# FROM THRILLS TO SKILLS: EXPLORING EMERGING ADULTS' NEEDS AND PREFERENCES FOR A DIGITAL EMOTION REGULATION INTERVENTION

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**Abstract**

Emotion regulation plays a critical role in the onset and exacerbation of mental health concerns in emerging adulthood. Although digital emotion regulation interventions show promise, few have been tailored to or co-created with emerging adults. To inform future co-creation of a digital emotion regulation intervention, our team conducted a needs assessment with emerging adults in post-secondary settings across Canada. Participants (*N*=1,875) completed an online survey assessing emotion regulation attitudes, beliefs, and abilities; intervention preferences; and perceived facilitators and barriers to using a digital intervention. Findings indicated that most emerging adults had a strong awareness of the impacts and importance of emotion regulation and were interested in using a daily digital intervention that included interactive content on managing emotions. Thematic analysis revealed key facilitators and barriers, including accessibility, usability, engagement, and time commitment. Findings provide guidance for co-creating an acceptable, developmentally appropriate, and feasible digital emotion regulation intervention for emerging adults.

*Keywords:* emotion regulation, mental health, digital intervention, emerging adulthood, young adults

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# From Thrills to Skills: Exploring Emerging Adults' Needs and Preferences for a Digital Emotion Regulation Tool

Emerging adulthood, ages 18–29 years, is a vulnerable developmental period (Wood et al., 2018) due to the peak onset and exacerbation of mental health disorders (Solmi et al., 2022). Emotion regulation refers to the ability to identify and manage emotions and is a critical component in the development and maintenance of mental health disorders (Sloan et al., 2017). Given that emerging adults experience among the highest rates of mental health disorders (Stephenson, 2023) and emotion regulation is a transdiagnostic factor that can protect against or worsen mental health issues (Aldao et al., 2016; Sloan et al., 2017), early intervention targeting emotion regulation is critical.

Emotion regulation interventions can be effective in improving regulation skills and abilities among those struggling to effectively manage their emotions (Saccaro et al., 2024); however, existing interventions have not been co-created (i.e., meaningful collaboration with people with lived/living experience to understand population needs, and designing and refining an intervention to better support the target population; Thabrew et al., 2018) and tailored to best meet emerging adults' needs (e.g., Eisenstadt et al., 2021; Reynard et al., 2022; Saccaro et al., 2024). To address this gap, our long-term goal is to co-create a brief, digital tool to enhance emotion regulation abilities among emerging adults. As the first step in this broader work, the current study assessed emerging adults' needs and preferences for a digital emotion regulation tool (i.e., intervention), including their attitudes towards and beliefs about emotion regulation, preferences for engaging with a digital tool, and perceptions of facilitators and barriers to using a digital emotion regulation tool.

**Emotion Regulation Strategies, Abilities, and Development**

Emotion regulation is most commonly defined as the "processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross, 1998, p. 275). Emotion regulation can occur intrapersonally or interpersonally. Intrapersonal emotion regulation refers to an individual's internal processes for regulating emotions, while interpersonal emotion regulation describes how individuals use interactions with others to regulate emotions (Marroquín et al., 2017).

Three key theoretical models and frameworks inform researchers' and clinicians' understanding of emotion regulation: the Process Model (intrapersonal emotion regulation; Gross, 1998), the Abilities Framework (intrapersonal emotion regulation; Tull & Aldao, 2015), and the Interpersonal Emotion Regulation Framework (Zaki & Williams, 2013). The process model describes five general strategies to regulate an emotion: 1) situation selection; 2) situation modification; 3) attentional deployment; 4) cognitive change; and 5) response modulation (Gross, 1998). Each general strategy serves as an opportunity to regulate emotions and encompasses specific, well-recognized strategies (Naragon-Gainey et al., 2017). For instance, within attentional deployment, individuals may engage in rumination or mindfulness, while cognitive change includes reappraisal and acceptance (Naragon-Gainey et al., 2017).

The emotion regulation abilities framework complements the process model by focusing on an individual's abilities, situational goals, and the demands of a situation. The earliest abilities-based framework was developed by Thompson (1994), who suggested that the intensity and duration of emotions experienced can be modified, and emotion responses should be flexible, relevant to the situation, and goal-oriented. The Tull and Aldao (2015) abilities framework builds on this approach and offers a more holistic understanding of emotion

regulation strategies, abilities, and individual context. Specifically, emotion regulation strategies and abilities (i.e., awareness, acceptance, tolerance, flexibility) have a bidirectional relationship, which can be positive or negative, depending on the types of strategies used and the extent to which an individual's emotion regulation abilities have been developed. Further, Tull and Aldao (2015) argue that strategies and abilities interact with an individual's biological and environmental history, such that emotion regulation abilities and strategies can offset or exacerbate biological (e.g., genetic predispositions) and environmental (e.g., adverse childhood experiences) vulnerabilities.

Finally, the Interpersonal Emotion Regulation Framework addresses a key limitation of the process model and abilities framework, as Zaki and Williams (2013) recognized that individuals regulate emotions with others as well as by themselves. Within this framework, interpersonal emotion regulation is classified as "intrinsic" (i.e., using others to regulate one's own emotions) or "extrinsic" (i.e., helping others regulate their emotions), and response-independent (i.e., regulation regardless of how the person responds) or response-dependent (i.e., regulation occurs depending on how the person responds; Zaki & Williams, 2013). Taken together, the three theoretical approaches to emotion regulation provide a strong foundation for informing the development and delivery of a digital intervention (i.e., targeting both intra- and interpersonal emotion regulation strategies and abilities).

### *Strategies and Flexibility*

Both process- and abilities-based theoretical frameworks rely on an understanding of unique strategies that individuals use to regulate their emotions. Researchers have identified ten key intrapersonal emotion regulation strategies, including: acceptance, mindfulness, problem solving, reappraisal, behaviour avoidance, experiential avoidance, experiential suppression,

rumination, worry, and distraction (Naragon-Gainey et al., 2017). Historically, these strategies have been categorized as adaptive (e.g., acceptance, mindfulness, problem-solving) or maladaptive (e.g., avoidance, suppression, rumination) based on the impact they have on one's psychological well-being (Aldao et al., 2010). While all strategies have the potential to serve as an adaptive mechanism for short-term emotion regulation, and particularly in light of contextual and personal factors (Aldao & Christensen, 2015), habitual use of strategies like avoidance, suppression, and rumination is associated with poorer long-term biopsychosocial outcomes (Aldao et al., 2016; Koechlin et al., 2018; Navas-Casado et al., 2023).

In addition to identifying various emotion regulation strategies, researchers have recognized the importance of flexibility in regulating emotions. Specifically, emotion regulation flexibility refers to an individual's ability to implement and alternate between strategies across various situations and contexts (Aldao et al., 2015). Bonanno and Burton (2013) proposed a theoretical model of emotion regulation flexibility that includes three components: context-sensitivity, repertoire of strategies, and response to feedback. Context-sensitivity refers to the ability to identify the demands of a situation and select the most appropriate emotion regulation strategy (i.e., from the individual's repertoire) to respond to the demands. After selecting and implementing a strategy, individuals "respond to feedback" by monitoring its effectiveness relative to the situation, and adapt their behaviours as needed (e.g., selecting an alternate strategy; Bonanno & Burton, 2013). Importantly, an individual's level of flexibility has critical implications for longer-term outcomes (i.e., psychopathology; Pruessner & Ortner, 2025).

### *Developmental Trajectories and Outcomes*

Emotion regulation skills and abilities change over the course of an individual's development (e.g., Rawana et al., 2014; Zimmermann & Iwanski, 2014). In early years, emotion

regulation quickly evolves, as infants learn to self-soothe, toddlers begin to verbally express emotions and use social and cognitive emotion regulation, and preschoolers begin to develop the ability to control emotions (Crowell, 2021). Children between the ages of 7–12 begin to develop enhanced abilities to identify emotions and apply more complex regulation strategies (e.g., suppression, problem-solving; Rawana et al., 2014). Further, children begin to develop emotion regulation flexibility as they select and substitute strategies relative to the situation (Parsafar et al., 2019). During adolescence, there is increased potential for emotion regulation abilities to decline due to ongoing developmental changes, such as puberty (Vukman & Licardo, 2010). For instance, rumination becomes the most commonly used strategy during this developmental period (Rawana et al., 2014). Research on emotion regulation during emerging adulthood remains limited. Within the existing research, it appears that emotion regulation abilities begin to improve again after adolescence (e.g., reduced use of rumination; Zimmermann & Iwanski, 2014); however, many emerging adults continue to struggle (Park et al., 2020; Rawana et al., 2014). Specifically, relative to older adults, emerging adults use maladaptive strategies more frequently (Schirda et al., 2016) and experience greater overall dysregulation (i.e., the combination of maladaptive strategies) in response to negative emotions (Zimmermann & Iwanski, 2014).

The use of increasingly complex emotion regulation abilities and strategies across development has important implications for individuals' mental health and well-being (Rawana et al., 2014). Specifically, there are strong positive associations between use of 'maladaptive' emotion regulation strategies and psychopathology, and negative associations between use of 'adaptive' strategies and psychopathology (Aldao et al., 2010). For instance, habitual use of rumination in adolescence predicts increased internalizing symptoms and severity of depressive

symptoms five months later (Hankin, 2008). In addition to rumination, avoidance, and suppression predicting subsequent internalizing symptoms (Aldao et al., 2016), rumination is also associated with eating disorders, while avoidance is linked to substance use disorders (Aldao et al., 2010). Emotion dysregulation (i.e., maladaptive emotion regulation; habitual use of rumination, avoidance, etc.) is also associated with increased externalizing disorders and behaviour concerns (e.g., aggression, conduct disorder; Beauchaine et al., 2007), and poorer longer-term outcomes for relationships (Tani et al., 2015) and academic achievement (Graziano et al., 2007; Usán-Supervía & Quílez-Robres, 2021). As such, intervention during adolescence and emerging adulthood is critical to improve emotion regulation skills, and help improve long-term mental health outcomes.

