR	92.5%	US; 72.7% White	The interaction between PF and war-zone stressors was not associated with depressive symptoms. The main effect of PF on depressive symptoms was not significant (b = 0.31, Effect Size = 0.07).
Cookson et al. (2020)	Study 1 = 57; Study 2 = 106	Study 1 = Adult patients at primary care for mental health services; Study 2 = undergraduates	Study 1 = 42.0; Study 2 = 19.3	Study 1 = 74%; Study 2 = 87%	Study 1 = UK; 93%; Study 2 = NR; 69%	Higher PF was associated with lower depressive symptoms (r = 0.58) in the clinical sample. Higher PF was associated with lower depressive symptoms in the community sample cross-sectionally (r = 0.48) and prospectively (r = 0.32). PF did not mediate the associations between rumination and life events and depressive symptoms. There was a significant serial mediation of these associations via PF and cognitive fusion in the clinical sample (βs = 0.001-0.21). These results were replicated cross-sectionally (β = 0.002-0.06) and longitudinally (β = 0.002-0.08) in the undergraduate sample.

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Coyne & Thompson (2011)	74	Mothers of preschoolers in Head Start Programs	31.3	100%	US; 9.5%	Among mothers, higher PF was associated with lower depressive symptoms (r = 0.29).
Cribb et al. (2006)	109	Undergraduates	20.9	68.8%	Australia; 41%	Higher PF was associated with lower depressive symptoms (r = 0.53). PF was a significant predictor of depressive symptoms (β = 0.18).
Curtiss & Klemanski (2014)	151	Adults seeking treatment at mood/anxiety clinics	38.0	63.6%	US; 79.5%	Higher PF was associated with lower depressive symptoms (r = 0.72). PF was a significant predictor of depressive symptoms (β = 0.74).
Davis et al. (2020)	51	US Special Operations Forces veterans	40	4%	US; 92%	Retrospective reports of changes in PF from one month before to one month after a psychedelic experience were correlated with retrospective reports of reductions in depressive symptoms.
Dawson & Golijani-Moghaddam (2020)	555	Adults	39.2	72%	UK; 92%	Higher PF was associated with lower depressive symptoms (r = -0.63). PF was a significant predictor of depressive symptoms (β = -0.38).
Dereix-Calonge et a. (2020)	236	Undergraduates	22.9	83.1%	Columbia; NR	Higher PF at Time 1 was associated with lower depressive symptoms at Time 1 (r = 0.64) and Time 2 (r = 0.37).
Dinis et al. (2015)	181	Adults	Men = 32.3; Women = 35.0	63.5%	NR	Higher PF was associated with lower depressive symptoms (r = 0.48). PF mediated the association between more frequent early shame experiences involving caregivers and higher depressive symptoms (β = 0.08). PF mediates the association between greater perceived impact of early shame experiences and higher depressive symptoms (β = 0.07).
Duarte & Pinto-Gouveia (2017)	48	Oncology nurses	41.0	89.6%	Portugal; NR	Changes in PF mediated the impact of a mindfulness-based intervention on depressive symptoms (b = -0.42).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Dubey et al. (2020)	402	Adults	NR	37.3%	India; NR	Higher PF was associated with lower depressive symptoms (r = 0.44). PF was a significant predictor of depressive symptoms (b = -0.12).
Dworsky et al. (2016)	307	Adults endorsing spiritual struggle	NR	41.4%	NR; 67.4%	Higher PF was associated with lower depressive symptoms (r = 0.61). The interaction between PF and spiritual struggles was not associated with depressive symptoms (β = 0.03). The main effect of PF on depressive symptoms was significant (β = 0.51).
Edwards & Lowe (2021)	230	Adults	29.0	NR	UK; NR	Higher PF was associated with higher depressive symptoms (r = -0.31).
Eisenbeck et al. (2019)	442	Undergraduates	22.0	76.2%	Spain; NR	Higher PF was associated with lower depressive symptoms (r = 0.57).
Eisma et al. (2013)	282	Bereaved adults	49.9	89.7%	Netherlands; NR	Higher PF at Time 2 was associated with lower depressive symptoms at Time 3 (r = 0.60). PF at Time 2 mediated the association between greater grief rumination at Time 1 and higher depressive symptoms at Time 3 (b = 0.02).
Elliot et al. (2015)	127	Iraq/Afghanistan war veterans	37.6	18.7%	US; 63.0%	Higher PF was associated with lower depressive symptoms (r = 0.73). PF at Time 2 mediated the association between personality prototype at Time 1 and depressive symptom at Time 3 (bs = 3.21-3.57).
Ellis & Rufiano (2016)	189	Adult psychiatric inpatients	33.1	57%	US; 91.5%	Higher PF was associated with lower depressive symptoms cross-sectionally at admission (r = 0.40) and discharge (r = 0.70).
Epkins (2016)	123	Children	10.8	50.8%	NR; 67%	Higher PF was associated with lower depressive symptoms (r = 0.64).
Fergus et al. (2013)	334	Undergraduates	19.6	59.3%	US; 62.9%	Higher PF was associated with lower depressive symptoms (r = 0.59). The interaction between PF and beliefs about emotion regulation strategies was associated with depressive symptoms ($r_{partial}$ = 0.18). The impact of PF was significant at both low ($r_{partial}$ = 0.36) and high ($r_{partial}$ = 0.12) levels of PF.

