

Coping flexibility: Variability, fit and associations with efficacy, emotion regulation, decentering and responses to stress

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Abstract

Coping flexibility is a promising approach to understanding risk and resilience, but it has been conceptualized in various ways. The aim of this study was to test convergence of coping-related flexibility measures with other coping-related competencies (coping self-efficacy, emotion regulation, decentering) and ways of coping. Participants were 885 students ($M_{\text{age}} = 21.5$ years) who completed measures of flexibility (seven subscales), coping self-efficacy, emotion dysregulation, decentering, and ways of coping with recent interpersonal stressors. Breadth of coping was also examined, given its past use as a measure of flexibility. The seven flexibility subscales converged with each other as expected, and all were associated with greater coping-related competence, with moderate or large positive associations between the four measures of coping flexibility ability and other measures of coping-related competence. Regarding associations with ways of coping, multivariate models showed that perceived ability in coping flexibility had positive associations with engagement and negative associations with disengagement coping, but multiple situational/adaptive coping flexibility subscales were associated positively with both engagement and disengagement ways of coping. In addition, some findings were weak or counterintuitive, especially when ways of coping and breadth were considered, suggesting a need for more attention to precisely conceptualizing and appropriately measuring coping flexibility.

KEYWORDS

emotion regulation, flexibility, interpersonal stress, self-efficacy, ways of coping

The importance of adaptively coping with stress for maintaining emotional well-being is undeniable. However, the role of coping in adaptation, defined as 'constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person' (Lazarus & Folkman, 1984, p. 141), has been difficult to capture fully in research. In fact, hundreds of ways of coping—including, for example, problem-solving, support seeking, escape, positive thinking and distraction—have been studied using a variety of methodologies

(Skinner et al., 2003; Skinner & Zimmer-Gembeck, 2016). Moreover, transactional conceptualizations of stress and coping also focus on individuals' stress appraisals, which include appraisals of the reasons for and the significance and meaning of encounters with threatening or challenging events (Compas et al., 2017; Lazarus, 2000; Wright, 2020). These stress appraisals are important proximal links to coping responses, as shown in the conceptual model in Figure 1. Even more broadly, shown at the top of Figure 1, there are personal resources and vulnerabilities that impact on the stress-coping

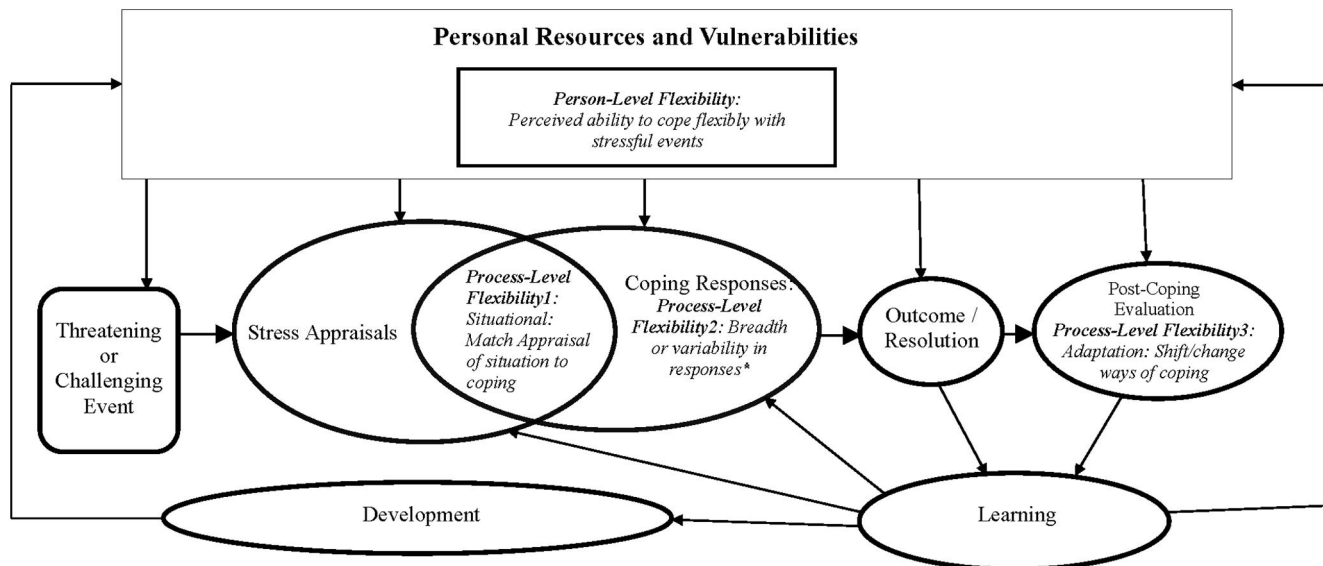


FIGURE 1 The stress and coping process involving stress appraisals of a demanding event, coping responses, initial outcomes or resolution, post-coping evaluation (e.g., re-appraisal) and, eventually, learning and development; the model is modified to identify personal-level flexibility (at the top) and three potential points of flexibility (in bold and italics) that could impact on adaptation, outcomes, and learning and development. Note: Learning and development feeds back to emotional reactions and appraisals and coping responses, and all steps in the model are influenced by a set of resource and vulnerabilities at the societal, social and personal level. * The results of this study draw attention to the lack of consistent convergence between person-level measures of flexibility and measures of breadth of ways of coping

process (Taylor & Stanton, 2007; Wadsworth, 2015). What has been added to the conceptual model in Figure 1 are the emerging views that individuals can show flexibility or inflexibility (e.g., rigidity) in responses at multiple levels, including at the person or individual level and during the process of coping with stress (Babb et al., 2010; Bonanno & Burton, 2013; Cheng et al., 2014; Kato, 2017; Keng et al., 2018; Lester et al., 1994; Wright, 2020; Zimmer-Gembeck et al., 2018). When compared to the impact of any one way of appraising or responding to a stressful event, it may be flexibility that is even more important to successful adaptation and recovery following stressful events.

Although coping flexibility is an important direction in research on risk and resilience, conceptualizations vary (Cheng et al., 2014). This variation has led to (1) a lack of clarity about how much conceptualizations converge and (2) the use of a range of self-report measures or techniques to determine coping flexibility. Thus, there is great promise in studying coping flexibility to understand human adaptation to stressful events, but there is little understanding of how measures interrelate and how they relate to other identified coping-related competencies or ways of coping with stress. Coping flexibility, regardless of how it is measured, may not be completely unique from other personal resources that can be beneficial for stress responding, and it may not always converge with what is known about how best to cope with stressful events. The primary aim of this study was to consider interrelations of existing standalone self-report measures of flexibility related to stress appraisals and coping. An additional aim was to test their associations with coping self-efficacy, emotion dysregulation, decentering and ways of coping with stress. Coping with stress was measured as engagement (i.e.,

approach) and disengagement (i.e., avoidance) coping with recent interpersonal stressors. Subscales of engagement and disengagement coping were also combined to test associations of coping breadth with flexibility, and involuntary responses to interpersonal stress were also measured.