**Emotion Regulation Interventions**

Emotion regulation abilities can be improved when applying principles of evidence-based psychological interventions. Specifically, an umbrella systematic review highlighted that Cognitive Behavior Therapy (CBT), Acceptance and Commitment Therapy (ACT), Dialectical Behavior Therapy (DBT), and Mindfulness-Based Cognitive Therapy (MBCT) are effective approaches for improving emotion regulation (Hedges $g$ = 0.28–0.62; Saccaro et al., 2024). Further, the Unified Protocol (UP) for Transdiagnostic Treatment of Emotional Disorders (Barlow et al., 2011), a newer intervention, shows promising evidence for its effectiveness in improving emotion regulation (Farchione et al., 2024; Sakiris & Berle, 2019).

These therapeutic approaches appear to be most effective in enhancing emotion regulation abilities, as each modality targets specific aspects of emotion regulation abilities and strategies. For instance, CBT aims to equip clients with skills to address cognitive distortions (i.e., maladaptive thinking) as a way to improve emotions and behaviours (Beck, 2021). Two

treatment components of CBT include identifying and challenging unhelpful thoughts (i.e., cognitive reappraisal) and problem solving (Cully et al., 2020), both of which can be characterized as emotion regulation skills (Naragon-Gainey et al., 2017). Moreover, DBT has gained considerable recognition and is widely used with clients experiencing emotion dysregulation, as this modality aims to support individuals with their interpersonal skills, ability to tolerate distress, and manage emotions adaptively (Harvey et al., 2019; Linehan, 1993a, 1993b). Treatment components of DBT directly target emotion regulation strategies such as mindfulness and avoidance (Neacsiu et al., 2014).

CBT, DBT, and ACT are transdiagnostic in nature when used to treat emotion dysregulation (Jiménez-Orenga et al., 2025). Transdiagnostic interventions target factors that cross-cut various mental health disorders (Dalgleish et al., 2020), with emotion regulation difficulties serving as a key transdiagnostic factor (Aldao et al., 2016; Fernandez et al., 2016). Moreover, transdiagnostic interventions are both useful and effective ($g = 0.56$) in simultaneously treating multiple disorders (Jiménez-Orenga et al., 2025), which is particularly important given the high rates of comorbid mental health disorders (e.g., mood disorders, anxiety disorders, neurodevelopmental disorders, substance use disorders; McGrath et al., 2020) that develop in adolescence and emerging adulthood (Caspi et al., 2020).

### *Intervention Delivery and Content*

Emotion regulation interventions are often delivered in more traditional one-on-one therapy (Iwakabe et al., 2023) and group therapy settings (Moore et al., 2022). While interventions delivered in these more traditional formats are effective, long wait times for mental health services (i.e., therapy and counselling to address emotion regulation difficulties) often preclude individuals from receiving the care they need. Data from the Canadian Institute for

Health Information have indicated that on average, Canadians wait approximately one month to receive community mental healthcare, with 10% of Canadians waiting up to four months to receive care (Canadian Institute for Health Information [CIHI], 2025b). Notably, six provinces and territories were unable to report wait time indicators, suggesting that the current depiction of wait times is likely a drastic underrepresentation of the current climate. Further, 52% of Canadian young adults with a mental health disorder reported that their needs for mental healthcare had not been met (e.g., due to cost, wait times, difficulties with system navigation; CIHI, 2025a). Given the current challenges for accessing support, researchers and clinicians have indicated increased interest in digital emotion regulation interventions, as they can enhance accessibility of services at an individual's time of need (Jadhakhan et al., 2022).

Digital emotion regulation interventions are typically delivered through apps or websites and can include a wide range of content and features, such as psychoeducation, guided exercises (e.g., breathing, mindfulness), mood monitoring, games, biofeedback, and virtual reality (Eisenstadt et al., 2021; Reynard et al., 2022). While digital interventions are effective in improving emotion regulation abilities, interventions tend to differ drastically in content provided (Eisenstadt et al., 2021; Reynard et al., 2022). In fact, given the wide range of content made available in emotion regulation interventions, Helland et al. (2022) mapped the most common types of content included in interventions and assessed the efficacy of interventions that included the specific types of content (e.g., effect sizes of interventions including content about differentiating between emotions). Results of the Helland et al. (2022) study suggested that interventions that included setting goals and psychoeducation about acceptance were the most effective for adolescents, as compared to interventions that included training on awareness of emotions, recognizing triggers to rumination, relaxation techniques, etc. Content on setting goals

involved information about creating and implementing realistic goals for the course of the intervention, and monitoring progress towards those goals. Further, psychoeducation about acceptance included information about the long-term negative impacts of attempting to control unwanted situations, emotions, and outcomes, and using acceptance as an alternative strategy to control. Notably, a key limitation of the Helland et al. (2022) study is that researchers were unable to control for the inclusion of different content types, making it unclear whether individual components (e.g., setting goals) or combination of components (e.g., setting goals and understanding emotions) drives effective change.

### *Limitations of Existing Interventions*

Although systematic reviews have highlighted that digital emotion regulation interventions are effective at improving emotion regulation abilities at all developmental stages, the included studies have numerous limitations, including: 1) limited or no co-creation with individuals with lived experience of emotion regulation difficulties; 2) high rates of attrition; 3) a lack of understanding of participants' experience with the intervention; and 4) no investigation into content, behaviour change techniques, and mechanisms of action that facilitated successful emotion regulation change (Eisenstadt et al., 2021; Reynard et al., 2022; Saccaro et al., 2024).

Further, most interventions have been designed for children, adolescents, and adults (Eisenstadt et al., 2021; Montana et al., 2020; Reynard et al., 2022), with few interventions being tailored to emerging adults and the unique needs and stressors experienced by this cohort (i.e., transitioning from adolescent to adult expectations for functioning, post-secondary education stressors, high rates of onset/exacerbation of mental health disorders; Solmi et al., 2022; Stephenson, 2023; Wood et al., 2018). Further, digital emotion regulation interventions designed for community emerging adult samples often had additional limitations, including 1) a lack of

reporting on participant characteristics (i.e., little understanding of generalizability and who the intervention works for); 2) not leveraging the strengths of combining various psychotherapeutic approaches; and 3) failing to assess the acceptability and appropriateness of the intervention (e.g., Chen, 2024; Laure et al., 2025; Smith et al., 2024).

Finally, digital emotion regulation interventions fail to study and report the 'active intervention ingredients' (Dombrowski et al., 2012), which allows researchers and clinicians to understand the components of an intervention that are the drivers of emotion regulation behaviour change (Gearing et al., 2011). In light of this, it is critical to develop an evidence-based digital intervention that targets effective and sustainable emotion regulation behaviour change and addresses the shortcomings of existing interventions.

**Evidence-Based Intervention Development**

The ORBIT model of intervention development was first created to delineate an evidence-based process for developing and testing behavioural medicine and health behaviour change interventions (Czajkowski et al., 2015). Since its inception in 2015, the ORBIT model has gained traction in other fields, including mental health intervention development (e.g., Gabrielli et al., 2021; Guertler et al., 2023; Joyce et al., 2023; Woolf-King et al., 2022). The ORBIT model includes four phases: 1) Design (define, refine); 2) Preliminary Testing (proof-of-concept, pilot and feasibility study); 3) Efficacy; and 4) Effectiveness. The first two phases also include sub-phases, with the goal of iteratively improving the intervention before conducting a randomized controlled trial. Specifically, the 'Design' and 'Refine' sub-phases focus on establishing treatment elements; determining milestones for clinically significant change; identifying attitudes and needs that will impact acceptability, appropriateness, and feasibility; and determining logistical details of the intervention (e.g., frequency of contact, duration of

intervention). To help achieve the goals of the first phase, researchers often complete a needs assessment with the target population (e.g., Araújo-Soares et al., 2019; Dube et al., 2021; Poulter et al., 2024) and use combined quantitative and qualitative methods, as recommended by the developers of the ORBIT model (Czajkowski et al., 2015).

### Current Study

Given the limitations of existing emotion regulation interventions (i.e., lack of co-creation, attrition, limited understanding of the drivers of emotion regulation change) and the lack of available, tailored interventions for emerging adults, our long-term goal is to co-create a brief, digital tool to enhance emotion regulation abilities in emerging adults using evidence-based best practices in intervention design (Czajkowski et al., 2015) and emotion regulation interventions (Helland et al., 2022). To support the first phase of intervention development (Czajkowski et al., 2015), we conducted a needs assessment with emerging adults in post-secondary settings across Canada. We had three primary objectives for the current study: 1) examine emerging adults' attitudes towards and beliefs about emotion regulation; 2) evaluate needs and preferences for intervention content, delivery, and engagement; and 3) explore perceptions of facilitators and barriers to engaging with a digital emotion regulation tool. Collectively, these objectives provide key insights on needs and preferences, as well as considerations for acceptability, appropriateness, and feasibility in the future co-creation process.

## Methods

### Participants and Recruitment

Eligible participants included emerging adults between the ages of 18 and 29 years old and living in Canada. Participants were recruited through the York University Undergraduate Research Participant Pool (URPP) and email advertisements, as our team contacted academic

institutions in each Canadian province and territory to circulate the recruitment posting through institutional Listservs. Based on an a priori calculation using G*Power (Faul et al., 2007), we aimed to recruit a minimum of 159 emerging adults ($f$ = .25, α = .05, power = .80). Recruitment occurred between October 2025 and January 2026.

**Procedures**

Interested individuals reviewed an online informed consent form (Appendix A) and completed screener questions to confirm eligibility (i.e., age, living in Canada) via the survey platform QuestionPro. Upon consenting and confirming eligibility, participants completed a series of measures on demographics, attitudes towards and beliefs about emotion regulation, and their emotion regulation skills and abilities. Participants read a brief description of emotion regulation, why it is important, how it has unique impacts on emerging adults, and why our team is looking to develop a brief digital tool for this population. Afterwards, participants responded to questions on potential intervention content, delivery, and length and completed measures on psychological distress, cognitive flexibility, and distress tolerance. Finally, participants responded to open-ended questions on perceived facilitators and barriers of engaging with a digital tool. Survey measures and materials are included in Appendices B through L. While the survey included additional measures, only those pertaining to the current study are included and discussed. The order of study measures is detailed in Figure 1.