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Fergus et al. (2013)	141	Adult patients in an intensive outpatient program	29.1	56.7%	NR; 92.2%	Higher PF was associated with lower depressive symptoms (r = 0.61). PF was a significant predictor of depressive symptoms $r_{partial}$ = 0.38).
Fernández-Fernández et al. (2020)	338	Older Adults	71.5	70.2%	Spain; NR	Higher PF was associated with lower depressive symptoms (r = 0.47).
Fernández-Rodríguez et al. (2018)	242	Adults	49.6	88.4%	Spain; NR	Higher PF was associated with lower depressive symptoms (r = 0.67).
Fiorillo et al. (2017)	25	Adult women with a history of unwanted sexual/physical experience	39.1	100%	NR; 76%	Higher PF was associated with higher depressive symptoms (r = 0.65). Changes in PF during a brief web-based ACT self-help program were correlated with depressive symptoms at post-treatment (r = 0.52).
Fledderus et al. (2010)	93	Adults	49.0	81.7%	Netherlands; NR	Higher PF was associated with lower depressive symptoms (r = -0.47). PF mediated the association between greater passive coping and higher depressive symptoms.
Fledderus et al. (2012)	376	Adults	42.0	70%	Netherlands; NR	Baseline PF did not interact with the intervention condition to predict depressive symptoms at post-intervention.
Fledderus et al. (2013)	376	Adults	42.0	70%	Netherlands; NR	Changes in PF mediated the impact of a web-based ACT self-help program with email support on depressive symptoms (95% CI for indirect effect = -2.93, -1.46).
Fonseca et al. (2018)	262	Postpartum women	31.8	100%	Portugal; NR	Higher PF was associated with lower depressive symptoms (r = 0.68). PF mediated the association between greater motherhood-related dysfunctional beliefs and higher depressive symptoms (β = 0.02-0.20).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Fonseca et al. (2019)	401	Adults	30.9	69.8%	Portugal; NR	Higher PF was associated with lower depressive symptoms (r = -0.57). The interaction between PF and the number of major life events was associated with depressive symptoms (β = -0.40). The interaction between PF and appraisal of major life events was associated with depressive symptoms (β = -0.48). The impact of the number of events and appraisal of events on depressive symptoms was weaker among those with high, versus medium and low, levels of PF.
Fonseca et al. (2019)	194	Postpartum women	Intervention group = 32.2; Control group = 32.9	100%	Portugal; NR	Changes in PF during a web-based CBT intervention aimed at preventing postpartum depression were not associated with change in depressive symptoms (β = 0.10).
Forman et al. (2007)	101	Patients at university counseling centers	27.9	80.2%	64.4%	Changes in PF were significantly correlated with changes in depressive symptoms for those in the ACT condition (r = 0.42) but not the cognitive therapy condition (r = 0.14).
Fowler et al. (2016)	994	Adult psychiatric inpatients	34.8	47%	US; 90%	Lower PF at admission was associated with diagnoses of bipolar disorders (β = 0.14) and depressive disorders (β = 0.23).
Fowler et al. (2017)	994	Adult psychiatric inpatients	34.8	47%	US; 90%	Lower PF was associated with more severe depressive symptoms at intake (β = 0.22), greater initial reductions in depressive symptoms during hospitalization (β = -0.06), and a greater slowing of symptom reduction over the course of treatment (β = 0.01).
Gaudiano et al. (2017)	570	Adults	34.6	64%	US; 83%	Higher PF was associated with lower depressive symptoms (r = -0.62).
Gerhart et al. (2013)	202	Undergraduates	19.5	77.2%	US; 91.6%	Higher PF was associated with lower depressive symptoms (r = 0.68).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Ghazanfari et al. (2018)	439	College students with a history of a depressive disorder diagnosis	22.5	NR	Iran; NR	Higher PF was associated with lower depressive symptoms (r = 0.62). PF mediated the association between greater childhood trauma and higher depressive symptoms (b = 0.10). PF mediated the association between greater childhood abuse and higher depressive symptoms (b = 0.19). PF mediated the association between greater childhood neglect and higher depressive symptoms (b = 0.15).
Gird & Zettle (2009)	40	University students	AAQ > 41 group = 22.2; AAQ < 26 group = 26.4	AAQ > 41 group = 70%; AAQ < 26 group = 75%	NR	The interaction between group (high vs. low PF) and experimental phase was not associated with dysphoric mood. The interaction between group and experimental phase was associated with subjective distress.
Gloster et al. (2017)	1035	Adults	45.4	50.3%	Switzerland; NR	The interaction between PF and life-threatening events was associated with depressive symptoms (b = -23.49). The interaction between PF and daily stress was associated with depressive symptoms (b = -0.70). The interaction between PF and low social support was associated with depressive symptoms (b = -0.54). In all three interactions, the impact of the risk factor on depressive symptoms was weaker among those with higher PF.
Gold et al. (2007)	74	Adult gay male sexual assault survivors	34.7	0%	US; 65.7%	Higher PF was associated with lower depressive symptoms (r = 0.49). PF mediated the association between greater internalized homophobia and greater depressive symptom severity (Sobel z = 2.60).
Gold et al. (2009)	72	Adult lesbian sexual assault survivors	33.5	100%	US; 67.1%	Higher PF was associated with lower depressive symptoms (r = 0.77).
Gold et al. (2011)	337	Adult sexual minorities	33.6	36.2%	US; 71%	Among gay men, PF did not mediate the association between greater childhood physical abuse and higher depressive symptoms. Among lesbian women, PF mediated the association between greater childhood physical abuse and higher depressive symptoms (95% CI for indirect effect = 1.52, 7.22).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Kangasnie et al. (2014)	108	Adults	43.0	79%	Finland; NR	Higher PF was associated with lower depressive symptoms (r = -0.64).
Kashdan & Breen et al. (2007)	144	Undergraduates	23.8	78.5%	US; 53.5%	Higher PF was associated with lower depressive symptoms (r = 0.59). PF mediated the association between higher materialism and higher depressive symptoms (Sobel z = 4.21).
Kashdan et al. (2009)	174	Adult civilian survivors of Kosovo War	39.5	62.1%	Kosovo; NR	Individuals with MDD reported lower PF compared to those without MDD (η^2_p = 0.30).
Kashdan et al. (2010)	148	University students	NR	75.2%	US; 69%	Higher PF at Time 1 was associated with lower depressive symptoms at Time 1 (r = 0.24) but not at Time 2 (r = 0.15).
Kato (2016a)	663	College students	19.6	56.6%	Japan; NR	Higher PF was associated with lower depressive symptoms (r = 0.60). PF was a significant predictor of depressive symptoms (β = 0.45).
Kato (2016b)	Indian sample = 300; Singaporean sample = 300; Philippine sample = 300	Adults	Indian sample = 36.0; Singaporean sample = 36.4; Philippine sample = 35.9	Indian sample = 50%; Singaporean sample = 50%; Philippine sample = 50%	India, Philippines, Singapore; NR	Higher PF was associated with lower depressive symptoms among the Indian (r = 0.65), Singaporean (r = 0.66), and Philippine (r = 0.61) sample. The interaction between PF and stress was not associated with depressive symptoms in the Indian (β = -0.11), Philippine (β = 0.18), or Singaporean (β = -0.02) samples. The main effect of PF on depressive symptoms was significant among all three samples (βs = 0.47-0.69).