1 | CONCEPTUALIZING COPING FLEXIBILITY

There has been a long history of describing human flexibility as an adaptive process for learning, development and well-being. For example, the dynamic systems perspective of White (1974) describes three capacities that point to flexibility as a resource at the level of the person, including the capacity to (1) *monitor and detect* threats and problems, to secure clear and accurate information, (2) *calibrate* responses without interference and overreactions (Williams, 2010) and (3) maintain *internal organization* (White, 1974). Thus, personal resources or vulnerability would allow the system to be more or less flexible and able to adapt well when stressful events occur. Classic theories of stress and coping behaviours and processes incorporate these views and also describe flexibility (e.g., Lazarus, 1993; Lazarus & Folkman, 1984). Furthermore, there are bodies of research on stress and coping flexibility (Cheng et al., 2014), cognitive flexibility (Gabrys et al., 2018; Martin & Rubin, 1995), regulatory flexibility (Bonanno & Burton, 2013) and psychological flexibility (Hayes et al., 2004; Kashdan & Rottenberg, 2010) or inflexibility (Kashdan & Rottenberg, 2010; Stange et al., 2017). Cognitive flexibility, defined as 'one's awareness that in any given situation there are alternative thoughts and behaviours that are possible, as well as the willingness

to consider these alternatives' (Palm et al., 2011, p. 81) aligns well with discussions of coping flexibility. In their meta-analyses of coping flexibility research, Cheng et al. (2014) referred to this set of conceptualizations of flexibility as *perceived ability*, defined as 'subjective appraisals of a range of skills that facilitate adjustment to situational change' (p. 1583). This person-level flexibility is noted at the top of Figure 1.

Not only can coping flexibility be defined as a person or trait ability but coping flexibility has also been measured as patterns during stress and coping processes or cycles. As stress unfolds and coping is required, the system often needs the capacity to flexibly adjust actions as coping responses fail, the situation changes, or there are other setbacks (Kato, 2012; White, 1974). This identifies flexibility as important downstream during the stress-coping process after initial outcomes or additional information is available—this flexibility could occur in the postcoping, re-evaluation process, whereby coping flexibility has been defined as a change after initial coping attempts are not having the desired outcomes (e.g., Kato, 2012; see Figure 1, Process-Level Flexibility3). One self-report measure, the Coping Flexibility Scale (CFS; Jones et al., 2019; Kato et al., 2019) includes items to assess evaluation coping and adaptive coping. The evaluation subscale includes items to assess evaluation of one's coping responses, whereas the adaptive subscale includes items to assess modifying coping responses to change or improve responses to stressful experiences. Such ideas can also be found in other literature, including in research on flexible goal adjustment (Brandtstädter & Renner, 1990), coping with trauma (Bonanno et al., 2011) and ego-resiliency (Block & Block, 1980; Kashdan & Rottenberg, 2010).

Flexible adjustment during the stress-coping process may be less necessary, however, when one has learned to initially match coping to the situational demands and can avoid rigidly responding to a particular type of stressor (Cheng, 2001; Finkelstein-Fox & Park, 2019; Wright, 2020; Zakowski et al., 2001; Zimmer-Gembeck et al., 2018). This ability to match coping to situation has been described as another form of flexibility (*strategy-situation fit*; Cheng et al., 2014; see Figure 1, Process-Level Flexibility1). Strategy-situation fit seems closely connected to the stress-coping process because it places a lens on adjustment to a stressful situation (Cheng, 2001; Cheng et al., 2014; Kashdan & Rottenberg, 2010; Schwartz & Daltroy, 1999). Research on fit tends to identify flexibility as coping that 'fits' with the perceived controllability of stressful events (Babb et al., 2010; Cheng, 2003; Cheng et al., 2012; Finkelstein-Fox et al., 2018). Following this reasoning, Finkelstein-Fox and Park (2019) conducted a diary study to measure flexibility as the fit between appraised controllability and the coping strategies used (problem-focused or emotion-focused or problem-focused vs. acceptance). They argued, as did Cheng (2001), that flexibility is relying on emotion-focused (or acceptance) coping responses for uncontrollable stressors but problem-focused coping for controllable stressors.

Others have captured flexibility using a range of stressor stimuli to assess within-person variability in appraisals, emotions and coping

across multiple stressors (e.g., Zimmer-Gembeck et al., 2016). This conceptualization of flexibility has been called *cross-situational variability* (Cheng et al., 2014; see Figure 1, Process-Level Flexibility2). Rigidity has also been considered as the antithesis to variability. To study variability or rigidity, measures of ways of coping with stressful events (e.g., problem-solving, support seeking, positive thinking) have been gathered and responses have been configured to reflect breadth in the use of coping strategies in general or across different stressful situations (a larger coping repertoire; Bonanno et al., 2020; Fresco et al., 2006; Keng et al., 2018; Lam & McBride-Chang, 2007; Lester et al., 1994; Shell et al., 2018; Zimmer-Gembeck et al., 2013, 2016). Related approaches have been referred to as the *breadth of a coping repertoire*, a *balanced profile* of coping (Cheng et al., 2014) or as *directed coping* (Wright, 2020). Given that ways of coping can be multiply determined by features of the stressful event, personal characteristics, and history and experience, it remains unclear whether breadth of coping responses (or rigidity) converge with other measures of coping flexibility (see Duhachek & Kelting, 2009).

In all conceptualizations, the core assumption is the adaptive advantage of greater coping flexibility or better fit and directed coping. These views have been supported in research. For example, in a meta-analysis of studies of coping flexibility, most approaches to measuring coping flexibility yielded at least small beneficial effects on emotional adjustment (Cheng et al., 2014). Yet, also important, there were differences in the strength of associations of different operationalization of coping flexibility with adjustment outcomes; strongest for perceived ability to cope ($r = 0.32$) and weaker for breadth of coping repertoire and variability in coping across situation ($r = 0.12$ in both). Furthermore, not all studies report significant effects. In a recent meta-analysis of studies of control-coping fit, associations with well-being were mixed (Finkelstein-Fox & Park, 2019). Overall, evidence is emerging that the conceptualization and measurement of flexibility may have an impact on study results. Thus, it is surprising that little is known about how different coping flexibility measures (which usually map onto different conceptualizations) interrelate, and how they relate to other measures of coping-related competence.