Participation was incentivized by: 1) 0.5 course credit (PSYC 1010) for York University URPP students; 2) a draw for one of three $50 YU gift cards for York University non-URPP students; and 3) a draw for one of three $50 Everything gift cards for participants recruited external to York University. This study was approved by the York University Office of Research Ethics (#e2025-295).

## Measures

### *Characterizing the Sample*

***Demographics.*** Participants completed a series of items on age, gender identity, ethnicity, student status, level and field of study, relationship status, and household income. Participants were also asked whether they had received a formal diagnosis of a mental health disorder or suspected they had a mental health disorder. Participants who indicated "yes" were asked to indicate the diagnosed/suspected mental health disorders, types of treatment received, and if they had engaged in therapy, the type of therapy received (i.e., modality).

***Emotion Dysregulation.*** The 18-item Difficulties in Emotion Regulation Scale – Short Form (DERS-SF; Kaufman et al., 2016) was used to assess emotion dysregulation. Subscales of the DERS-SF include nonacceptance of emotional responses, difficulty engaging in goal-directed behaviour, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. Items are rated on a 5-point Likert scale from 1 (*Almost never*) to 5 (*Almost always*). Scores are summed across subscales (range: 3–15) and all items (range: 18–90), with higher scores suggesting greater difficulties with regulating emotions. The DERS-SF demonstrated excellent internal consistency in the current sample ($\omega = 0.90$) and has been previously used with emerging adult populations (Kaufman et al., 2016).

***Cognitive Emotion Regulation Strategies.*** The Cognitive Emotion Regulation Scale – Short Form (CERQ-SF; Garnefski & Kraaij, 2006) was used to assess the use of emotion regulation strategies. The CERQ-SF includes 18 items and nine subscales: self-blame, acceptance, rumination, positive refocusing, refocus on planning, positive reappraisal, putting into perspective, catastrophizing, and blaming others. Items are rated on a 5-point Likert scale, ranging from 1 (*Almost never*) to 5 (*Almost always*). Scores are summed across subscales (range:

2–10), with higher scores suggesting greater use of the specific emotion regulation strategy. Within the current sample, internal consistency of subscales ranged from questionable (ω = 0.52; rumination) to good (ω = 0.80; catastrophizing).

***Psychological distress.*** The Kessler-10 (K10) questionnaire (Kessler et al., 2002) was used to assess psychological distress, and includes 10 items rated between 1 (*None of the time*) and 5 (*All of the time*). Items are summed for a total score ranging between 10 and 50, with clinical cutoffs including: low distress (10–19; likely to be well), mild distress (20–24; likely to have a mild disorder), moderate distress (25–29; likely to have a moderate disorder), and severe distress (30–50; likely to have a severe disorder). Internal consistency for the K10 in the current sample is considered excellent, ω = 0.91.

***Cognitive Flexibility.*** The Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010) was used to explore participants' cognitive flexibility, which is associated with emotion regulation strategy use and flexibility (Wang et al., 2025). The CFI includes 20 items rated on a 7-point Likert scale from 1 = *Strongly disagree* to 7 = *Strongly agree*. Items are summed to calculate the total score and scores for two subscales (i.e., alternatives and control), with higher scores suggesting greater flexibility. In the current sample, the CFI demonstrated good internal consistency, ω = 0.86.

***Distress Tolerance.*** The Distress-Tolerance Scale–Short Form (DTS-SF; Brown et al., 2022) was used to explore emerging adults' ability to tolerate uncomfortable and distressing feelings, which is associated with emotion regulation (Naragon-Gainey et al., 2017). The DTS-SF includes four items representing the domains of tolerance, appraisal, absorption, and regulation. Items are rated from 1 = *Strongly agree* to 5 = *Strongly disagree*, with lower total

scores suggesting greater difficulties tolerating distress. The DTS-SF had good internal consistency in the current sample, $\omega = 0.85$.

### *Emerging Adults' Attitudes and Beliefs About Emotion Regulation*

Participants were asked to rate their agreement with statements on difficulties with emotion regulation during four developmental periods (adolescence, emerging adulthood, adulthood, older adulthood; 1 = *Strongly Disagree*, 5 = *Strongly Agree*). Participants were also asked to rate their agreement (1 = *Strongly Disagree*, 5 = *Strongly Agree*) with a series of statements to explore attitudes towards and beliefs about emotion regulation, including impacts to mental health, physical health, and well-being; their agreement that individuals can regulate emotions by themselves and with others; and the extent to which they agree emotion regulation skills can be improved and are important.

### *Preferences for Intervention Content and Delivery*

***Intervention Content.*** A series of 33 items on potential intervention content was developed based on findings of a recent systematic review and meta-analysis on effective elements of emotion regulation interventions for adolescents (Helland et al., 2022) and a literature review on digital emotion regulation interventions for emerging adults. These items align with the three theoretical models and frameworks of emotion regulation. Participants were asked to indicate how strongly they agreed with the importance of each potential element of intervention content to be included. Items were rated on a 7-point Likert scale, ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Examples of potential intervention elements included: training on 1) how to recognize different emotions; 2) how thoughts influence our emotions; 3) self-monitoring thoughts and feelings; and 4) preventing unhealthy responses to intense emotions. Given the length of the measure, participants were randomly assigned to 23 of 33

items (random assignment to 70% of items recommended by experts; Zhang & Sackett, 2023) for a planned missing data by design approach (Graham et al., 2006).

***Delivery of Intervention Content.*** Participants were asked to indicate their preferred formats for intervention content delivery, including video clips, audio clips, text descriptions, infographics, and games. Participants rated their agreement with the form of intervention content delivery on a 5-point scale of 1 (*Strongly Disagree*) to 5 (*Strongly Agree*).

***Intervention Length and Engagement Techniques.*** Participants were asked if they were willing to engage with a digital emotion regulation tool each day for a discrete period of time. Individuals who selected "Yes" were asked to identify the maximum amount of time per day that they would be willing to engage with the digital tool, with options ranging from 5 minutes to 30 minutes. Participants were then asked to identify how many days/weeks, in total, they would prefer to use a daily digital tool, with options ranging from 3 days to 8 weeks.

Participants who indicated that they did not want to engage with a digital tool daily were asked their preferred frequency for engaging with a tool (e.g., one-time only, weekly, monthly, as needed, never), and the maximum amount of time that they would engage with a digital tool (i.e., options ranging between 5–60 minutes). Participants who indicated that they would not use a digital tool were prompted to respond to an open-ended question to explore why they were uninterested in engaging with a digital emotion regulation tool.

### *Perceived Facilitators and Barriers to Using a Digital Emotion Regulation Tool*

Participants were asked to respond to two open-ended questions to explore perceived facilitators and barriers to engaging with a digital tool to improve emotion regulation abilities. These questions were adapted from the King et al. (2023) exploration of facilitators and barriers to engaging with the delivery of a mental health intervention. During data collection, a question

was added to the survey to explore participants' use of Artificial Intelligence (AI) in their open-ended responses. Specifically, participants received information noting, "We appreciate that AI (e.g., ChatGPT) can be a helpful tool! To help us better understand the data, we are curious if you used AI in your open-ended responses." Participants responded by selecting "yes", "no", or "I used AI for another purpose" (with a textbox for further elaboration on the reasoning).

## Data Analyses

Quantitative data were analyzed using Jamovi (Version 2.6.45.0; the jamovi project, 2025) and R Statistical Software (Version 4.5.2; R Core Team, 2025), including the *misty* R package (Yanagida, 2026). Data were examined for normality and outliers using histograms, boxplots, and descriptive statistics (e.g., skewness, kurtosis). However, the central limit theorem mitigated any concerns of non-normality due to a large sample size (Tabachnick & Fidell, 2007). Descriptive statistics were used to characterize the sample. Bonferroni correction was used to account for multiple analyses and control the family-wise error rate. As such, an alpha of $p <$ .003 was retained ($\alpha = .05/20 = .0025$). Results of additional analyses, not pertinent to the current objectives, are detailed in the Supplemental Materials (refer to Supplemental Tables 1 and 2).

### *Emerging Adults' Attitudes and Beliefs About Emotion Regulation*

Descriptive statistics were first used to characterize participants' agreement with a series of statements about emotion regulation. Two repeated-measures ANOVAs were conducted to assess within-participant differences on attitudes towards/beliefs about emotion regulation, including: 1) emotion regulation difficulties among adolescents, emerging adults, adults, and older adults; and 2) impacts of emotion regulation on mental health, physical health, and well-being. In cases where the assumption of sphericity was violated, the Greenhouse-Geisser correction was used. Post-hoc analyses were conducted using the Bonferroni correction.

Additionally, a dependent-samples t-test was conducted to assess differences in participants' agreement that emotion regulation can be regulated intra- and interpersonally.

Finally, multiple linear regressions were estimated to examine if participant characteristics (i.e., emotion dysregulation, psychological distress, cognitive flexibility, distress tolerance, preferred frequency of digital tool use) were associated with their perceived importance of emotion regulation and agreement that emotion regulation skills can be improved. Preferred frequency for using a digital tool (i.e., daily use, occasional use, not interested in using digital tool) was included as a factor and dummy-coded to explore the relationship between attitudes towards/beliefs about emotion regulation and interest in receiving support.

***Preferences for Intervention Content and Delivery***

Descriptive statistics (i.e., frequencies, arithmetic means, standard deviations) were calculated to explore participants' preferences for frequency of using an intervention, engagement techniques, length and duration, and delivery of the digital tool. Available case means and standard deviations were calculated for the intervention content measure. One-way ANOVAs were conducted to explore if participants' emotion dysregulation, psychological distress, cognitive flexibility, and distress tolerance differed by their preferred frequency for using a digital emotion regulation tool (i.e., daily use, occasional use, not interested in using digital tool). In cases where the assumption of homogeneity of variances was violated, Welch's ANOVA was used. Post-hoc analyses were conducted using the Games-Howell correction.