Keinonen & Lappalainen (2020)	37	Community adults meeting criteria for major depressive disorder	NR	78%	Finland; NR	Early changes in depressive symptoms during an ACT intervention were correlated with early changes in PF (r = -0.32). Early changes in PF were correlated with depressive symptoms at post-treatment (r = -0.30).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Khakpoor et al. (2019)	23	Adults	Treatment group = 24.3; Control group = 26.7	Treatment group = 72.7%; Control group = 83.3%	Iran; NR	Higher PF was associated with lower depressive symptoms (r = 0.76) at pre-treatment. Changes in PF during the Unified Protocol were significant associated with changes in depressive symptoms (β = 0.76).
Kishita et al. (2020)	89	Adults caring for a family member with dementia	69.1	67%	England; NR	PF is a significant predictor of depressive symptoms (β = 0.52).
Kohtala et al. (2018)	33	Adults	49.6	82%	Finland; 100%	Higher PF was associated with lower depressive symptoms (r = -0.65). Changes in PF during a brief ACT intervention were associated with changes in depressive symptoms from pre-to-post intervention (r = -0.51).
Kroska et al. (2020)	271	Adults	33.2	80.1%	US; 79.9%	Higher PF was associated with lower depressive symptoms (r = 0.65).
Landi et al. (2020)	944	Adults	38.8	75.3%	Italy; NR	Higher PF was associated with lower depressive symptoms (r = -0.33). PF mediated the association between greater trait health anxiety and higher depressive symptoms (b = 0.03). The interaction between PF and trait health anxiety was not associated with depressive symptoms (b = -0.01).
Lappalainen, Keinonen, et al. (2021)	149	Caregivers over age 60	72.9	80.5%	Finland; NR	Higher PF was associated with lower depressive symptoms (r = 0.61).
Lappalainen, Lappalainen et al., (2021)	243	Lower secondary school students	15.3	49%	Finland; NR	Higher PF was associated with lower depressive symptoms at pre-treatment (r = 0.70). The correlation was stronger among girls (r = 0.78) than among boys (r = 0.52).
Leahy et al. (2012)	425	Adult psychotherapy patients	35.0	60.9%	NR	Higher PF was associated with lower depressive symptoms (r = -0.67). PF is a significant predictor of depressive symptoms (β = -0.32).
Leleux-Labarge et al. (2015)	100	Undergraduates who identify as sexual minorities	22.4	74%	US; 51%	Higher PF was associated with lower depressive symptoms (r = 0.73). PF mediated the association between higher self-concealment and higher depressive symptoms (β = 0.22).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Levin et al. (2012)	157	Undergraduates	20.7	0%	US; 73.2%	Higher PF was associated with lower depressive symptoms (r = 0.63). The interaction between watching pornography and PF was not associated with depressive symptoms. The main effect of PF on depressive symptoms was significant (b = 0.53).
Levin et al. (2014)	972	College freshman	18.1	62.3%	US; 70.6%	Individuals with current major depressive disorder, dysthymia, and depressive disorder NOS reported lower PF compared to controls.
Levin et al. (2015)	82	Student patients at a college counseling center	21.9	75.6%	US; 71.2%	Changes in PF during a three-lesson self-help ACT program add-on to therapy were correlated with depression at post-treatment ($r_{partial}$ = 0.39).
Levin et al. (2016)	234	Undergraduates	21.6	76.9%	US; 76.2%	Changes in PF during a three-lesson self-help ACT program were correlated with depression at post-treatment ($r_{partial}$ = 0.49) and the one-month follow-up ($r_{partial}$ = 0.26), but not the three-month follow-up, when controlling for pre-treatment depression.
Levin et al. (2018)	389	Undergraduates	20.1	67.9%	US; 95.4%	PF mediated the association between steeper delayed discounting and higher depressive symptoms (β = -0.13).
Lilly & Allen (2015)	808	9-1-1 Telecommunicators	39.8	73.6%	US; 87.9%	Higher PF was associated with lower depressive symptoms (r = 0.74).
Lily et al. (2016)	758	9-1-1 telecommunicators	39.8	73.7%	US; 88%	Higher PF was associated with lower depressive symptoms (r = 0.74).
Livheim et al. (2015)	Study 1 = 66; Study 2 = 32	All Studies = Adolescent students screened for psychosocial problems	Study 1 = 14.5; Study 2 = NR	Study 1 = 87.9%; Study 2 = 71.9%	Study 1 = Australia; NR; Study 2 = Swedish; NR	Higher PF was associated with lower depressive symptoms (r = 0.83). Higher PF was also associated with lower negative affect (r = 0.53), negative self-evaluation (r = 0.33), dysphoria (r = 0.75), and somatic symptoms (r = 0.71).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Lloyd et al. (2019)	358	Transgender and gender-nonconforming adults	34.9	18.7% identify as a "trans woman," 10.9% identify as a "woman with a trans history," 3.9% identify as a "woman"	England; 93.6%	Higher PF was associated with lower depressive symptoms cross-sectionally (*r*s = 0.73-0.75) and prospectively (*r*s = 0.60-0.67). PF at Time 2 mediated the association between greater gender-related discrimination at Time 1and higher depressive symptoms at Time 2 (95% CI for indirect effect = 0.01, 0.90).
Long & Hayes (2014)	93	K-12 Education employees	NR	90%	US; 96%	Higher PF was associated with lower depressive symptoms (*r* = -0.62). The interaction between PF and awareness was not associated with depressive symptoms at the 2-month follow-up (β = -0.01) or the 4-month follow-up (β = -0.01). The main effects of PF on depressive symptoms at the 2-month (β = -0.28) and 4-month (β = -0.24) follow-ups were significant.
Makriyianis et al. (2019)	305	Undergraduates	19.1	66.6%	US; 72.5%	Higher PF was associated with lower depressive symptoms (*r* = -0.32). Higher psychological *in*flexibility was associated with higher depressive symptoms (*r* = 0.64). Psychological *in*flexibility mediated the association between more frequent adverse childhood events and higher depressive symptoms (β = 0.14).
Markarian et al. (2019)	296	Adults	38.0	60.1%	US; 85.8%	Higher PF was associated with lower depressive symptoms (*r* = 0.70).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Marroquín et al. (2019)	187	Undergraduates	18.9	85%	US; 59.9%	Higher PF was associated with lower depressive symptoms (r = 0.67). The interaction between PF and social connectedness was associated with concurrent depressive symptoms (b = -0.01). The impact of PF on concurrent depressive symptoms was stronger among those with low (b = 0.54) versus high (b = 0.27) levels of social connectedness. The interaction between PF and social connectedness was not associated with depressive symptoms four weeks later (b = -0.01). The main effect of PF on depressive symptoms four weeks later was not significant (b = 0.10).
Martinez et al. (2020)	200	University students	22.4	73.5%	US; 0%	The interaction between PF and the frequency of racist events was associated with depressive symptoms (b = 0.51). The impact of more frequent racist events on depressive symptoms was significant at low (b = 11.40) but not high (b = -0.33) levels of PF. The interaction between PF and appraisal of racist events was not associated with depressive symptoms (b = 0.10).
Masuda & Tully (2012)	494	Undergraduates	19.6	77%	US; 40%	Higher PF was associated with lower depressive symptoms (r = -0.42). PF was a significant predictor of depressive symptoms (β = -0.32).
Masuda et al. (2014)	116	Undergraduates	19.9	67%	US; 0%	Higher PF was associated with lower depressive symptoms (r = 0.55). PF was a significant predictor of depressive symptoms (β = 0.53).
Masuda et al. (2020)	402	Undergraduates	20.3	84.3%	US; 19%	Higher PF was associated with lower depressive symptoms (r = 0.70). The interaction between PF and mindful awareness was marginally significant (β = -0.20, p = 0.051).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Matos et al. (2017)	105	Gay and heterosexual men	Gay men = 37.0; Heterosexual men = 37.8	0%	NR	Higher PF was associated with lower depressive symptoms among gay (r = -0.93) and heterosexual (r = -0.50) men. PF mediated the association between greater memories of warmth and safeness and lower depressive symptoms among gay (β = -0.36) and heterosexual (β = -0.05) men. PF mediated the association between greater centrality of shame experiences and depressive symptoms among gay (β = 0.36) and heterosexual (β = 0.06) men.