1.1 | Included measures of flexibility

The primary focus here was on standalone self-report measures of coping and cognitive (coping-related) flexibility. Four measures were included that had seven subscales: (1) the CFS (Kato, 2012), (2) the Self-Perceived Flexible Coping Scale (SFCS; Zimmer-Gembeck et al., 2018), (3) the Cognitive Control and Flexibility Questionnaire (CCFQ; Gabrys et al., 2018) and (4) the Cognitive Flexibility Scale (CogFS; Martin & Rubin, 1995), which assesses the self-perceived capacity to act when needed by making decisions or problem-solving. These measures produce seven subscales total. It is not argued here that there are clear boundaries between these subscales—instead, they are expected to converge with each other. However, to provide some order to these measures, the conceptualizations of flexibility were used as a guide to identify subscales more closely

aligned with perceived ability from those that were designed to focus more directly on the stressful situation or involved reporting about adjusting coping responses as the stress-coping process unfolds. There were four subscales that were best aligned with perceived ability. These included the self-perceived capacity to use *multiple coping strategies* from the SFCS because it captures a general self-perception of access to (rather than specific use of) multiple strategies, as well as two subscales from the CCFQ (*capacity to appraise* and for *cognitive control of emotions*) and the composite score of the *cognitive capacity to act* formed from items on the CogFS. Given the principle of generalizability of person-level competence, strong associations between these four flexibility subscales were expected.

The other three included subscales contained items that assessed the flexible use of coping responses based on the stressful situation or involved reporting about adjusting coping responses as the stress-coping process unfolds. The first two subscales were *situational coping* and *coping rigidity* from the SFCS, which both contain items that ask about variable use of coping responses across different stressful events or matching/fit between stress appraisals and coping responses. The third subscale was coping flexibility as measured by the CFS, because it is specifically designed to assess adaptability of coping as a stressor unfolds (*adaptive coping*), which aligns closely with definitions of flexibility within the stress-coping process involving appraisal, reappraisal and adjustment of coping responses. Expecting convergence, it was hypothesized that situational coping, coping rigidity and adaptive coping would have at least small associations with each other and with the four perceived ability coping flexibility subscales described in the previous paragraph.

1.2 | Flexibility and associations with coping-related competencies and ways of coping

Associations of flexibility with coping-related competencies (coping self-efficacy, emotion regulation and decentering), and with ways of coping with stress, were also expected, as consistency in individual competency in responding to stress was expected. However, it was also expected that examining these associations would reveal some differences that could be helpful for moving forward the conceptualization of flexibility and future research by highlighting the variation in associations of measures of flexibility with other coping-related competencies and ways of coping with stress (e.g., using problem-solving, positive thinking, avoidance or support seeking or breadth of coping responses).

Coping self-efficacy is the belief that one can cope effectively with stress (Chesney et al., 2006). Emotion regulation involves emotional clarity, greater acceptance of feelings, less impulsive emotional responses, access to more regulation strategies and the capacity for goal-directed behaviour when aroused (Gratz & Roemer, 2004). Decentering, sometimes described as an aspect of mindfulness (Garland & Fredrickson, 2019), is the act of disengaging from sensory, cognitive or emotional experiences to achieve a reflective distance on events or personal states (Travers-Hill

et al., 2017). In one longitudinal study examining mindful positive emotion regulation, decentering predicted broader awareness and this in turn predicted more positive stress reappraisals and subsequent positive affect (Garland et al., 2017). Each subscale of coping flexibility was expected to be associated with more coping self-efficacy, emotion regulation and decentering, given that flexibility, efficacy, regulation and decentering have all been found to be positively related to adaptation to stress and the management of associated distress (Bernstein et al., 2019; Compas et al., 2017; Golombok et al., 2020; Schäfer et al., 2016). However, it was expected that associations of person-level measures of flexibility would have the strongest associations with coping self-efficacy, emotion regulation and decentering.

Associations of measures of flexibility with ways of coping with recalled recent stressful events were also investigated, as were associations of coping flexibility subscales with coping breadth. There are many perspectives on how to measure ways of coping with stress, but most focus on capturing a range of responses that form broader categories (Skinner et al., 2003). One such model of coping differentiates voluntary (e.g., problem-solving) from involuntary (e.g., rumination) responses, highlighting the role of conscious control or the lack thereof and engagement from disengagement responses (i.e., the tendency to approach or withdraw from the stress response; Connor-Smith et al., 2000; Portello & Long, 2001). In addition, strategies are differentiated based on whether they are primary or secondary control responses. Primary control strategies act directly on the problem or stressor, whereas secondary control strategies involve attempts to adjust to the problem or stressor. In total, this model results in four subscales of voluntary ways of coping, including engagement and disengagement primary and secondary control coping, and subscales of involuntary engagement and disengagement. Research has found that flexibility (Cheng et al., 2014; Kato, 2012; Zimmer-Gembeck et al., 2018), and approach or engagement coping (Connor-Smith et al., 2000) have positive associations with well-being, whereas avoidance and disengagement coping have been associated with poorer well-being (e.g., see Compas et al., 2017; Zimmer-Gembeck & Skinner, 2016 for reviews). Thus, all subscales of flexibility were expected to be associated with more engagement coping, less disengagement coping, less involuntary response to stress and more breadth in coping responses.

1.3 | The present study

To summarize, the first aim in the present study was to examine associations between multiple standalone, multi-item measures of coping-related flexibility. There were five hypotheses. First, four identified subscales of perceived ability in coping flexibility will be strongly correlated with each other (H1). Second, the perceived ability flexibility subscales will have small associations with three other measures of coping flexibility that align less with a general ability and more with situational coping or adaptation of coping during the stress-coping process (H2). Third, flexibility measures,

especially perceived ability measures, will be associated with other coping related measures known to be of benefit or to undermine successful stress adaptation, including coping self-efficacy, emotion dysregulation and decentering (H3). Finally, all measures of coping flexibility will be associated with reports of ways of coping with recent interpersonal stress, with measures of flexibility associated with more engagement coping, less disengagement and a greater breadth in ways of coping (H4). Involuntary responses to stress were also measured and expected to have associations with less coping flexibility (H5).