***Perceived Facilitators and Barriers to Using a Digital Emotion Regulation Tool***

Open-ended questions on perceived facilitators and barriers to using a digital emotion regulation tool were thematically coded in an iterative manner (inductively; Braun & Clarke, 2006). In line with recommendations by DeCuir-Gunby et al. (2011), two coders (LH-L, KB)

reviewed the open-ended responses and created a preliminary coding scheme. The coders then coded 5% of all responses in duplicate to refine the codebook and determine reliability (McHugh, 2012), before independently coding the remaining responses. Disagreements in coding were resolved through team meetings to reach consensus. Themes and sub-themes emerged based on commonly endorsed considerations.

## Results

A total of 2,415 emerging adults commenced the survey. Individuals were excluded if they did not: complete any questions ($n$ = 302), consent to participate ($n$ = 5), meet eligibility criteria ($n$ = 36), or complete any questions beyond basic demographics ($n$ = 122). Further, for participants who completed the survey multiple times ($n$ = 75), only the first response set was retained. The final sample included 1,875 emerging adults. Data were normally distributed (e.g., skewness range = -0.41–0.34, kurtosis range = -0.72–0.26; Kim, 2013) with few outliers present. Notably, manual inspection of outliers suggested acceptable data quality (e.g., time to survey completion, response pattern), and outliers did not reach the univariate z-score threshold of ±3.29 warranting action (e.g., winsorization; Tabachnick & Fidell, 2007).

### Characterizing the Sample

As detailed in Table 1, on average, participants were 21 years old ($SD$ = 3.03). Over half of participants were from Ontario (57.2%), identified as a woman (73.3%), and were born in Canada (66.4%). Most participants indicated that they were a student (98.0%) and were completing an undergraduate degree (79.3%). Descriptive statistics on emotion dysregulation (DERS-SF), cognitive emotion regulation strategies (CERQ-SF), cognitive flexibility (CFI), and distress tolerance (DTS-SF) are summarized in Table 2. Of note, on average, participants scored within the moderate distress range on the Kessler-10 ($M$±$SD$; $M$ = 28.05±8.54; Range = 10–50),

with approximately 45% of the sample scoring within the severe psychological distress range (i.e., likely to have a severe mental health disorder).

Almost half of participants indicated they did not have a diagnosed or suspected mental health disorder ($n$ = 867; 46.4%), whereas 27.3% of participants reported a formal diagnosis ($n$ = 511), and 26.3% reported a suspected mental health disorder (no formal diagnosis; $n$ = 492). Notably, among participants who indicated no diagnosed/suspected mental health disorder, 46.9% met clinical cutoffs for likely to have a moderate to severe mental health disorder, based on the Kessler-10. Further information (e.g., disorders, treatments) for those with a diagnosed or suspected mental health disorder is detailed in Table 3.

**Emerging Adults' Attitudes and Beliefs About Emotion Regulation**

A repeated-measures ANOVA was conducted to compare participants' perceptions of emotion regulation difficulties between adolescents, emerging adults, adults, and older adults. Using the Greenhouse-Geisser correction, results revealed significant within-subject differences, $F(2.44, 4279.40) = 828.75$, $p < .001$, $\eta^2_p = .32$. As detailed in Table 4, post-hoc analyses indicated participants perceived adolescents to have greater emotion regulation difficulties compared to emerging adults, adults, and older adults. Similarly, participants perceived emerging adults to have greater difficulties with emotion regulation than adults and older adults.

Further, participants perceived significant differences in the impacts of emotion regulation on mental health, physical health, and well-being, $F(1.83, 3182.92) = 230.18$, $p < .001$, $\eta^2_p = .12$, such that emotion regulation was perceived to have greater impacts on mental health and well-being than physical health (refer to Table 4). While participants tended to agree that emotions can be regulated intra- and interpersonally, participants reported stronger

agreement that emotions can be regulated interpersonally compared to intrapersonally, $t(1740) = 9.86$, $p < .001$, $d = .24$.

Finally, participants agreed that emotion regulation skills are both important ($M = 4.58 \pm 0.60$) and can be improved ($M = 4.43 \pm 0.63$). As detailed further in Table 5, a multiple linear regression revealed that greater cognitive flexibility, greater difficulties tolerating distress, and preference for daily use of a digital tool (compared to occasional use or no use) were significantly associated with perceived importance of emotion regulation, $F(6, 1558) = 43.82$, $p < .001$, $R^2_{adj} = .14$. Similarly, greater cognitive flexibility and preference for daily use of a digital tool (compared to occasional use or no use) were significantly associated with perceptions that emotion regulation skills can be improved, $F(6, 1558) = 36.68$, $p < .001$, $R^2_{adj} = .12$.

**Preferences for Intervention Content and Delivery**

As characterized in Table 6, most participants indicated interest in daily use of a digital emotion regulation intervention (71.3%), with less than a quarter of participants indicating a preference for occasional use (22.6%), and few participants reporting a lack of interest in this form of support (6.1%). Results of Welch's ANOVAs and post-hoc analyses comparing the three groups on mental health and emotion regulation variables are detailed in Table 7. Importantly, results indicated that emerging adults who preferred to use a digital tool daily experienced significantly higher emotion dysregulation and psychological distress, and lower distress tolerance abilities, compared to those who preferred occasional use or not to use a digital tool.

Among participants who expressed interest in daily use of a digital intervention, almost 60% indicated they preferred to use a daily intervention for between 3 and 7 days, compared to 2, 4, or 8 weeks. However, almost 35% of participants noted that they preferred to use a daily digital intervention for between 2 and 8 weeks, suggesting considerable interest in a longer

intervention. Additionally, most emerging adults who preferred daily use of a digital intervention noted that they would like to engage with the tool for 15 minutes or less each day (89.8%).

With respect to potential intervention content (refer to Table 8), participants who preferred to use a digital tool daily perceived the strongest importance for psychotherapeutic content on identifying healthy ways to manage intense emotions ($M$ = 6.40±0.81), intrapersonal emotion regulation strategies ($M$ = 6.36±0.83), recognizing triggers of maladaptive responses to emotions ($M$ = 6.34±0.85), and managing behaviour when responding to intense emotions ($M$ = 6.28±0.86). Further, among those who indicated a preference for daily use, other skills and relevant areas of content with the highest ratings of perceived importance included managing stress ($M$ = 6.51±0.79), establishing a coping plan ($M$ = 6.26±0.91), and self-compassion ($M$ = 6.26±0.87). Ratings of content by preferred frequency of use (i.e., daily, occasional, no use of digital intervention) are detailed in Table 8.

Finally, participants were asked to rate their preferences for modes of delivering content and features to include in the digital tool (refer to Table 9). Participants who indicated interest in daily use of an emotion regulation tool felt that content is best delivered through games ($M$ = 4.17±0.94), infographics ($M$ = 4.12±0.89), and video clips ($M$ = 3.97±0.61). Additionally, the highest rated features to include in a digital tool included: the ability to personalize content received ($M$ = 4.37±0.70), self-monitoring ($M$ = 4.36±0.66), professional support ($M$ = 4.34±0.77), and guided exercises ($M$ = 4.34±0.75).

**Perceived Facilitators and Barriers to Using a Digital Emotion Regulation Tool**

Responses from participants that indicated interest in using a digital emotion regulation tool (daily or occasionally) and responded to the open-ended questions on facilitators and barriers were coded ($n$ = 1,405). Based on thematic analyses, seven themes emerged: 1)

accessibility; 2) usability and design experience; 3) techniques for engagement; 4) time, effort, and motivation; 5) acceptability and appropriateness of content; 6) personalization; and 7) privacy and security (refer to Figure 2). Within each theme, sub-themes (italicized) were identified. Further, a sub-theme was classified as either a "*facilitator*", "*barrier*", or "*mixed facilitator & barrier*". Sub-themes were considered "*mixed*" if participants noted its presence as a facilitator and absence as a barrier (or vice versa). Interrater reliability was calculated, and fell within the "almost perfect" range of agreement, $\kappa = .86$ (McHugh, 2012).

During data collection, a question was added to the survey to explore if participants used AI to respond to open-ended questions. While many participants did not have the opportunity to respond to this question ($n = 942$, 67.0%), among the participants who received this question ($n = 463$), 97.2% indicated that AI was not used to respond to the open-ended questions. Further, four participants indicated that AI was used to understand the questions but not to generate responses. The responses of the nine participants who indicated use of AI in responses to open-ended questions were retained, as participants had the opportunity to edit, add, or remove information to the AI-generated response before submission.

### *Theme 1: Accessibility*

Participants indicated that the digital intervention needs to be *easily accessible (mixed facilitator & barrier)* on their phone, as well as on different devices. Most participants indicated that a mobile application would provide the easiest access, with one participant stating: "Making an app on Cellphones. This make[s] it easier and more compact for people to just open the app even on the bus, to enter the data of how they have been keeping up with regulating their emotions" (P886).

*Cost and advertisements* were also cited as a *mixed facilitator & barrier*. Participants indicated it is important for the digital emotion regulation tool to be free or low-cost, and highlighted that paywalls (i.e., having to pay to access certain features) are a frustrating experience. While some participants noted that advertisements can help keep the app free, others noted that they are distracting and deter use: "I won't use an app/tool if there's any distractions like ads" (P3143).

***Theme 2: Usability and Design Experience***

Participants often highlighted the importance of the *user interface and experience (mixed facilitator & barrier)*. Specifically, the organization, layout, and look of the app can promote or hinder the user's engagement. The digital tool should have an "intuitive interface", which helps ensure the app is "easy to navigate". Additionally, aesthetics was frequently discussed, as participants want a visually appealing tool: "making sure it has an aesthetic vibe, cute designs" (P580). User interface also contributes to the user experience as the tool needs to be user-friendly and easy to use. When a tool is complicated and has technical issues, it can be "frustrating to interact with" (P2300), ultimately discouraging use.