McCracken et al. (2021)	1102	Adults	36.9	75%	Sweden; NR	Higher PF was associated with lower depressive symptoms (rs = 0.65, -0.59). PF was a significant predictor of depressive symptoms (β = 0.43).
McMahon & Naragon-Gainey (2018)	109	Undergraduates	19.2	56%	US; 49.5%	Higher PF was associated with lower depressive symptoms within-person (r = 0.28) and between-person (b = 0.41). The within-person interaction between PF and reappraisal was not significantly associated with concurrent depressive symptoms. The main effect of PF on depressive symptoms was significant (b = 0.87). The between-person interaction between PF and reappraisal was depressive symptoms (b = -42.84). The impact of reappraisal on depressive symptoms was significant among those with low (b = -15.80) but not high PF.
Mellick et al. (2017)	146	Mother-daughter dyads	Daughter = 13.0; Mother = 40.1	100%	NR; Overall sample = 40.4%	Higher PF was associated with lower depressive symptoms among daughters (r = 0.70) and mothers (r = 0.76).
Mellick et al. (2019)	183	Adolescents/ Emerging adults ages 15-20	19.0	61.7%	US; 77.6%	Higher PF was associated with lower depressive symptoms cross-sectionally (rs = 0.65-0.67) and prospectively (rs = 0.53).
Mendoza, Goodnight et al. (2018)	83	Undergraduates	19.8	76%	US; 0%	Higher PF was associated with lower depressive symptoms (r = 0.51). PF mediated the association between higher self-concealment and higher depressive symptoms among Latinx individuals (b = 0.11).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Mendoza, Tully et al. (2018)	991	Undergraduates	20.9	77%	US; 39.7%	Higher PF was associated with lower depressive symptoms among White (r = 0.70), Black (r = 0.67), and Asian (r = 0.59) individuals. PF mediated the association between higher self-concealment and higher depressive symptoms among White (β = 0.20), Black = (β = 0.18), and Asian (β = 0.15) individuals. The effect sizes for the indirect effects did not significantly differ based on race.
Mohammadkhani et al. (2016)	316	University students	22.3	50.6%	Iran; NR	Higher PF was associated with lower depressive symptoms (r = -0.42). PF was a significant predictor of depressive (β = -0.21).
Monteiro et al. (2019)	185	Postpartum women	32.6	100%	NR	Higher PF was associated with lower depressive symptoms (r = -0.62).
Monteiro et al. (2021)	661	Postpartum women	32.1	100%	Portugal; NR	Higher PF was associated with the absence of postpartum symptoms (OR = 1.17).
Moore et al. (2009)	233	University students	18.9	55%	US; 63%	Higher PF was associated with lower depressive symptoms (r = -0.44). The associations are significant among men (r = -0.47) and women (r = -0.39).
Moran & McHugh (2019)	102	Emerging adults	21.0	50%	NR	Higher PF was associated with lower depressive symptoms (r = 0.63). PF did not mediate the association between a sense of defined by self-as-hierarchy and lower depressive symptoms (β = -0.10).
Morina (2007)	152	Adult Kosovar civilian war survivors	39.3	59.2%	Kosovo; NR	Higher PF was associated with lower depressive symptoms (r = 0.37).
Morina (2011)	100	Adult widowed survivors of Kosovar civilian war	50.1	100%	Kosovo; NR	Higher PF was associated with lower depressive symptoms (r = -0.42). The interaction between PF and rumination was not associated with depressive symptoms. The main effect of PF on depressive symptoms was significant (β = -0.42).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Moroz & Dunkley (2015)	210	Adults	English-speaking adults = 39.0; French-speaking adults = 40.7	English-Speaking adults = 70.8%; French-speaking adults = 60%	Canada; NR	Higher PF was associated with lower depressive symptoms among English-speaking (*r*s = 0.25-0.35) and French-speaking (*r*s = 0.45-0.55) participants. PF mediated the relationship between higher self-critical perfectionism and higher depressive symptoms (95% CI for indirect effect = 0.05, 0.10). PF did not mediate the relationship between higher self-esteem and lower depressive symptoms (95% CI for indirect effect = -0.15, 0.08).
Moroz & Dunkley (2019)	192	Adults	40.1	65.6%	Canada; 69.3%	Higher PF was associated with lower depressive symptoms cross-sectionally (*r*s = 0.47-0.65) and prospectively (*r*s = 0.45-0.55) PF at Time 2 mediated the association between higher self-critical perfectionism at Time 1 and higher anhedonic depression at Time 3 (95% CI for indirect effect = 0.04, 0.25).
Moyer & Sandoz (2015)	21	Adolescents	NR	66.7%	US; 85.7%	Higher PF was associated with lower depressive symptoms ($r = 0.54$).
Moyer et al. (2018)	29	Parents with a history of relationship violence	37.7	100%	NR; 76%	PF was not associated with depressive symptoms ($r = 0.01$).
Mullen et al. (2021)	237	Undergraduates	NR	82.3%	US; 25.7%	Higher PF was associated with lower depressive symptoms at pre-treatment ($r = 0.69$) and post-treatment ($r = 0.75$).
Naragon-Gainey & Watson (2018)	296	Psychiatric outpatients	36.7	73.9%	NR; 89%	Significant association between PF and depressive outcomes ($r = 0.48$). PF was not a significant predictor of depressive outcomes ($\beta = 0.02$).
Oliver et al. (2012)	700	University students	NR	NR	New Zealand & England; NR	Higher PF was associated with lower depressive symptoms ($r = -0.16$).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Østergaard et al. (2020)	106	Adults with a history of a depressive disorder but not currently exhibiting symptoms	40.8	75.5	Norway; NR	Monthly changes in PF during group-based ACT were associated with reductions in self-reported (b = -0.33), and clinician-rated (b = -0.13) rated depression.
Pakenham et al. (2020)	1035	Adults	37.5	79.1%	Italy; NR	Higher PF was associated with lower depressive symptoms (r = -0.39). Higher psychological *in*flexibility was associated with higher depressive symptoms (r = 0.63). The interaction between PF and COVID-19 lockdown stress was associated with depressive symptoms (b = -0.35). The interaction with psychological *in*flexibility and COVID-19 lockdown stress was associated with depressive symptoms (b = 0.34).
Palm & Follette (2011)	92	Undergraduates with a history of interpersonal victimization	24.5	100%	NR; 78.3%	Higher PF was associated with lower depressive symptoms (r = 0.56). PF mediated the relationship between greater cognitive flexibility and lower depressive symptoms (Sobel z = -3.44).
Paulus et al. (2016)	105	Adolescent psychiatric inpatients	15.3	64.8%	NR; 75.2%	Higher PF was associated with lower depressive symptoms (r = 0.72). PF mediated the association between greater neuroticism and higher depression severity (β = 0.05, K^2 = 0.06).
Peltz et al. (2020)	385	College students	21.0	81%	US; 69%	Higher PF at baseline was associated with lower depressive symptoms at baseline (r = -0.38) and two-month follow-ups (r = 0.39). Higher psychological *in*flexibility at baseline was associated with greater depressive symptoms at baseline (r = 0.58) and two-month follow-up (r = 0.60). Changes in psychological *in*flexibility mediated the relationship between changes in sleep disturbance and changes in depressive symptoms. PF was not a significant mediator.
Polusny et al. (2004)	304	Undergraduates	19.0	100%	US; 82%	Higher PF was associated with lower depressive symptoms (r = 0.51). PF mediated the association between adolescent sexual victimization and adult depressive symptoms.