2 | METHOD

2.1 | Participants

Participants were 885 university students (42% male, 57% female, 1% other; $M_{\text{age}} = 21.5$ years, $SD = 4.9$; 95% under age 30). Participants were asked to endorse all sociocultural backgrounds that applied: 67% endorsed white European; 22% Asian; 4% Australian First Peoples, Pacific Islander or Torres Strait Islander; 11% other. Living arrangements of participants included living with parents (49%), living with roommates (35%), living with a partner (13%), living alone (2%) or other (1%). Overall, 24% of participants were just starting their first year of university, 6% were in a postgraduate study program, and the remaining 70% were undergraduate students. In addition, 15% reported having done previous training in a vocational program or trade. Most participants reported that their parents were still in a relationship (69%).

2.2 | Measures

2.2.1 | Coping flexibility

Two measures of coping flexibility were included. The first was the 18-item SFCS (Zimmer-Gembeck et al., 2018). The scale includes three subscales of (1) multiple coping strategy use (MCSU; six items: e.g., 'I can come up with lots of ways to make myself feel better if I am stressed'), (2) situational coping (six items: e.g., 'Using the same coping response is not always helpful'), and (3) coping rigidity (six items: e.g., 'I have only one good way to cope with stress'). Item responses ranged from 1 (*Not at all true*) to 7 (*Totally true*). Total scores were created by averaging relevant items, so that higher scores represented more of the dimension being measured. Cronbach's α were 0.90, 0.75 and 0.71 for MCSU, situational coping and coping rigidity, respectively.

The second measure was the 10-item CFS (Kato, 2012), which taps *coping adaptation*. The items are rated on a scale from 1 (*VERY applicable to me*) to 4 (*NOT applicable to me*). Two items are negatively worded (e.g., 'I only use certain ways to cope with stress') and eight items are positively worded (e.g., 'When I haven't coped with a

stressful situation well, I use other ways to cope with that situation'). Cronbach's α was 0.82.

2.2.2 | Cognitive flexibility

Two measures of cognitive flexibility, the CCFQ (Gabrys et al., 2018) and the CogFS (Martin & Rubin, 1995), were included. The CCFQ contains nine items that form a subscale tapping the capacity for appraisal and coping flexibility (*appraisal*; e.g., 'I weigh out many options before choosing how to take action'), and nine items that tap the capacity for cognitive control over emotion (*cognitive control of emotion*, e.g., 'I find it easy to set-aside unpleasant thoughts or emotions'). Response options ranged from 1 (*Strongly disagree*) to 6 (*Strongly agree*). The CogFS measures perceived capacity to take action when needed by making decisions or problem-solving. Eight items are worded positively (e.g., 'I can communicate an idea in many different ways') and four items are worded negatively (e.g., 'I feel like I never get to make decisions'). Responses on the CCFQ and CogFS ranged from 1 (*Strongly disagree*) to 6 (*Strongly agree*). To form composite scores, items were averaged and higher scores reflected more flexibility. Cronbach's α was 0.90 for CCFQ appraisal, 0.60 for CCFQ cognitive control over emotion and 0.90 for the CogFS.

2.2.3 | Coping self-efficacy

Coping self-efficacy was measured by the 13-item Coping Self-Efficacy Scale (CSE; Chesney et al., 2006). The CSE includes items relevant to (1) problem-focused coping (six items: e.g., break an upsetting problem down into smaller parts), (2) stopping unpleasant emotions and thoughts (four items: e.g., make unpleasant thoughts go away) and (3) getting support from friends and family (three items: e.g., get friends to help you with the things you need). Response options ranged from 0 (*Cannot do at all*) to 10 (*Certain can do*). Items were averaged to create a coping self-efficacy composite score, Cronbach's $\alpha = 0.88$.

2.2.4 | Emotion dysregulation

Emotion dysregulation was measured with the 36-item Difficulties with Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS taps emotional responses (e.g., 'When I feel upset...I feel really guilty for feeling that way') difficulties engaging in goal directed behaviour (e.g., '... I have difficulties concentrating'); impulse control difficulties (e.g., '...I lose control over my behaviors'); lack of emotional awareness (e.g., '...I am attentive to me feelings', reversed); limited access to emotion regulation (e.g., '...I believe that I will end up feeling very depressed'); lack of emotional clarity (e.g., '...I have difficulty making sense out of my feelings'). Responses ranged from 1 (*Never*) to 5 (*Almost always*). Eleven items were reversed before

averaging all items to form a composite emotion dysregulation score, Cronbach's $\alpha = 0.95$.

2.2.5 | Decentering

Decentering was measured with the 11-item Experiences Questionnaire (Fresco et al., 2006; e.g., 'I can separate myself from my thoughts and feelings'), which assesses the ability to objectively witness internal experiences. Response options ranged from 1 (*Never*) to 5 (*All the time*). Items were averaged to form a decentering composite score, Cronbach's $\alpha = 0.88$.

2.2.6 | Ways of coping with stress and breadth of coping

Coping with stress was measured with the 57-item Responses to Stress Questionnaire—Social Stress (RSQ; Connor-Smith et al., 2000). The RSQ measures primary and secondary control, and engagement and disengagement coping. Primary control items assess responses aimed at changing the stressful event, whereas secondary control is focused on the self. Engagement coping involves active approach, whereas disengagement coping involves avoidance or minimization. These four categories are crossed to yield scores for used of (1) primary control engagement coping (9 items; e.g., I try to think of different ways to change or fix things), Cronbach's $\alpha = 0.77$; (2) secondary control engagement coping (11 items; e.g., I tell myself that I can get through this, or that I will be okay or do better next time), Cronbach's $\alpha = 0.76$; (3) primary control disengagement coping (6 items; e.g., I try not to feel anything), Cronbach's $\alpha = 0.64$ and (4) secondary control disengagement coping (3 items; e.g., I wish that someone would just come and take all the stress away), Cronbach's $\alpha = 0.69$. Three items were removed from the original secondary control disengagement coping to improve the α from 0.46 to 0.69; two of these tapped positive thinking and were better aligned with secondary control engagement coping, increasing the Cronbach's α from 0.71 to 0.76.

Two additional sets of items measured involuntary engagement (15 items; e.g., I can't stop thinking about how I am feeling), Cronbach's $\alpha = 0.89$; and involuntary disengagement (12 items; e.g., I don't feel anything at all, it's like I have no feelings), Cronbach's $\alpha = 0.86$. The involuntary subscales assess emotional reactivity and cognitive interference rather than coping responses.