***Theme 3: Techniques for Engaging Participants***

Participants prefer digital tools that include *engaging and interactive components (mixed facilitator & barrier)*, noting the utility of having multiple ways of interacting, including "interactive activities", "graphics/animations", "games", "videos", and "interactive modules". Relatedly, participants are less likely to engage if the tool is perceived as boring or repetitive.

*Receiving reminders (facilitator)* is a valuable technique for encouraging engagement with the digital tool, as participants noted that it can be hard to remember things when they are busy. For instance, one participant stated: "I find that receiving reminders on my phone would

make it easier for me to keep up with regulating my emotions, since I have a hard time remembering things" (P264). While most participants indicated that reminders are a facilitator, some noted that *constant reminders are unwanted (barrier)*: "The reminders might make someone feel less inclined to engage with the tool solely because they feel like they're obligated to do so. Similar to how when someone's mom tells them to wash the dishes as they were about to do it, makes them not want to do it anymore" (P1052).

Participants often noted that *gamification* (e.g., characters, point systems, achievement badges) *and progress tracking are rewarding (mixed facilitator & barrier)*. Based on emerging adults' experiences with apps that use gamification, participants highlighted the utility of reward systems (e.g., "maybe use medals and awards to help motivate more frequent usage" [P471]) and characters in an app:

> "An idea to keep users motivated on going on the app could be implementing pets (an array of different pets we can choose from) that we could take care of. Not only will we go on the app to take care of our pet, we will engage with our daily emotion regulation tools - it would be cool to practice what we learned with our pet." (P373)

Progress tracking can be used to monitor engagement in using the app (e.g., a streak), as well as to observe progress in emotion regulation abilities, which encourages continued use. One participant highlighted the value of this, as they stated: "Progress is very important, so some kind of progress marker and positive reinforcement feature when the tool is used properly and consistently would make it easier and also more appealing for me to use the tool" (P3025). Notably, a few participants advised against the use of streak-based progress tracking, citing that *streaks can lead to a sense of failure (barrier)*: "If there is no 'streaks' quality to encourage the person to continue using the tool. This pressure can be guilt-inducing and make the person no longer want to engage whatsoever because of a lost 'perfect score' of some sort" (P3268).

***Theme 4: Time, Effort, and Motivation***

Emerging adults in post-secondary settings experience a range of competing demands. As a result, participants highlighted that *time commitment (mixed facilitator & barrier)* is a critical consideration in co-creating the length of the interactions with the tool. One participant noted, "If the tools are quick and to the point, I won't feel intimidated by dedicating time to it" (P3313). Participants also provided mixed feedback on the frequency of interacting with the tool. Some individuals highlighted that daily interactions are a barrier and greater flexibility is needed, while others felt that daily interactions create structure and routine. These competing perspectives align with quantitative findings on the preferred frequency of using the tool.

In addition to brevity, participants noted that the interactions with the tool and content should be *simple and require minimal effort (mixed facilitator & barrier)*. One participant stated: "It would be harder to engage with the tool if it is… overly complex or requires too much effort when I am already stressed" (P1005). Further, participants noted that "text-heavy" content is cognitively demanding and a barrier to engagement.

Finally, participants indicated that they need to feel *motivated (mixed facilitator & barrier)* to use the digital tool, with one participant stating, "Lack of motivation would probably make it harder for me to interact." (P798). Importantly, participants suggested that their motivation to use the tool is lower if it feels like a chore to engage with.

***Theme 5: Acceptability and Appropriateness of Content***

Participants highlighted the need for content that is *novel and relevant (mixed facilitator & barrier).* Specifically, shortcomings of existing interventions included content that is "generic" or does not adequately meet the needs of the intervention-user: "If it was too cliche and broad. Sometimes just 'taking a deep breath' isn't enough for complex feelings" (P980). As

a result, participants are looking for "information that other well-being apps don't have" (P3346).

While the type of content is important, participants frequently discussed acceptable and appropriate delivery of content. First, information should be presented in a *clear and "bite-sized" manner (mixed facilitator & barrier).* Participants suggested: "Simple/plain language, breaking down different emotions into very basic terms so that it is easy to understand" (P2032) and "Having 'bite sized learning' so doing a little bit everyday, instead of having to learn a lot all at once" (P3017). Content also needs to be delivered in an *appropriate tone (mixed facilitator & barrier)* that is not patronizing or condescending. In fact, one participant stated:

> "I think it would need to be written in a way that is not condescending. I find a lot of mental health apps are really dumbed down and it makes me not want to engage with them even if the content is valuable" (P3360)

***Theme 6: Personalization***

*Personalization (mixed facilitator & barrier)* emerged as a unique theme as participants frequently highlighted the importance of personalization in relation to other themes (i.e., usability and design experience; engagement techniques; time, effort, and motivation; and acceptability and appropriateness of content), to ensure the tool best meets their needs. Specifically, personalization can include choice in the content users receive, the colours and features of the app, and how often users engage with the tool. One participant highlighted the facilitative nature of personalization: "making it personalized to me and my needs. not necessarily diagnosing but having a questionnaire to help me manage and understand some feelings" (P2549).

***Theme 7: Privacy and Security***

*Privacy and security (mixed facilitator & barrier)* were commonly raised among emerging adults, as they are concerned about personal and sensitive information becoming available to others. For instance, one participant noted: “private - I don't want my personal emotions [to] become another data point for [a] data broker and could potentially leaked online.” (P3327). Participants reported that documenting emotions and experiences in an app is sensitive information, with one individual stating “Maybe if I'm not sure who can see my responses. Because my emotions are something I am very sensitive and insecure about, I don't want everyone to know about it” (P2318). However, some privacy concerns can be mitigated with safety features: “A tool with a lock feature would be ideal.” (P2875).

## Discussion

Emerging adults often struggle with emotion regulation, as they rely on maladaptive strategies (Zimmermann & Iwanski, 2014), which has a tremendous impact on mental health and well-being. While there are many existing digital interventions to support enhanced emotion regulation, few interventions have been designed for emerging adults, and often fail to consider the needs, preferences, and perspectives of the intervention-users. In light of this, we aim to co-create a digital emotion regulation intervention with and for emerging adults. As the first step in this process, we examined emerging adults’ attitudes and beliefs about emotion regulation, assessed needs and preferences for the content and delivery of a digital tool, and explored perceived facilitators and barriers to using a digital tool.

### Emerging Adults’ Attitudes and Beliefs About Emotion Regulation

To date, no known research has explored emerging adults’ attitudes towards and beliefs about emotion regulation. Our findings highlighted that emerging adults in post-secondary settings accurately perceived differences in emotion regulation difficulties across age groups,

such that adolescents often struggle more with regulating emotions than emerging adults, adults, and older adults (Braet et al., 2026; Zimmermann & Iwanski, 2014). Further, participants also recognized that their age cohort tends to experience more emotion regulation difficulties than adults and older adults.

Interestingly, participants indicated stronger agreement that emotions can be regulated with others compared to by oneself. This is an interesting finding given that preliminary research has suggested that individuals use intrapersonal emotion regulation strategies more than interpersonal strategies (Claus et al., 2025). Further, the vast majority of interventions focus on improving intrapersonal emotion regulation skills (Saccaro et al., 2024). Importantly, although individuals use intrapersonal emotion regulation more and intervention-based research has focused more on this modality, it is possible that interpersonal emotion regulation has greater meaning and value to emerging adults, particularly given the importance of peers at this life stage (Schwartz, 2016).

Overall, participants believed that emotion regulation: 1) impacts physical health, mental health, and well-being; 2) is important; and 3) can be improved. In line with the first phase of the ORBIT model of intervention development, exploration of attitudes is critical to ensure the intervention will be acceptable and feasible (Czajkowski et al., 2015), and provides an understanding of the 'starting points' for co-creating intervention content. For instance, if emerging adults demonstrated a lack of awareness that emotion regulation skills can be improved, this would signal an important area of pre-intervention work to build understanding, awareness, and readiness. Moreover, exploration of emerging adults' attitudes and beliefs about emotion regulation aligns with a large body of literature on mental health literacy (MHL). Drawing from the most well-established definition of MHL (Jorm et al., 1997), in our context,

emotion regulation health literacy could be conceptualized as the ability to recognize emotions and regulation strategies; knowledge on how to seek emotion regulation information; knowledge of risk factors for emotion dysregulation, impacts, and accessing supportive resources; and attitudes and readiness to improve abilities. Given that mental health literacy is positively associated with help-seeking intentions and behaviours (Bonabi et al., 2016; Smith & Shochet, 2011), the same may be the case within the context of emotion regulation. As a preliminary indication of this, we found that individuals who were interested in a daily digital emotion regulation tool (compared to occasional or no use of a digital tool) perceived greater importance of emotion regulation and appreciation that skills can be improved.

**Preferences for Intervention Usage, Content, and Delivery**

In exploring emerging adults' needs and preferences for the usage, content, and delivery of the intervention, we found that emerging adults who preferred daily use of a digital tool also experienced greater emotion dysregulation, psychological distress, and difficulties tolerating distress. Specifically, it appears that emerging adults who are struggling more also recognize the need for more intensive support. Further, given that the preference for daily use of the tool was prominent, Ecological Momentary Intervention (EMI) or Just-In-Time Adaptive Intervention (JITAI) approaches may be promising solutions. EMIs deliver an intervention through a mobile device as individuals go about their day and offer real-time data collection associated with the intervention (Heron & Smyth, 2010). Similarly, JITAIs provide intervention and data collection in an ecologically valid environment (i.e., day-to-day); however, JITAIs also aim to provide the right support at the right time by adapting to an individual's state and circumstances (i.e., using sensing technologies; Nahum-Shani et al., 2018). As such, EMI or JITAI approaches may lend

themselves well to a digital emotion regulation tool, particularly given that emerging adults are looking for a brief (i.e., 5–15 minutes), daily support.