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Pots et al. (2014)	151	Adults	48.0	78.1%	Netherlands; NR	Changes in PF mediated the impact of mindfulness-based cognitive therapy on depressive symptoms (β = -0.39).
Pots et al. (2016)	236	Adults	46.9	75.8%	Netherlands; NR	Changes in PF mediated the impact of ACT versus the waitlist condition on depressive symptoms (β = -1.56). PF did not mediate the impact of ACT versus the web-based expressive writing condition on depressive symptoms.
Raines et al. (2018)	326	Adults	37.8	88.9%	US; 0%	Higher PF was associated with lower depressive symptoms (r = 0.63). The interaction between PF and mindful attention was associated with depressive symptoms (β = -0.01). The association between lower PF was associated with higher depressive symptoms was stronger among those low (β = 0.91) versus high (β = 0.62) mindful attention.
Räsänen et al. (2020)	68	University students	iACT group = 24.6; Waiting list control group = 24.0	iACT group = 85%; Waiting list control group = 85.7%	NR	Changes in PF did not mediate the impact of iACT versus the waitlist condition on depressive symptoms.
Richardson & Jost (2019)	240	Undergraduates with a history of trauma	20.5	73%	NR; 75%	PF did not mediate the relationship between a greater number of early traumas and higher depressive symptoms. PF mediated the relationship between greater trauma impact and higher depressive symptoms.
Roush et al. (2019)	118	Adult psychiatric inpatients	36.2	46.6%	US; 80.5%	Higher PF was associated with lower depressive symptoms (r = 0.55).
Rueda & Valls (2016)	147	Adult psychiatric outpatients	40.2	68.7%	NR	Higher PF was associated with lower depressive symptoms (r = 0.67). PF was a significant predictor of depressive symptoms (β = 0.78).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Ruiz & Odriozola-González (2015)	289	Adults	35.4	59.5%	NR	Higher PF was associated with lower depressive symptoms cross-sectionally (*r*s = 0.50-0.57) and prospectively (*r*s = 0.39-0.46). PF at Time 2 mediated the association between greater depressogenic schemas at Time 1 and higher depressive symptoms at Time 2 (*b* = 0.02). These findings held when looking at specific aspects of the depressogenic schema, including positive metacognitive beliefs about worry (*b* = 0.05), negative metacognitive beliefs about uncontrollability and danger of worry (*b* = 0.09), and metacognitive beliefs about the need to control (*b* = 0.09).
Ruiz & Odriozola-González (2016)	210	Undergraduates	20.5	NR	Spain; NR	Higher PF was associated with lower depressive symptoms (*r* = 0.58). PF mediated the association between greater depressogenic schemas and higher depressive symptoms (*b* = 0.02, ab_{cs} = 0.09).
Sairanen et al. (2018)	75	Parents of children with chronic medical conditions	42.6	81.3%	Sweden; NR	Higher PF was associated with lower depressive symptoms (*r* =.69). PF was a significant predictor of depressive symptoms (*b* = 0.49), controlling for cognitive fusion and mindfulness.
Sairanen et al. (2020)	74	Parents of children with Type 1 Diabetes or functional disability	42.7	81%	Sweden; NR	Changes in PF from pre-to-follow-up did not mediate the impact of a hybrid ACT intervention on depressive symptoms (*b* = -0.08).
Schut & Boelen (2017)	185	Undergraduate students	21.5	88.9%	Netherlands; NR	Higher PF was associated with lower depressive symptoms cross-sectionally (*r*s = -0.51 - -0.54). PF did not predict depressive symptoms at Time 2 (β = -0.07) after controlling for Time 1 depressive symptoms, brooding, reflection, and mindfulness.
Shea & Coyne (2011)	144	Mothers of children attending preschool and Head Start Programs	32.0	100%	US; 31%	Higher PF was associated with lower depressive symptoms (*r* = 0.32).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Smith et al. (2020)	349	Adults	39.6	80.6%	US, Australia, Canada, Ireland, Norway, Sweden, UK; 89.6%	The interaction between PF and social isolation was associated with depressive symptoms (β = 0.12). The impact of social isolation on depressive symptoms stronger among those with low (β = 0.47) versus low (β = 0.22), levels of PF.
Spendelow & Joubert (2018)	120	Adults	35.6	0%	UK; NR	Higher PF was associated with lower depressive symptoms (*r* = 0.68).
Spinhoven et al. (2016)	2513	Adults	Currently depressed group = 44.8; Previously depressed group = 43.9; Health group = 43.6	Currently depressed group = 66.9%; Previously depressed group = 68.7%; Healthy group = 61.2%	Netherlands; NR	Higher PF was associated with lower depressive symptoms (*r* = 0.53). Changes in PF from Time 2 to Time 4 mediated the association between greater neuroticism at Time 2 and the presence of a depressive disorder during Time 4 through Time 6 (*b* = 0.01).
Spira et al. (2007)	28	Caregivers of individuals with cognitive and functional impairments	62.6	100%	US; 100%	Higher PF was associated with lower depressive symptoms (*r* = 0.72). PF was a significant predictor of depressive symptoms (β = 0.46).
Stein et al. (2020)	60	University students	20.7	75%	US; NR	Higher PF was associated with lower depressive symptoms (*r* = 0.56). PF mediated the association between anxiety sensitivity and depressive symptoms when assessed cross-sectionally (*b* = 0.21) but not prospectively (*b* = 0.04).
Stevens et al. (2018)	272	Adult patients in a partial hospitalization program	35.0	34%	US;69%	Higher PF was associated with lower depressive symptoms (*r* = 0.48).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Stotts et al. (2019)	328	Mothers with an infant in the NICU	26.7	100%	US; 10%	PF at the mid-point mediated the association between baseline depressive symptoms and depressive symptoms at follow-up 1 (b = 0.15) and follow-up 2 (b = 0.09).
Sung et al. (2020)	Study 1 = 100; Study 2 = 100	Study 1 = Adults with depressive disorder diagnosis; Study 2 = Community adults	Study 1 = 37.8; Study 2 = 39.5	Study 1 = 49%; Study 2 = 50%	Study 1 = South Korea; NR; Study 2 = Korea; NR	Higher PF was associated with lower depressive symptoms among depressed adults (r = 0.56) and community adults (r = 0.70). PF mediated the association between greater implicit theories of anxiety, depression, and personality and higher depressive symptoms among adults with depressive disorders (bs = 0.57-0.60) and community adults (bs = 0.34-0.76).
Tol et al. (2018)	65	Adult female refugees	Females = 35.4; Males = 33.5	38.4%	Uganda; NR	Higher PF was associated with lower depressive symptoms (r = -0.50).
Trindade et al. (2020)	84	Adults	11.1	64.3%	Portugal; NR	Higher PF was associated with lower depressive symptoms (r = -0.59). The interaction between PF and learned helplessness was associated with depressive symptoms (b = -0.01). The impact of learned helplessness on depressive symptoms was weaker among those with higher levels of PF.
Tull & Gratz (2008)	391	Undergraduates	23.7	75.7%	US; 59.9%	Higher PF was associated with lower depressive symptoms (r = 0.59). PF mediated the association between greater fear of cognitive dyscontrol and higher depressive symptoms (Sobel z = 4.99).
Tull et al. (2004)	230	Adults with a history of sexual assault and another trauma & comparison sample	Potentially traumatic event group = 26.4; Comparison sample = 21.3	Potentially traumatic event group = 100%; Comparison = 100%	US; Potentially traumatic event group = 58.1%; Comparison group = 17.1%	Higher PF was associated with lower depressive symptoms (r = 0.55) among adults with a history of sexual assault and another trauma. Correlation not reported among the comparison sample.