In order to capture trait level coping as accurately as possible by limiting responses to specific stressors within a particular time frame (Todd et al., 2004), participants were first prompted to think about recent experiences of interpersonal stress (e.g., being around people who were rude or mean, having a conflict with a friend). After this, participants responded to items using a scale from 1 (*Not at all*) to 4 (*Very much*) to indicate the degree or frequency each response was enacted in response to stress. Items on subscales were averaged to create composite scores for the six subscales. After standardizing subscale scores, a sum of the four primary and secondary

engagement and disengagement standardized scores was used as an indicator of coping breadth.¹ A higher score indicated more breadth.

2.3 | Procedure

The Griffith University Human Research Ethics Committee approved the study (Ref No: 2019/178). Participants were recruited in person within common areas on the university campus (e.g., library) during the week before the first school term and in week 1 of the term. Participants completed the 20–30-min survey under the supervision of a research assistant and received a chocolate bar for participation.

2.4 | Overview of the data analyses

Hypotheses were tested using correlations and regression analyses. First, correlations between the seven subscales measuring flexibility, and correlations of flexibility with other measures were estimated. Second, 10 regression models were estimated to identify the flexibility measures that were uniquely associated with coping self-efficacy, emotion dysregulation, decentering, each of six subscales from the ways of coping measure (RSQ) and coping breadth.

3 | RESULTS

3.1 | Descriptive statistics and correlations between all measures

As expected (H1 and H2), the seven subscales of coping flexibility (with one exception—CCFQ cognitive control of emotion with situational coping) were interrelated, and each had a moderate or strong association with at least one other measure (see Table 1). The strongest association was between CCFQ appraisal and the CogFS capacity to act, $r = 0.58$. The SFCS coping rigidity subscale had the weakest associations with other subscales but was more strongly associated (negatively) with coping adaptation (CFS), $r = -0.43$.

In Table 2, associations of flexibility with coping self-efficacy, emotion dysregulation and decentering are presented. Most measures of flexibility were significantly associated with a higher level of coping self-efficacy and decentering, and were in opposition to emotion dysregulation, supporting H3. Associations of perceived ability measures of flexibility with coping self-efficacy, emotion dysregulation, and decentering were moderate or large, r 's ranged from $|0.40|$ to $|0.66|$, as were associations of CFS coping adaptation with coping self-efficacy, emotion dysregulation, and decentering, r 's ranged from $|0.32|$ to $|0.41|$. Of all measures, only two subscales from the SFCS (situational coping and coping rigidity) had relatively small and only intermittently significant associations with coping self-efficacy, emotion dysregulation and decentering.

Table 3 shows associations of flexibility with ways of coping with interpersonal stress, as well as with breadth of coping and the two

TABLE 1 Correlations between self-report coping flexibility measures (N = 875)

	1	2	3	4	5	6	7
Perceived ability							
1. SFCS: Multiple coping strategy use	–						
2. CCFQ: Appraisal	0.48***	–					
3. CCFQ: Cognitive control of emotion	0.41***	0.35***	–				
4. CogFS (capacity to act)	0.38***	0.58***	0.36***	–			
Situational/adaptation							
5. CFS: Coping adaptation	0.51***	0.41***	0.27***	0.35***	–		
6. SFCS: Situational coping	0.31***	0.27***	–0.01	0.29***	0.34***	–	
7. SFCS: Coping rigidity	–0.12**	–0.11**	–0.13**	–0.20***	–0.43***	–0.12**	–
Mean	4.15	4.25	3.52	4.24	2.61	4.70	3.66
Standard deviation	1.20	0.84	0.94	0.60	0.55	0.99	1.04
Possible range	1–7	1–6	1–6	1–6	1–4	1–7	1–7

Abbreviations: CCFQ, Cognitive Control and Flexibility Questionnaire (Gabrys et al., 2018); CFS, Coping Flexibility Scale (Kato, 2012); CogFS, Cognitive Flexibility Scale (Martin & Rubin, 1995); SFCS, Self-Perceived Flexible Coping Scale (Zimmer-Gembeck et al., 2018).

** $p < 0.01$. *** $p < 0.001$. p -values were adjusted to control for family-wise error rate using the Holm–Bonferroni method (Holm, 1979).

TABLE 2 Correlations of self-report coping-related flexibility with coping-efficacy, emotion dysregulation and decentering (N = 875)

	Coping self-efficacy	Emotion dysregulation	Decentering
Perceived ability			
SFCS: Multiple coping strategy use	0.61***	–0.42***	0.57***
CCFQ: Appraisal	0.56***	–0.40***	0.57***
CCFQ: Cognitive control of emotion	0.53***	–0.66***	0.54***
CogFS (capacity to act)	0.51***	–0.49***	0.50***
Situational/adaptation			
CFS: Coping adaptation	0.41***	–0.32***	0.34***
SFCS: Situational coping	0.20***	0.00	0.14**
SFCS: Coping rigidity	–0.07	0.24***	–0.06
Mean	5.81	2.75	3.42
Standard deviation	1.64	0.66	0.67
Possible range	0–10	1–5	1–5

Abbreviations: CCFQ, Cognitive Control and Flexibility Questionnaire (Gabrys et al., 2018); CFS, Coping Flexibility Scale (Kato, 2012); CogFS, Cognitive Flexibility Scale (Martin & Rubin, 1995); SFCS, Self-Perceived Flexible Coping Scale (Zimmer-Gembeck et al., 2018).

** $p < 0.01$. *** $p < 0.001$. p Values were adjusted to control for family-wise error rate using the Holm–Bonferroni method (Holm, 1979).

subscales of involuntary responses to stress. In general, most flexibility measures had small or moderate and significant associations with engagement, disengagement and involuntary coping responses and all of the significant correlations were in the expected directions (H4); flexibility was associated with more engagement coping, less disengagement coping and fewer involuntary responses to stress. Only two flexibility subscales were significantly associated with breadth of coping; CCFQ cognitive control of emotion was associated with *less* breadth, and situational coping was associated with *more* breadth.