Previous systematic reviews have explored content in digital emotion regulation interventions for adolescents, with the most common content covering mindfulness, training in cognitive skills (i.e., flexibility, reappraisal, restructuring), awareness and recognizing emotions, and managing emotions (Helland et al., 2022; Thomson et al., 2025). Importantly, for emerging adults in post-secondary settings, the most important types of content focused on responding to and managing intense emotions (i.e., in healthy ways, recognizing triggers of maladaptive responses, and managing behaviour) and regulating emotions by oneself, aligning with the process model and abilities framework of intrapersonal emotion regulation. The differences in content offered to adolescents and the needs of emerging adults, paired with our qualitative findings that emerging adults are looking for relevant content that is sensitive to their needs and circumstances, further reinforce the need to co-create a digital emotion regulation intervention. While there may be differences in content needs based on developmental stage, emerging adults' preferences for how content is delivered (i.e., games, infographics, videos) and intervention features (i.e., personalization, self-monitoring) reflect preferences identified by adolescents (Liverpool et al., 2020), as well as how these considerations are enacted in a digital intervention (Eisenstadt et al., 2021; Reynard et al., 2022).

The broad range of needs and preferences for frequency of use, content, methods of content delivery, and features of the digital tool explored in the current study provide a strong foundation for the next subphase in the ORBIT model of intervention development. Specifically, future research can focus on establishing and partnering with an emerging adult advisory

committee to reach consensus on the components and delivery of the intervention (e.g., using a design-thinking process).

**Perceived Facilitators and Barriers to Using a Digital Emotion Regulation Tool**

Emerging adults indicated seven primary areas of consideration on factors that would make it easier or harder to engage with a digital emotion regulation tool, including accessibility; usability and design experience; techniques for engagement; time, effort, and motivation required; the acceptability and appropriateness of content; personalization; and privacy and security of the app. These findings align with previous systematic reviews on perceived barriers and facilitators of digital mental health interventions (Borghouts et al., 2021; Ho et al., 2025; Liverpool et al., 2020).

Systematic and scoping reviews on digital mental health interventions for children, youth, and adults have consistently highlighted accessibility, usability, and the design experience as a combined facilitator-barrier (Borghouts et al., 2021; Liverpool et al., 2020; Zhu et al., 2025). For instance, in one review on barriers and facilitators of user engagement with digital mental health interventions for young people, approximately one-third of included studies noted the importance of these factors (Ho et al., 2025). Given the range of considerations for accessibility (e.g., easy access, cost) and usability/design experience (e.g., user-friendly, inclusive design) highlighted in previous systematic and scoping reviews on digital mental health interventions (e.g., Borghouts et al., 2021), researchers developed the Framework for Digital Health Equity (Richardson et al., 2022), which can guide the co-creation process to help increase equitable access and experiences (Figueroa et al., 2026). Specifically, considerations of access to technology and self-efficacy can be integrated into co-creation to support greater access, and enhanced usability and experience.

Emerging adults also discussed key engagement techniques, including delivering content in engaging ways, gamification, reminders, and personalization. Gamification has been defined as "the use of game design elements in non-game contexts" (Deterding et al., 2011), and can include components like badges, points, leaderboards, a story/theme, clear goals, feedback, rewards, progress tracking, and challenges (Hamari et al., 2014). Substantial research has highlighted similar findings on these factors as combined facilitators-barriers (Liverpool et al., 2020). Importantly, integrating these components into a digital tool can help foster emotion regulation behaviour change and adherence to the intervention, as they align with evidence-based behaviour change techniques (BCTs). Previous research has identified BCTs associated with mechanisms of change (Carey et al., 2019; Johnston et al., 2021; Michie et al., 2013), with relevant BCTs including prompts/cueing (i.e., reminders), non-specific rewards (i.e., reinforcement through gamification elements), and instructions on how to perform the behaviour (i.e., interacting with content in different ways). Collectively, these BCTs target knowledge, skills, reinforcement, and environmental context and resources as mechanisms of emotion regulation behaviour change (Johnston et al., 2021). While reminders and notifications are a key BCT and increase intervention engagement (Borghouts et al., 2021), some participants reported that too many reminders are unwanted and discourage engagement. Little research has explored reminders as a barrier (Zhu et al., 2025); however, personalization may serve as one vehicle to achieving appropriate reminder frequency.

Ongoing exploration of acceptability, appropriateness, and feasibility is critical in successful intervention design, trial, and implementation (Sekhon et al., 2017; Weiner et al., 2017). Acceptability suggests that an intervention is agreeable or palatable, while appropriateness refers to the relevance or fit of an intervention (Weiner et al., 2017). Participants

consistently noted that the tone of the content (i.e., acceptability) and relevance (i.e., appropriateness) are key factors that can encourage or discourage their use of an intervention. Specifically, content that is delivered in a patronizing or condescending manner diminishes the experiences and stressors that emerging adults face. Additionally, a key component of feasibility (i.e., the degree to which an intervention can be successfully used; Weiner et al., 2017) is time commitment, which emerging adults cited as a combined facilitator/barrier to engaging with a digital emotion regulation tool. Our findings provide an early understanding of the considerations for a digital tool. Moreover, based on an evidence-based taxonomy of intervention design approaches (O'Cathain et al., 2019), acceptability, appropriateness, and feasibility are best addressed through partnerships (e.g., people with lived experience, providers or others impacted by the delivery of the interventions, etc.) in planning and co-creation. Further, providing personalization (e.g., content, length of engagement) may increase the overall acceptability, appropriateness, and feasibility for emerging adults with differing preferences and needs.

**Limitations and Future Directions**

Findings of the current study are important to consider in light of several limitations. First, data were collected using self-report and are subject to response biases, including social desirability. However, findings provide a benchmark for further research on needs and preferences using qualitative co-creation methods. Second, almost all participants indicated that they were currently a post-secondary student, suggesting that findings may not be generalizable to non-student populations. As such, further exploration of the needs and preferences of emerging adults outside of a post-secondary context is needed. Third, it is possible that selection bias occurred, as individuals who participated in the survey may experience different emotion regulation and mental health outcomes than those who elected not to participate. However,

participants represented a range of mental health experiences, and the average psychological distress score in the current sample was comparable to that of Canadian post-secondary students (N = 103,936; Fagan et al., 2025), although the distribution of distress scores in the Fagan et al. (2025) study is unknown. Fourth, internal consistency of some CERQ-SF subscales was questionable, warranting caution in its interpretation. However, given the reliability concerns, CERQ-SF subscales were only reported descriptively and not included in other analyses. Finally, many participants did not have the opportunity to indicate if they used AI to generate their responses to the open-ended questions. As such, it is possible that thematic coding may have been influenced by unreported AI-generated responses (Zhang et al., 2025). Of note, AI-generated qualitative responses are an emerging concern, and researchers have not yet established an evidence-based approach to navigating this landscape. As a result, further research is needed to identify best practices and ensure their prospective use.

**Conclusions and Implications**

Our overarching research objective aims to address a critical gap in the literature by co-creating a digital emotion regulation intervention *with* and *for* emerging adults. As the first step in this large process, the current study explored emerging adults' awareness and beliefs about emotion regulation, needs and preferences for a digital intervention, and perceived facilitators and barriers. To our knowledge, this is the first study to explore these considerations. In addition to gaining emerging adults' needs, preferences, and perceptions, the current study provides guidance to future researchers on integrating a needs assessment within the ORBIT model of intervention development. Finally, our findings will directly inform the co-creation process with emerging adults to ensure a digital emotion regulation intervention best meets their needs and helps effectively and sustainably improve their emotion regulation skills and abilities.

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**Table 1**

*Participant Characteristics*

| **Demographic Variables** | ***N* (%)** | ***M* ± *SD*** |
|---|---|---|
| Age | | 21.0 ± 3.03 |
| Province | | |
| Alberta | 157 (8.4) | |
| British Columbia | 123 (6.6) | |
| Manitoba | 52 (2.8) | |
| New Brunswick | 23 (1.2) | |
| Newfoundland and Labrador | 97 (5.2) | |
| Nova Scotia | 89 (4.7) | |
| Ontario | 1072 (57.2) | |
| Prince Edward Island | 9 (0.5) | |
| Quebec | 184 (9.8) | |
| Saskatchewan | 69 (3.7) | |
| Gender Identity | | |
| Woman | 1374 (73.3) | |
| Man | 385 (20.5) | |
| Non-binary | 34 (1.8) | |
| Gender fluid | 11 (0.6) | |
| Transgender | 2 (0.1) | |
| Two-spirit | 1 (0.1) | |
| Identified with multiple gender identities | 57 (3.0) | |
| Preferred to self-identify | 7 (0.4) | |
| Ethnicity | | |
| Black (e.g., African heritage, people from the Caribbean, Americas, Europe, etc.) | 159 (8.5) | |
| East Asian (e.g., Chinese, Japanese, Korean, etc.) | 122 (6.5) | |
| Hispanic or Latinx (including Indigenous persons from Central/South America) | 45 (2.4) | |
| Indigenous | 8 (0.4) | |
| Indo-Caribbean (e.g., Trinidadian, Guyanese, etc.) | 18 (1.0) | |
| Person of mixed origin (e.g., one parent member of a racialized minority group) | 190 (10.1) | |
| South Asian (e.g., Indian, Pakistani, Bangladeshi, etc.) | 328 (17.5) | |
| Southeast Asian (e.g., Filipino, Thai, Vietnamese, etc.) | 93 (5.0) | |
| West Asian (e.g., Iranian, Lebanese, Afghan, etc.) | 165 (8.8) | |
| White/Caucasian | 709 (37.8) | |
| Preferred to self-identify | 28 (1.5) | |
| Relationship Status | | |
| Single | 1057 (56.4) | |
| Casually dating | 118 (6.3) | |
| In a relationship | 604 (32.2) | |
| Married/common-law | 80 (4.3) | |
| Other | 11 (0.6) | |
| Current Level of Studies | | |
| College/diploma | 73 (3.9) | |
| Undergraduate degree | 1487 (79.3) | |

| | |
|---|---|
| Master's degree | 181 (9.7) |
| Doctoral degree | 87 (4.6) |
| Other | 10 (0.5) |
| Field of Study | |
| Arts, humanities, & social sciences (e.g., psychology, sociology, history) | 770 (41.1) |
| Business (e.g., commerce, marketing, economics) | 77 (4.1) |
| Mathematics, statistics, and computing (e.g., computer sciences) | 33 (1.8) |
| Engineering and applied sciences | 142 (7.6) |
| Health sciences (public health, epidemiology, biomedical science) | 224 (11.9) |
| Professional program (e.g., nursing, pharmacy, law, social work) | 198 (10.6) |
| Life and physical sciences (e.g., physics, chemistry, biology) | 327 (17.4) |
| Other (e.g., education, kinesiology, environmental sciences) | 65 (3.4) |

*Note:* Percentages will not add to 100% in cases where participants did not respond to an item.