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Valiente et al. (2017)	138	Adult psychiatric inpatients, adults with a current depressive disorder, and community adults	Adult psychiatric inpatient group = 34.7; Current depressive disorder group = 41.3; Community adults = 35.6	Adult psychiatric inpatient group = 50%; Current depressive disorder group = 80%; Community adults = 43.1%	NR	Individuals with a current depressive disorder reported significantly less PF compared to psychiatric inpatients and community adults.
Venta et al. (2012)	111	Adolescent psychiatric inpatients	16.1	59.5%	NR; 93.7%	Adolescents with depression report significantly less PF compared to those without depression (t = -4.87).
Vine & Marroquín (2018)	Study 1 = 119; Study 2 = 245	Study 1 = Adults; Study 2 = Adults seeking psychiatric outpatient treatment	Study 1 = 19.7; Study 2 = 36.2	Study 1 = 54.6%; Study 2 = 66.1%	Study 1 = US; 56.3%; Study 2 = US; 79%	Higher PF was associated with lower depressive symptoms (r = 0.57). PF mediated the association between lower emotional clarity and higher depressive symptoms among those with very low to high, but not very high, negative affective intensity.
Webb et al. (2016)	173	Adult psychiatric outpatients	35.5	56%	US; 88%	Higher PF was associated with lower depressive symptoms at admission (r = 0.36) and discharge (r = 0.58).
Weinstock et al. (2018)	90	Adults with depressive disorder diagnosis and healthy controls	38.2	66%	US; 72%	Adults with depressive disorder diagnoses reported lower PF compared to the control group (d = 3.64).
Wenze et al. (2018)	104	Undergraduates	19.2	77.9%	US; 64%	Higher PF was associated with lower depressive symptoms (r = 0.63).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Wenze et al. (2019)	104	Undergraduates	19.2	77.9%	US; 64.4%	Higher PF was associated with lower depressive symptoms (*r*s = -0.67, 0.48). PF mediated the association between greater helicopter parenting and higher depressive symptoms (95% CI for indirect effect = 0.01, 0.33; ab_{cs} = 0.09; f^2 = 0.30). PF mediated the association between greater autonomy support and lower depressive symptoms (95% CI for indirect effect = -0.59, -0.04; ab_{cs} = 0.15; f^2 = 0.86).
Woodruff et al. (2014)	147	Undergraduates	NR	71%	US; 78%	Higher PF was associated with lower depressive symptoms (R^2 = 0.30). PF was a significant predictor of depressive symptoms ($r_{semi\text{-}partial}$ = 0.08).
Xavier et al. (2018)	776	Adolescents	14.6	52.4%	Portugal; NR	Higher PF was associated with lower depressive symptoms for males (*r* = 0.55) and females (*r* = 0.54). PF mediated the association between greater daily peer hassles and higher depressive symptoms.
Yadavaia et al. (2014)	73	Undergraduates	20.44	74%	US; 74%	Changes in PF during an ACT workshop were associated with pre-to-follow-up changes in depressive symptoms (*b* = -2.89).
Yasinski et al. (2020)	49	Adult psychiatric outpatients	50.3	71.4%	England; 100%	There was no association between PF and depressive symptoms at baseline (*r* = 0.12). Changes in PF prior to a sudden gain during CBT treatment predicted lower depressive symptoms at the one-year follow-up (β = -0.49).
Zeifman et al. (2020)	Study 1 = 104; Study 2 = 254	All Studies = Adults planning a psychedelic experience	Study 1 = 29.3; Study 2 = 41.6	Study 1 = 29.8%; Study 2 = 45.3%	All Studies = US, UK, Canada, German, Sweden, Netherlands, "Other"; Study 1 = NR; Study 2 = NR	Higher PF was associated with lower depressive symptoms (*r*s = 0.40-0.55). In Study 1, changes in PF after the psychedelic experience were associated with changes in depressive symptoms at two weeks (Spearman's rho = 0.37) and four weeks (Spearman's rho = 0.52) after the experience. In Study 2, changes in PF after the psychedelic experience were associated with changes in depressive symptoms at four weeks (Spearman's rho = 0.43) after the experience.
Zimmermann et al. (2020)	142	Undergraduates	20.1	75%	US; 63%	Higher PF at pre-treatment was associated with lower depressive symptoms at pre-treatment (*r* = 0.51) and at post-treatment (*r* = 0.56).