3.2 | Unique associations of flexibility with other measures of competence and coping

3.2.1 | Coping self-efficacy, emotion dysregulation and decentering

When coping self-efficacy, emotion dysregulation and decentering were regressed on all measures of flexibility simultaneously, a majority of the perceived ability measures had small or moderate

TABLE 3 Correlations of self-report coping-related flexibility with ways of coping ($N = 875$)

	Way of coping				Breadth of coping	Involuntary Responses	
	Primary control engage	Secondary control engage	Primary control disengage	Secondary control disengage		Involuntary engage	Involuntary disengage
Perceived ability							
SFCS: Multiple coping strategy use	0.13	0.20***	-0.20***	-0.32***	-0.09	-0.37***	-0.31***
CCFQ: Appraisal	0.24***	0.29***	-0.20***	-0.24***	0.03	-0.26***	-0.30***
CCFQ: Cognitive control of emotion	0.03	0.19***	-0.33***	-0.48***	-0.27***	-0.59***	-0.48***
CogFS (capacity to act)	0.26***	0.24***	-0.36***	-0.35***	-0.06	-0.34***	-0.46***
Situational/adaptation							
CFS: Coping adaptation	0.24***	0.12	-0.20***	-0.21***	0.04	-0.23***	-0.28***
SFCS: Situational coping	0.22***	0.18***	-0.03	0.03	0.19***	0.03	-0.03
SFCS: Coping rigidity	-0.12	-0.04	0.19***	0.19***	0.08	0.17***	0.23***
Mean	2.67	2.68	2.25	2.38	10.23	2.38	2.18
Standard deviation	0.56	0.50	0.55	0.81	1.70	0.62	0.60

Note: The range was 1–4 for all ways of coping composite scores and 4–16 for breadth of coping.

Abbreviations: CCFQ, Cognitive Control and Flexibility Questionnaire (Gabrys et al., 2018); CFS, Coping Flexibility Scale (Kato, 2012); CogFS, Cognitive Flexibility Scale (Martin & Rubin, 1995); disengage, disengagement; engage, engagement; SFCS, Self-Perceived Flexible Coping Scale (Zimmer-Gembeck et al., 2018).

*** $p < 0.001$. p Values were adjusted to control for family-wise error rate using the Holm-Bonferonni method (Holm, 1979).

TABLE 4 Results of regressing coping self-efficacy, emotion dysregulation and decentering on measures of coping-related flexibility ($N = 875$)

Independent variables	Dependent variables		
	Coping self-efficacy, β	Emotion dysregulation, β	Decentering, β
Perceived ability			
SFCS: Multiple coping strategy use	0.32***	-0.13**	0.21***
CCFQ: Appraisal	0.18***	-0.03	0.16***
CCFQ: Cognitive control of emotion	0.26***	-0.47***	0.42***
CogFS (capacity to act)	0.19***	-0.26***	0.24***
Situational/adaptation			
CFS: Coping adaptation	0.09	-0.02	-0.02
SFCS: Situational coping	-0.02	0.15***	-0.05
SFCS: Coping rigidity	0.10**	0.11***	0.00
$F(7,867)$	155.74***	145.98***	168.55***
R^2	0.56	0.54	0.58

Abbreviations: CCFQ, Cognitive Control and Flexibility Questionnaire (Gabrys et al., 2018); CFS, Coping Flexibility Scale (Kato, 2012); CogFS, Cognitive Flexibility Scale (Martin & Rubin, 1995); disengage, disengagement; engage, engagement; SFCS, Self-Perceived Flexible Coping Scale (Zimmer-Gembeck et al., 2018).

** $p < 0.01$; *** $p < 0.001$.

significant unique associations (see Table 4). All perceived ability flexibility measures were associated with a higher level of coping self-efficacy and decentering, and all but the CCFQ appraisal subscale were significantly associated with a lower level of emotion dysregulation. For the remaining three situational/adaptation measures of flexibility, there were only three significant unique associations and in one case (coping rigidity with coping self-efficacy) the direction of the association was counterintuitive. Situational coping and coping rigidity were associated with more emotion dysregulation, and coping rigidity was associated with *more* coping self-efficacy. Although the counterintuitive association could be due to suppression (the zero-order correlation was not significant), tolerance values ranged from 0.56 to 0.80, which were not below the 0.20 or even 0.40 cut-off that has been recommended to conclude high multicollinearity (Allison, 1999).

3.2.2 | Engagement and disengagement ways of coping

Next, engagement and disengagement coping, separated by primary versus secondary control, were regressed on all measures of flexibility simultaneously (see Table 5). For engagement coping, two

measures of perceived ability and two of situational/adaptation flexibility had small significant positive associations with engagement coping, and (counterintuitively) CCFQ cognitive control of emotion was associated with *less* primary control engagement coping. Two flexibility measures, multiple coping strategy use (SFCS) and coping rigidity (SFCS), had no unique significant associations with engagement coping.

Regarding disengagement coping, three of four perceived ability measures of flexibility were significantly associated with less use of disengagement coping. Furthermore, situational coping and coping rigidity were each significantly associated with *more* disengagement coping. Two flexibility measures, CCFQ appraisal and coping adaptation measured with the CFS, had no unique significant associations with disengagement coping.

3.2.3 | Breadth of coping

Unique associations of different flexibility subscales with breadth of coping were numerous but small and sometimes counterintuitive (see Table 5). Depending on the measure, greater flexibility was associated with either more or less breadth in ways of coping.

TABLE 5 Results of regressing ways of coping subscales, breadth of coping and involuntary responses on measures of coping-related flexibility ($N = 875$)

Independent variables	Dependent variables						
	Way of coping				Involuntary responses		
	Primary control engage, β	Secondary control engage, β	Primary control disengage, β	Secondary control disengage, β	Breadth of coping, β	Involuntary engage, β	Involuntary disengage, β
Perceived ability							
SFCS: Multiple coping strategy	-0.06	-0.03	-0.03	-0.16***	-0.14**	-0.17***	-0.06
CCFQ: Appraisal	0.12**	0.17***	0.06	0.05	0.14**	0.06	0.05
CCFQ: Cog control of emotion	-0.09**	0.10	-0.21***	-0.34***	-0.25***	-0.48***	-0.33***
CogFS (capacity to act)	0.15***	0.06	-0.30***	-0.23***	-0.07	-0.16***	-0.34***
Situational/adaptation							
CFS: Coping adaptation	0.15***	0.12**	-0.03	0.03	0.13**	0.01	-0.05
SFCS: Situational coping	0.10**	0.09**	0.07	0.13***	0.18***	0.11***	0.10**
SFCS: Coping rigidity	-0.02	0.06	0.10**	0.12***	0.11**	0.08**	0.10**
$F(7,867)$	16.66***	16.23***	29.60***	54.64***	19.57**	83.35**	69.78**
R^2	0.12	0.12	0.19	0.30	0.14	0.40	0.36

Abbreviations: CCFQ, Cognitive Control and Flexibility Questionnaire (Gabrys et al., 2018); CFS, Coping Flexibility Scale (Kato, 2012); Cog, cognitive; CogFS, Cognitive Flexibility Scale (Martin & Rubin, 1995); disengage, disengagement; engage, engagement; SFCS, Self-Perceived Flexible Coping Scale (Zimmer-Gembeck et al., 2018).