**Table 2**

*Descriptive Statistics on Emotion Regulation and Factors that Impact Emotion Regulation*

| **Measure and Subscales** | ***M*±*SD*** |
|---|---|
| Difficulties in Emotion Regulation Scale – Short Form, Total Score | 46.67 ± 12.33 |
| Strategies | 7.48 ± 3.01 |
| Nonacceptance | 8.33 ± 3.39 |
| Impulse | 6.28 ± 3.15 |
| Goals | 10.30 ± 3.18 |
| Awareness | 6.90 ± 2.50 |
| Clarity | 7.38 ± 2.63 |
| Cognitive Emotion Regulation Questionnaire – Short Form | |
| Self-blame | 6.48 ± 1.69 |
| Other-blame | 4.96 ± 1.67 |
| Rumination | 7.11 ± 1.53 |
| Catastrophizing | 6.11 ± 1.91 |
| Positive refocusing | 5.17 ± 1.76 |
| Refocus on planning | 6.90 ± 1.63 |
| Positive reappraisal | 7.10 ± 1.80 |
| Putting into perspective | 6.67 ± 1.71 |
| Acceptance | 7.38 ± 1.59 |
| Kessler-10 Psychological Distress Scale, Total Score | 28.05 ± 8.54 |
| Distress-Tolerance Scale Short Form, Total Score | 12.26 ± 4.16 |
| Cognitive Flexibility Inventory, Total Score | 95.46 ± 13.27 |
| Alternatives | 67.23 ± 10.09 |
| Control | 28.22 ± 7.93 |

**Table 3**

*Participant Mental Health and Treatment*

| | *Diagnosed MHD* *N* (% of 511) | *Suspected MHD* *N* (% of 492) |
|---|---|---|
| Mental Health Disorders | | |
| Anxiety disorder (e.g., GAD, panic disorder) | 378 (74.0) | 336 (68.3) |
| Attention-deficit/hyperactivity disorder | 198 (38.7) | 208 (42.3) |
| Autism spectrum disorder | 49 (9.6) | 60 (12.2) |
| Bipolar disorder | 22 (4.3) | 32 (6.5) |
| Depression | 279 (54.6) | 197 (40.0) |
| Dissociative disorder | 10 (2.0) | 25 (5.1) |
| Eating or body dysmorphic disorder | 73 (14.3) | 97 (19.7) |
| Insomnia | 38 (7.4) | 55 (11.2) |
| Obsessive-compulsive disorder | 82 (16.0) | 81 (16.5) |
| Personality disorder | 34 (6.7) | 16 (3.3) |
| Substance use disorder | 19 (3.8) | 10 (2.0) |
| Trauma-related disorder (e.g., PTSD) | 16 (3.1) | 2 (0.4) |
| Other | 19 (3.7) | 15 (3.0) |
| Number of Mental Health Disorders | | |
| One | 153 (29.9) | 159 (32.3) |
| Two | 156 (30.5) | 150 (30.5) |
| Three to four | 166 (32.5) | 138 (28.0) |
| Five or more | 35 (6.8) | 38 (7.7) |
| Provider of Mental Health Disorder Diagnosis | | |
| Psychologist | 120 (23.5) | – |
| Primary care provider (e.g., family physician) | 170 (33.3) | – |
| Psychiatrist | 167 (32.7) | – |
| Therapist/Counsellor | 30 (5.9) | – |
| Myself | 4 (0.8) | – |
| Other | 15 (2.9) | – |
| Treatment Received | | |
| Medication | 402 (78.7) | 49 (10.0) |
| Therapy | 388 (75.9) | 141 (28.7) |
| Peer support | 121 (23.7) | 78 (15.9) |
| Family and friends | 176 (34.4) | 286 (58.1) |
| Virtual support | 85 (16.6) | 46 (9.3) |
| Other | 14 (2.7) | 5 (1.0) |
| No treatment | 25 (4.9) | 217 (44.1) |
| | *Diagnosed MHD* *N* (% of 388) | *Suspected MHD* *N* (% of 141) |
| Psychotherapy Modality | | |
| Cognitive-behavioral therapy | 260 (67.0) | 54 (38.3) |
| Dialectical behavior therapy | 62 (16.0) | 2 (1.4) |
| Acceptance and commitment therapy | 33 (8.5) | 3 (2.1) |
| Supportive counselling | 147 (37.9) | 67 (47.5) |
| Eye Movement Desensitization and Reprocessing | 32 (8.2) | 7 (5.0) |
| Other | 15 (3.9) | 4 (2.8) |
| I don’t know | 67 (17.3) | 37 (26.2) |

**Table 4**

*Participant Attitudes Towards and Beliefs About Emotion Regulation*

| | *M*±*SD* | Repeated Measures ANOVA/ Paired-Samples T-Test |
|---|---|---|
| Age Group | | |
| Adolescents often struggle with ER | 4.35±0.72 | |
| Emerging adults often struggle with ER | 3.90±0.72 | $F(2.44, 4279.40) = 828.75$, $p < .001$** |
| Adults often struggle with ER | 3.35±0.88 | |
| Older Adults often struggle with ER | 3.35±1.03 | |
| Domains of Functioning | | |
| ER impacts mental health | 4.46±0.66 | $F(1.83, 3182.92) = 230.18$, $p < .001$** |
| ER impacts physical health | 4.23±0.72 | |
| ER impacts well-being | 4.47±0.62 | |
| Form of Regulation | | |
| Individuals can regulate emotions by themselves | 3.65±0.78 | $t(1740) = 9.86$, $p < .001$** |
| Individuals can regulate emotions with others | 3.84±0.71 | |
| | $M_{difference}$ | Bonferroni Post Hoc |
| Age Group | | |
| Adolescents – Emerging Adults | 0.44 | $t(1756) = 24.03$, $p < .001$** |
| Adolescents – Adults | 0.99 | $t(1756) = 39.68$, $p < .001$** |
| Adolescents – Older Adults | 0.99 | $t(1756) = 36.01$, $p < .001$** |
| Emerging Adults – Adults | 0.55 | $t(1756) = 26.86$, $p < .001$** |
| Emerging Adults – Older Adults | 0.55 | $t(1756) = 20.66$, $p < .001$** |
| Adults – Older Adults | 0.00 | $t(1756) = 0.10$, $p = 1.000$ |
| Domains of Functioning | | |
| Mental Health – Physical Health | 0.24 | $t(1743) = 16.64$, $p < .001$** |
| Mental Health – Well-Being | -0.01 | $t(1743) = -0.85$, $p = 1.000$ |
| Physical Health – Well-Being | -0.25 | $t(1743) = -18.00$, $p < .001$** |

Notes: $p < .003$*, $p < .001$**, ER = emotion regulation

**Table 5**

*Multiple Linear Regressions on Perceived Importance of and Ability to Improve Emotion Regulation Skills*

| Importance of emotion regulation skills, $F(6, 1558) = 43.82$, $p < .001$, $R^2_{adj} = .14$ | Unstandardized Coefficient | | Standardized Coefficient | | |
|---|---|---|---|---|---|
| | *B* | *SE* | *β* | *t* | *p* |
| Emotion dysregulation | 0.000 | 0.002 | 0.006 | 0.178 | .859 |
| Psychological distress | -0.001 | 0.002 | -0.021 | -0.628 | .530 |
| Cognitive flexibility | 0.016 | 0.001 | 0.354 | 13.144 | < .001** |
| Distress tolerance | -0.014 | 0.005 | -0.098 | -3.026 | < .003* |
| Preferred tool frequency | | | | | |
| *Daily use (ref) – Occasional use* | -0.211 | 0.035 | -0.354 | -6.118 | < .001** |
| *Daily use (ref) – No use* | -0.280 | 0.061 | -0.470 | -4.603 | < .001** |
| *Occasional use (ref) – No use* | -0.069 | 0.065 | -0.115 | -1.065 | .287 |
| Emotion regulation skills can be improved, $F(6, 1558) = 36.68$, $p < .001$, $R^2_{adj} = .12$ | Unstandardized Coefficient | | Standardized Coefficient | | |
| | *B* | *SE* | *β* | *t* | *p* |
| Emotion dysregulation | 0.001 | 0.002 | 0.023 | 0.647 | .518 |
| Psychological distress | -0.001 | 0.003 | -0.007 | -0.212 | .832 |
| Cognitive flexibility | 0.017 | 0.001 | 0.351 | 12.887 | < .001** |
| Distress tolerance | -0.011 | 0.005 | -0.074 | -2.267 | .024 |
| Preferred tool frequency | | | | | |
| *Daily use (ref) – Occasional use* | -0.151 | 0.037 | -0.239 | -4.084 | < .001** |
| *Daily use (ref) – No use* | -0.247 | 0.065 | -0.392 | -3.798 | < .001** |
| *Occasional use (ref) – No use* | -0.096 | 0.069 | -0.153 | -1.393 | .164 |