Table 17 (continued)

Authors and Year	*N*	Sample	Mean Age	% Female	Country & % White	Relevant Findings and Effect Sizes
Zvolensky et al. (2015)	138	Adults	38.4	86.2%	US; 0%	Higher PF was associated with lower depressive symptoms (r = 0.60). PF was a significant predictor of depressive symptoms (b = 0.56).
Zvolensky et al. (2016)	1095	College Students	21.9	78.1%	US; 0%	Higher PF was associated with lower depressive symptoms (r = 0.40). The interaction between PF and acculturative stress was not associated with depressive symptoms (β = 0.01). The main effect of PF on depressive symptoms was significant (β = 0.16).

Notes. NR = not reported in the original article; PF = psychological flexibility.

Table 18

Summary of Correlation Findings Between Psychological Flexibility and Depressive Outcomes

Authors and Year	Psychological Flexibility Measure	Depression Measure	Relationship Strength (r)
Andrew & Dulin (2007)	AAQ	GDS-SF	0.37
Baker et al. (2021)	AAQ-II*	PHQ-2	-0.51
Bakker et al. (2019)	BEAQ	BDI-II	0.44
Barajas & Garra (2017)	AAQ-II, Spanish Version	BDI-II (Depressive reactivity) = Change in BDI-II pre-to-post mood induction	0.11 – 0.20
Bardeen & Fergus (2016)	AAQ-II	DASS-21	0.74
Bardeen et al. (2013)	AAQ-II	DASS-21	0.75
Berzonsky & Kinney (2019)	AAQ-II	BDI-II	0.61
Bhambhani et al. (2020)	AAQ-II	DASS-21	0.68
Bhuptani et al. (2019)	AAQ	DASS-21	0.51
Biglan et al. (2013)	AAQ*	CES-D	-0.59
Biglan et al. (2015)	AFQ-Y	CES-D	0.22 – 0.71
Bird et al. (2013)	AAQ	DASS-21	0.36 – 0.40
Bjornsson et al. (2010)	AAQ	BDI-II	0.55 – 0.70
Boelen et al. (2010)	AAQ	SCL-D	0.39 – 0.68
Bryan et al. (2015)	AAQ-II*	PHQ-9	-0.55
Carvalho et al. (2015)	AAQ-II	DASS-42	0.67
Cernvall et al. (2016)	AAQ-II	BDI-II	0.72
Cheavens & Heiy (2011)	AAQ*	CES-D	0.55
Chong et al. (2017)	AAQ-II	DASS-21	0.51
Chou et al. (2017)	AAQ-II	SCL-90-R	0.58
Clifton et al. (2020)	AAQ-II	IDAS	0.80
Close et al. (2020)	AAQ-II	QIDS	0.54 -– 0.63
Cookson et al. (2020)	BEAQ	PHQ-9, DASS-21	0.32 – 0.58
Coyne & Thompson (2011)	AAQ	CES-D	0.29
Cribb et al. (2006)	AAQ	BDI-II	0.53
Curtiss & Klemanski (2014)	AAQ-II	BDI-II	0.72
Dawson & Golijani-Moghaddam (2020)	CompACT-8*	PHQ-9	-0.63
Dereix-Calonge et a. (2020)	AAQ-II, Spanish Version	DASS-21	0.37 – 0.64
Dinis et al. (2015)	AAQ-II, Portuguese Version	DASS-41	0.48
Dubey et al. (2020)	AAQ-II*	DASS-21	-0.44
Dworsky et al. (2016)	AAQ	PHQ	0.61
Edwards & Lowe (2021)	AAQ-II	DASS-21	-0.31
Eisenbeck et al. (2019)	AAQ-II, Spanish Version	DASS-21	0.57

Table 18 (continued)

Authors and Year	Psychological Flexibility Measure	Depression Measure	Relationship Strength (r)
Eisma et al. (2013)	AAQ-II, Dutch Version	HADS	0.60
Elliot et al. (2015)	AAQ-II	BDI-II	0.73
Ellis & Rufiano (2016)	AAQ-II	PHQ-9	0.40 – 0.70
Epkins (2016)	AFQ-Y	BDI-Y	0.64
Fergus et al. (2013)	AAQ-II	DASS-21	0.59
Fergus et al. (2013)	AAQ-II	CES-D	0.61
Fernández-Fernández et al. (2020)	AAQ, Spanish Version	CES-D	0.47
Fernández-Rodríguez et al. (2018)	BADS-Avoidance/Rumination, Spanish Version	HADS	0.67
Fiorillo et al. (2017)	AAQ-II*	DASS-21	0.65
Fledderus et al. (2010)	AAQ-II*, Dutch Version	CES-D	-0.47
Fonseca et al. (2018)	AAQ-II, Portuguese Version	EPDS	0.68
Fonseca et al. (2019)	CompACT*, Portuguese Version	DASS-21	-0.57
Gaudiano et al. (2017)	AAQ-II*	BDI-II	-0.62
Gerhart et al. (2013)	AAQ-II	CES-D	0.68
Ghazanfari et al. (2018)	AAQ-II	BDI-II	0.62
Gold et al. (2007)	AAQ	BDI-II	0.49
Gold et al. (2009)	AAQ	BDI-II	0.77
Kangasnie et a. (2014)	AAQ-II*	BDI-II	-0.64
Kashdan & Breen et al. (2007)	AAQ	BDI-II	0.59
Kashdan et al. (2010)	PF dimension of written narratives	BDI-II	0.15 – 0.24
Kato (2016a)	AAQ-II	PHQ-9	0.60
Kato (2016b)	AAQ-II	CES-D	0.61 – 0.66
Khakpoor et al. (2019)	AAQ-II, Persian Version	BDI	0.76
Kohtala et al. (2018)	AAQ-II*, Finnish Version	BDI	-0.65
Kroska et al. (2020)	AAQ-II	BDI-II	0.65
Landi et al. (2020)	MPFI (Flexibility Subscale*), Italian Version	PHQ-9	-0.33
Lappalainen, Keinonen, et al. (2021)	AAQ-II	BDI-II	0.61
Lappalainen, Lappalainen et al., (2021)	AFQ-Y	DEPS	0.70
Leahy et al. (2012)	AAQ-II*	BDI-IIR	-0.67
Leleux-Labarge et al. (2015)	AAQ-II	BSI-18	0.73
Levin et al. (2012)	AAQ-II	DASS-21	0.63
Lilly & Allen (2015)	AAQ-II	BDI-II	0.74
Lily et al. (2016)	AAQ-II	BDI-II	0.74
Livheim et al. (2015)	AFQ-Y8	RADS-2	0.83
Lloyd et al. (2019)	AAQ-II	DASS-21	0.60 – 0.75
Long & Hayes (2014)	AAQ-II*	DASS-21	-0.62
Makriyianis et al. (2019)	MPFI (Flexibility Subscale* and Inflexibility Subscale)	PHQ-8	Flexibility: -0.32 Inflexibility: 0.64

Table 18 (continued)