** $p < 0.01$; *** $p < 0.001$.

3.2.4 | Involuntary responses to stress

The findings for involuntary responses to stress were similar to those for disengagement coping, supporting H5 (see Table 5). Three of four ability measures of flexibility were associated with fewer involuntary responses, and coping rigidity was associated with more involuntary responses. Furthermore, as found for disengagement coping, situational coping was significantly associated with *more* involuntary responses, and CCFQ appraisal and coping adaptation measured with the CFS had no unique significant associations with involuntary responses.

4 | DISCUSSION

The aims of this study were to identify multiple self-report flexibility measures to investigate their convergence with each other and to examine their associations with other coping-related competencies and ways of coping with stress. This study was based on foundational research on coping flexibility (Babb et al., 2010; Bonanno & Burton, 2013; Cheng et al., 2014; Kato, 2017; Zimmer-Gembeck et al., 2018), and upon the description of coping flexibility (Lazarus, 1993; Lazarus & Folkman, 1984) in a widely cited transactional model of stress and coping. The broad differentiation of flexibility was between (1) four measures aligned with the perception of the ability to be flexible when coping with stress and (2) three measures of stress-coping flexibility that were more aligned with the situation and adaptation during stress-coping processes. The seven flexibility subscales were expected to converge with each other and with other measures relevant to responding to stressful events including coping self-efficacy, emotion dysregulation, decentering and ways of coping with stressful events. The majority of the findings aligned with what was expected. In addition, some patterns and some weak or counterintuitive findings emerged that, when taken together, highlight the need for continued theoretical and measurement development.

4.1 | Interrelations between measures of flexibility

There was support for the hypothesis (H1) that the four subscales referred to here as measuring perceived ability in coping flexibility would be interrelated and that these ability measures of flexibility would generalize to (i.e., shape) situational coping flexibility (H2). This convergence between flexibility measures suggests a person-level capacity for flexible coping with stress that cuts across measures described as assessing the ability to use different coping strategies when needed, the capacity to appraise and respond, the ability to control emotion, and the ability to act on situations. As shown at the top of Figure 1, descriptions of capacities suggest that flexibility is a resource at the level of the person allowing the system to be more or less adaptive when stressful events occur. This ability for flexibility is argued to be person-dependent, but could also develop through

experience and be linked to the situation. Therefore, person-level flexibility was expected to generalize to the stress-coping process, including (1) the consideration and reconsideration of coping responses as a stressful event unfolds and changes (coping adaptation), (2) understanding of how to match coping responses to situational context (situational coping) and (3) low rigidity when coping with stress (coping rigidity).

The pattern of correlations between subscales measuring coping flexibility provides some support for the useful differentiation of standalone self-report measures into those that tap perceived ability and those that tap situational or adaptive flexibility. However, the pattern was not as clear as expected, and this is probably a result of relying on a cross-sectional design in this study when the stress-coping process is dynamic (see Coyne & Racioppo, 2000; Duvenage et al., 2019; Todd et al., 2004 for discussions of this issue). Nevertheless, the measures included here (as well as the findings of past research on coping flexibility; e.g., Cheng et al., 2014; Finkelstein & Fox, 2019) suggest flexibility could be of benefit during the stress-coping process after initial outcomes or additional information is available. This flexibility could occur at three locations in the stress-coping process (see Figure 1). These locations include (1) when matching coping responses to appraisals of the situation (Process-Level Flexibility1 in Figure 1; Babb et al., 2010; Cheng et al., 2012; Finkelstein-Fox et al., 2018; Gabrys et al., 2018; Schwartz & Daltroy, 1999), (2) in the range of coping responses used (over time or between stressors; Process-Level Flexibility2 in Figure 1; Lam & McBride-Chang, 2007) and (3) as adaptation related to the post-coping, re-evaluation process, whereby coping flexibility has been defined as change after initial coping attempts are not perceived to be having the outcomes desired (Process-Level Flexibility3 in Figure 1; e.g., Kato, 2012). Although a stress-coping process was not directly studied here, the present findings do provide preliminary evidence of interrelations between measures that could align to each of these nodes of flexibility. This conceptual model presented in Figure 1 and the results of the present study could prove useful for making decisions about how to conceptualize and validly measure flexibility when measures need to be selected or modified for use in more resource-intensive studies (for examples and discussion of study designs to consider stress-coping processes see Cheng, 2001; Duvenage et al., 2019; Keng et al., 2018; Todd et al., 2004; Wright et al., 2015; Zimmer-Gembeck et al., 2016).

4.2 | Associations of flexibility with other coping-related competencies and ways of coping

As hypothesized, when only correlations are considered, most measures of coping flexibility, especially perceived ability measures and coping adaptation as measured by the CFS, were associated with more coping self-efficacy, less emotion dysregulation, and more ability to decenter (H3), as well as with more engagement and less disengagement coping responses (H4), and fewer involuntary responses to stress (H5). Individuals who report more flexibility—

measured as the self-perception of greater access to multiple coping strategies, better ability to organize stress appraisals, more cognitive control over emotion and a greater capacity to act—report that they are more efficacious about coping with stress, experience less emotion dysregulation, are better able to decenter (i.e., are more meta-aware and better able to disengage from internal experience), use more engagement/approach coping responses, fewer disengagement/avoidance coping responses, and report fewer involuntary (i.e., emotionally reactive) responses to stress. Thus, there are multiple aspects of coping flexibility uniquely relevant to feeling competent to cope with stress, which are also associated with engagement or disengagement ways of coping with stressful events (as well as with involuntary responses to stress). These findings suggest that it is important to consider the multidimensionality of flexibility when assessing it in future research.

Compared to the results of the correlational analyses, patterns of associations changed some in the multivariate models—particularly for the situational/adaptation flexibility measures. Notably, most of these measures were not significantly associated with coping self-efficacy, emotion dysregulation, decentering or ways of coping in the multivariate models, and in two instances the association was in a counterintuitive direction (individuals higher in rigidity reported more efficacy, individuals higher in situational coping reported more secondary control disengagement coping). Such findings could be drawing attention to the limitations of these data for accurately assessing situational/adaptational flexibility. However, these associations also reveal the very powerful contribution of person-level conceptions of flexibility for explaining ways of coping.

4.3 | Patterns across findings and their implications for theory and research

Considering general patterns across disparate findings raises three other issues that have implications for theory and future research. The first pattern concerns CCFQ cognitive control of emotion and its relationship with other measures. Across analyses, individuals who reported more cognitive control of emotion also reported less emotion dysregulation and fewer involuntary responses to stress (which tapped emotional and stress reactivity). Such a pattern suggests that more attention is needed to consider the interface of emotional reactivity (or emotional control) with coping flexibility and ways of coping with stress. Low cognitive control of emotion could result in a wider range of life events or daily hassles feeling outside one's personal control, yielding more emotional distress and more involuntary stress responses. Techniques to downregulate impulsive or automatic highly emotional reactions—better conscious control of emotion—may be critical before teaching flexibility when responding to stress in order to shape automatic processes into a domain of control (Kashdan & Rottenberg, 2010). Decentering and mindfulness (being in the present moment while noticing personal thoughts and feelings without attempts at suppression or judgement; see Masuda et al., 2007) may be techniques to learn to shift habitual and

automatic responding to allow for more control and, relatedly, flexibility. However, these views presume that emotion control is not in itself part of flexibility or flexible coping with stress but, instead, control is a necessary precondition for more flexibility. It seems some measures of flexibility may also capture emotional reactivity or control. This may be appropriate but could result in different interpretations of the mechanism explaining why flexibility is important to better stress recovery and adjustment—for example, it may be emotional dysregulation or stress reactivity that explains the effects rather than flexibility per se. Future research could focus on whether and how to assess flexibility apart from emotional reactivity or control, so that they are not confounded in studies of stress, coping and adjustment.

Second, coping rigidity had the weakest associations with other measures of flexibility, and was not associated with coping self-efficacy or decentering (and had a counterintuitive positive association with coping self-efficacy in the multivariate model). Nevertheless, coping rigidity was moderately negatively associated with coping adaptation measured with the CFS. Although coping rigidity was conceived of as the antithesis of flexibility and adaptive ability (Zimmer-Gembeck et al., 2018), these findings did not support this view, leading to three questions to address in future research. The first question is whether it is necessary to simultaneously measure coping rigidity (or inflexibility; Stange et al., 2017) separate from flexibility. It is not possible to draw a conclusion from these findings, so future research could address this question directly. The second question is whether there are multiple forms of rigidity—put simply, good rigidity or bad rigidity—that can be defined by the type of coping response (e.g., rigidly relying on support seeking or rigidly relying on avoidance) or the 'typical' type of stressor that requires coping responses (e.g., controllable or uncontrollable) (see Wright, 2020). The third question is whether there is covariation between (1) rigidity in initial coping responses and (2) rigid resistance to adaptation and change in responding. Given the association of coping rigidity with lower coping adaptation in this study, coping rigidity as measured with the SFCS seems to only capture the latter.

Third, in the multivariate models after person-level ability flexibility was adjusted, the associations between situational/adaptation coping tended to be positively associated with all ways of coping—both those often considered constructive and those considered less constructive. Although results could be due to a statistical suppression effect, given that the zero-order correlations were the reverse or not significant in some cases, there was little evidence of problems with multicollinearity. So, an alternative explanation is that these findings show how individuals reporting more adaptation and less rigidity report using a greater diversity of ways of coping. This may occur because flexible individuals understand that stressors have different demands and all coping strategies might aid recovery or adjustment in some situations (Babb et al., 2010; Bonanno et al., 2020; Finkelstein-Fox & Park, 2019). A limitation in this study was that the exact stressful events participants were thinking of when they reported how they coped were not captured. Instead, participants were limited to reporting about ways of coping with

'interpersonal stressors' they had recently experienced, as a way to control the potential impact of stressor type on ways of coping. Although this should have given some control, this approach may not have been restrictive enough, allowing for too much variability in stressor recall across the participants (e.g., mixing acute with chronic stress). Future research could integrate measures of context or situational specificity to examine their associations with the measures included here.

The findings carried through to the results of analyses examining associations of flexibility with a composite measure of breadth of ways of coping (the total of engagement and disengagement coping), whereby participants reporting more situational/adaptation coping flexibility also reported greater breadth in their coping responses. In addition, the informative associations of different measures of ability for flexible coping with engagement versus disengagement coping (i.e., positive associations with engagement coping and negative associations with disengagement coping) were muddled when examining associations between perceived ability flexibility and breadth of ways of coping. Thus, more research is needed to consider carefully whether measures of coping breadth, variability, or balance are valid measures of coping flexibility, given that it appears from these preliminary results that breadth of coping responses may not uniformly converge with perceived ability measures of flexibility (see Figure 1, note on Process-Level Flexibility2).

4.4 | Strengths, limitations and conclusion

There is a need for future research that extends the measurement of flexibility beyond the limitations of the current cross-sectional study design and the reliance on self-reports of university students from a single urban region of Australia. Because of the cross-sectional design, all measures should be considered as reflective of person-level beliefs, traits and abilities (Todd et al., 2004). For example, even ways of coping with recent interpersonal stressors relied on retrospective recall, which can be impacted by individuals' cognitive heuristics, history and mood (Ross, 1989). Regarding the university student sample, it is known that this time of life involves a high level of academic and interpersonal stress, as well as high rates depression and anxiety (Regehr et al., 2013). Thus, although caution is needed when generalizing the findings to other populations, it is unlikely that the findings were based on a sample with a restricted range of stressful experiences or coping responses. Finally, it should be noted that a few interitem correlations for ways of coping were lower than ideal, but some were improved by removing or adding items and they were not dissimilar to interitem correlations reported in past stress-coping research (e.g., see Wright et al., 2015).

Despite the above limitations, the study findings could prove useful for the continued development of coping flexibility theory and models, and the continued development and refinement of coping flexibility measures. Overall, the flexibility measures included here covaried in expected directions despite emerging from different

conceptualizations. In addition, most converged in expected ways with other coping-related competencies and helped to explain reports of specific ways of coping with stress. Identifying these levels and types of flexibility has implications for future research by assisting with the selection of measures of flexibility that align with a particular study aim, and findings could be applied to assist with the design of studies aimed at identifying multiple nodes of flexibility when coping with stressful events. More generally, future research is encouraged that can more precisely pinpoint similarities and differences in the ways of operationalizing multiple forms of flexibility, which is emerging as important for human system adaptation, recovery, growth and resilience.

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CONFLICT OF INTEREST

The authors have declared that they have no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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ENDNOTE

¹ A coping repertoire score was also formed using the method of Duhaček and Kelting (2009, Study 1). Results are not reported here as this measure was not associated with any measure of flexibility, *r*'s ranged from -0.01 to 0.06 , and only significantly associated with three other measures; a wider repertoire was associated with more emotion dysregulation ($r = 0.09$, $p < 0.01$) and stress reactivity (*r*'s with the two involuntary responses to stress subscales were 0.10 and 0.09 , both $p < 0.01$).

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