Authors and Year	Psychological Flexibility Measure	Depression Measure	Relationship Strength (r)
Markarian et al. (2019)	AAQ-II	BDI-II	0.70
Marroquín et al. (2019)	AAQ-II	BDI-I	0.67
Masuda & Tully (2012)	AAQ-16*	BSI-18	-0.42
Masuda et al. (2014)	AAQ-II	BSI-18	0.55
Masuda et al. (2020)	AAQ-II	BSI-18	0.70
Matos et al. (2017)	AAQ-II*	DASS-42	-0.93 – -0.50
McCracken et al. (2021)	AAQ-II; CAQ-8*, Swedish Version	PHQ-9	AAQ-II: 0.65 CAQ-8: -0.59
McMahon & Naragon-Gainey (2018)	Single item: "I tried to get rid of negative thoughts, feelings, or sensations."	IDAS	Between-person: 0.41 Within-person: 0.28
Mellick et al. (2017)	AAQ, AFQ-Y	BDI-II, MFQ	0.70 – 0.76
Mellick et al. (2019)	AAQ-II	BDI-II	0.53 – 0.67
Mendoza, Goodnight et al. (2018)	AAQ-II	BSI-18	0.51
Mendoza, Tully et al. (2018)	AAQ-II	BSI-18	0.59 – 0.70
Mohammadkhani et al. (2016)	AAQ-II*	BDI-II	-0.42
Monteiro et al. (2019)	AAQ-II*, Portuguese Version	EPDS	-0.62
Moore et al. (2019)	AAQ*	CES-D	-0.44
Moran & McHugh (2019)	AFQ-Y	DASS-21	0.63
Morina (2007)	AAQ, Albanian Version	BSI	0.37
Morina (2011)	AAQ-II*, Albanian Version	PHQ	-0.42
Moroz & Dunkley (2015)	MEAQ, French Version	BDI	0.25 – 0.55
Moroz & Dunkley (2019)	AAQ-II	MASQ	0.45 – 0.65
Moyer & Sandoz (2015)	AFQ-F	DASS-21	0.54
Moyer et al. (2018)	AAQ-II	BDI-II	0.01
Mullen et al. (2021)	AAQ-II	DASS-21	0.69 – 0.75
Naragon-Gainey & Watson (2018)	MEAQ (latent factor)	IDAS, PHQ-9, MASQ, SCID-IV, IDAS-CR (latent factor)	0.48
Oliver et al. (2012)	AAQ-II*	DASS-21	-0.16
Pakenham et al. (2020)	MPFI (Flexibility Subscale* and Inflexibility Subscale)	PHQ-9	Flexibility: -0.39 Inflexibility: 0.63
Palm & Follette (2011)	AAQ	BDI-II	0.56
Paulus et al. (2016)	AFQ-Y	BDI-II	0.72
Peltz et al. (2020)	MPFI (Flexibility Subscale* and Inflexibility Subscale)	PHQ-9	Flexibility: -0.38 – -0.39 Inflexibility:0.58 – 0.60
Polusny et al. (2004)	AAQ	BDI	0.51
Raines et al. (2018)	AAQ, Spanish Version	IDAS	0.63
Roush et al. (2019)	AAQ-II	CES-D	0.55
Rueda & Valls (2016)	AAQ-II, Spanish Version	BDI	0.67

Table 18 (continued)

Authors and Year	Psychological Flexibility Measure	Depression Measure	Relationship Strength (r)
Ruiz & Odriozola-González (2015)	AAQ-II, Spanish Version	DASS-21	0.39 – 0.57
Ruiz & Odriozola-González (2016)	AAQ-II, Spanish Version	BDI-II	0.58
Sairanen et al. (2018)	AAQ-II, Swedish Version	DASS-21	0.69
Schut & Boelen (2017)	AAQ-I*, Dutch Version	BDI-II	-0.51 – -0.54
Shea & Coyne (2011)	AAQ	DASS-21	0.32
Spendelow & Joubert (2018)	AAQ-II	DASS-42	0.68
Spinhoven et al. (2016)	AAQ, Dutch Version	IDS	0.53
Spira et al. (2007)	AAQ	CES-D	0.72
Stein et al. (2020)	AAQ	BDI-II	0.56
Stevens et al. (2018)	AAQ-II	CES-D-10	0.48
Sung et al. (2020)	AAQ-II	BDI-II	0.56 – 0.70
Tol et al. (2018)	AAQ-II*	PHQ-9	-0.50
Trindade et al. (2020)	CompACT-18*	DASS-21	-0.59
Tull & Gratz (2008)	AAQ	DASS-21	0.59
Tull et al. (2004)	AAQ	BSI-18	0.55
Vine & Marroquín (2018)	AAQ-II	MASQ	0.57
Webb et al. (2016)	AAQ-II	CES-D-10	0.36 – 0.58
Wenze et al. (2018)	6 items from MEAQ in EMA format	CES-D	0.63
Wenze et al. (2019)	AAQ-II*; BEAQ	CES-D	AAQ-II: -0.67 BEAQ: 0.48
Woodruff et al. (2014)	AAQ-II	BDI-SF	$R^2 = 0.30$
Xavier et al. (2018)	AFQ-Y	DASS-21	0.54 – 0.55
Yasinski et al. (2020)	CHANGE*	BDI-II	0.12
Zeifman et al. (2020)	BEAQ	QIDS	0.55
Zimmermann et al. (2020)	AAQ-II	PHQ-9	0.51 – 0.56
Zvolensky et al. (2015)	AAQ-II	IDAS	0.60
Zvolensky et al. (2016	MEAQ	IDAS	0.40

Note. *Higher scores indicate higher levels of psychological flexibility; AAQ = Acceptance and Action Questionnaires; AFQ-Y = Avoidance and Fusion Questionnaire for Youth; BEAQ = Brief Experiential Avoidance Questionnaires; MPFI = Multidimensional Psychological Flexibility Inventory; CompACT = Comprehensive Assessment of Acceptance and Commitment Therapy Processes; BADS = Behavioral Activation for Depression; CHANGE = Changes and Growth Experiences Scale' PFQ = Psychological Flexibility Questionnaires; GDS-SF = Geriatric Depression Scale, Short Form; PHQ-2 = Patient Health Questionnaire; BDI = Beck Depression Inventory; DASS = Depression Anxiety and Stress Scale; CES-D = Center for Epidemiological Studies—Depression, SCL = The Symptom Checklist, IDS = Inventory of Depressive Symptomatology; QIDS = Quick Inventory of Depressive Symptomatology; HADS = Hospital Anxiety and Depression Scale; EPDS = Edinburgh Postnatal Depression Scale; BSI = Brief Symptom Inventory; RADS = Reynolds Adolescent Depression Scale; MFQ = Mood and Feelings Questionnaire; IDAS = Inventory of Depression and Anxiety

Table 18 (continued)
Symptoms; MASQ = Mood and Anxiety Symptom Questionnaire; SCID = Structured Clinical Interview for DSM Disorders.

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