*Note*: $p < .003$*, $p < .001$**

**Table 6**

*Participant Preferences for Frequency and Duration of Using a Digital Emotion Regulation Tool*

| Preferred Frequency of Use and Duration of Intervention | *N* | *Valid %* |
|---|---|---|
| Daily | 1189 | 71.3% |
| *3 days* | *358* | *30.2%* |
| *5 days* | *178* | *15.0%* |
| *1 week* | *174* | *14.7%* |
| *2 weeks* | *130* | *11.0%* |
| *4 weeks* | *152* | *12.8%* |
| *8 weeks* | *129* | *10.9%* |
| *Other* | *66* | *5.6%* |
| Occasional use | 377 | 22.6% |
| *A few times per week* | *84* | *5.0%* |
| *Weekly* | *83* | *5.0%* |
| *Bi-weekly* | *30* | *1.8%* |
| *Monthly* | *23* | *1.4%* |
| *As needed* | *134* | *8.0%* |
| *One-time only* | *23* | *1.4%* |
| Would not use a digital emotion regulation tool | 102 | 6.1% |

| Duration per session | Daily Use *N* (%) | Occasional Use *N* (%) |
|---|---|---|
| 5 minutes | 306 (25.8) | 100 (26.3) |
| 10 minutes | 479 (40.3) | 128 (33.7) |
| 15 minutes | 281 (23.7) | 82 (21.6) |
| 20 minutes | 79 (6.7) | 41 (10.8) |
| 30 minutes | 41 (3.5) | 18 (4.7) |
| 60 minutes | – | 7 (1.8) |
| Other | 2 (0.2) | 4 (1.1) |

**Table 7**

*Comparison of Emotion Regulation and Mental Health Indicators by Preferred Frequency of Using a Digital Tool*

| | Welch's One-Way ANOVA | | | Games-Howell Post Hoc Tests | | | | |
|---|---|---|---|---|---|---|---|---|
| | *df* | *F* | *p* | *df* | *t* | *p* | *Effect Size* | $M_{diff}$ |
| Emotion Dysregulation | 2, 246.02 | 11.25 | < .001** | | | | $\eta^2 = .01$ | |
| Daily use – Occasional use | | | | 663.02 | 3.83 | < .001** | $d = .22$ | 2.68 |
| Daily use – No use | | | | 112.03 | 3.20 | < .001** | $d = .35$ | 4.48 |
| Occasional use – No use | | | | 140.48 | 1.25 | .426 | $d = .18$ | 1.80 |
| Psychological Distress | 2, 245.38 | 29.57 | < .001** | | | | $\eta^2 = .04$ | |
| Daily use – Occasional use | | | | 626.38 | 6.20 | < .001** | $d = .37$ | 3.05 |
| Daily use – No use | | | | 112.34 | 5.33 | < .001** | $d = .58$ | 5.11 |
| Occasional use – No use | | | | 142.18 | 2.02 | .112 | $d = .24$ | 2.06 |
| Cognitive Flexibility | 2, 245.19 | 1.84 | .161 | | | | $\eta^2 = .00$ | |
| Distress Tolerance | 2, 246.61 | 45.49 | < .001** | | | | $\eta^2 = .05$ | |
| Daily use – Occasional use | | | | 653.01 | 6.87 | < .001** | $d = .40$ | -1.61 |
| Daily use – No use | | | | 113.31 | 7.55 | < .001** | $d = .79$ | -3.20 |
| Occasional use – No use | | | | 147.06 | 3.49 | < .003* | $d = .40$ | -1.59 |

Notes: $p < .003$*, $p < .001$**

**Table 8**

*Participant Ratings of the Importance of Content to Include in Digital Emotion Regulation Tool*

| Psychotherapeutic Content | Total *M*±*SD* | Daily *M*±*SD* | Occasional *M*±*SD* | No Use *M*±*SD* |
|---|---|---|---|---|
| Healthy ways to manage intense emotions | 6.29±0.91 | 6.40±0.81 | 6.07±1.02 | 5.78±1.24 |
| Strategies to regulate emotions by self | 6.27±0.91 | 6.36±0.83 | 6.05±1.07 | 6.06±0.99 |
| Triggers of unhealthy responses to emotions | 6.22±0.95 | 6.34±0.85 | 5.95±1.08 | 5.95±1.20 |
| Managing behaviour when responding to intense emotions | 6.17±0.92 | 6.28±0.86 | 5.95±1.03 | 5.85±1.04 |
| How thoughts influence emotions | 6.15±0.94 | 6.24±0.87 | 5.98±1.00 | 5.71±1.18 |
| Preventing unhealthy responses to emotions | 6.15±0.99 | 6.25±0.92 | 5.92±1.08 | 5.86±1.15 |
| How to self-monitor thoughts and feelings | 6.14±0.93 | 6.26±0.86 | 5.86±1.03 | 5.82±1.12 |
| Strategies to regulate emotions can be adaptive and/or maladaptive | 6.09±1.00 | 6.20±0.92 | 5.82±1.08 | 5.77±1.29 |
| How behaviours influence emotions | 6.07±0.93 | 6.16±0.86 | 5.80±1.06 | 5.89±1.02 |
| Acceptance | 6.06±0.97 | 6.14±0.90 | 5.92±1.04 | 5.65±1.28 |
| How thoughts can be used to change emotional responses | 6.05±0.94 | 6.15±0.89 | 5.87±0.99 | 5.65±1.10 |
| Recognizing different emotions | 6.05±1.02 | 6.14±0.98 | 5.86±1.06 | 5.64±1.05 |
| Cognitive flexibility | 6.01±0.98 | 6.14±0.91 | 5.76±1.04 | 5.56±1.15 |
| Challenging negative assumptions | 6.01±1.04 | 6.11±1.01 | 5.77±1.06 | 5.73±1.13 |
| Becoming more comfortable with unwanted/distressing emotions | 5.99±1.06 | 6.12±0.99 | 5.69±1.11 | 5.65±1.33 |
| Physiological impacts of emotions | 5.98±1.02 | 6.10±0.93 | 5.71±1.19 | 5.57±1.11 |
| Strategies to regulate emotions with others | 5.98±1.03 | 6.09±0.95 | 5.69±1.19 | 5.67±1.10 |
| Understanding differences between emotions | 5.97±1.03 | 6.11±0.94 | 5.68±1.15 | 5.49±1.17 |
| Mindfulness | 5.97±1.07 | 6.08±1.00 | 5.69±1.18 | 5.70±1.21 |
| Relationship between emotion dysregulation and mental health disorders | 5.95±1.05 | 6.05±1.00 | 5.75±1.12 | 5.46±1.15 |
| Reducing the intensity of negative emotions | 5.90±1.11 | 6.04±1.05 | 5.65±1.14 | 5.21±1.33 |
| Regulating emotions within different cultural contexts | 5.81±1.16 | 5.95±1.10 | 5.46±1.20 | 5.37±1.29 |
| Impacts of emotion dysregulation | 5.81±1.07 | 5.92±1.00 | 5.56±1.19 | 5.33±1.22 |
| How to change our perspectives to look at the positive aspects of a situation | 5.80±1.14 | 5.91±1.09 | 5.57±1.20 | 5.51±1.37 |

| | | | | |
|---|---|---|---|---|
| How interventions help improve emotion regulation abilities | 5.79±1.07 | 5.91±1.02 | 5.47±1.12 | 5.51±1.19 |
| Other Skills and Components | Total *M*±*SD* | Daily *M*±*SD* | Occasional *M*±*SD* | No Use *M*±*SD* |
| Managing stress | 6.41±0.86 | 6.51±0.79 | 6.21±0.98 | 6.08±1.03 |
| Improving communication skills | 6.15±0.98 | 6.23±0.91 | 5.95±1.09 | 5.93±1.22 |
| Establishing a coping plan | 6.13±0.98 | 6.26±0.91 | 5.86±1.06 | 5.67±1.18 |
| Self-compassion | 6.12±0.99 | 6.26±0.87 | 5.90±1.06 | 5.37±1.38 |
| Improving problem-solving skills | 6.02±1.05 | 6.14±0.97 | 5.67±1.22 | 5.84±1.07 |
| Relaxation techniques | 6.01±1.07 | 6.13±0.99 | 5.75±1.21 | 5.63±1.26 |
| Improving social skills | 5.85±1.10 | 5.93±1.05 | 5.65±1.22 | 5.67±1.22 |
| Spirituality/spiritual well-being | 5.19±1.42 | 5.30±1.36 | 4.86±1.52 | 5.02±1.57 |

**Table 9**

*Importance of Methods for Delivering Content and Features to Include in the Digital Tool*

| | Total<br>*M*±*SD* | Daily<br>*M*±*SD* | Occasional<br>*M*±*SD* | No Use<br>*M*±*SD* |
|---|---|---|---|---|
| Games | 4.07±1.02 | 4.17±0.94 | 3.92±1.12 | 3.50±1.21 |
| Infographics | 4.01±0.93 | 4.12±0.89 | 3.81±0.99 | 3.58±1.04 |
| Video clips | 3.91±0.99 | 3.97±0.61 | 3.80±1.01 | 3.60±1.15 |
| Text Descriptions | 3.68±0.98 | 3.76±0.96 | 3.49±0.97 | 3.44±1.04 |
| Audio clips | 3.43±1.04 | 3.50±1.03 | 3.24±1.03 | 3.25±1.10 |
| | Total<br>*M*±*SD* | Daily<br>*M*±*SD* | Occasional<br>*M*±*SD* | No Use<br>*M*±*SD* |
| Ability to personalize content received | 4.29±0.75 | 4.37±0.70 | 4.11±0.81 | 3.97±0.85 |
| Professional support | 4.28±0.81 | 4.34±0.77 | 4.16±0.88 | 4.05±0.88 |
| Self-monitoring | 4.27±0.69 | 4.36±0.66 | 4.10±0.70 | 3.93±0.79 |
| Guided exercises | 4.25±0.79 | 4.34±0.75 | 4.08±0.78 | 3.84±1.03 |
| Ability to personalize frequency of engaging with intervention | 4.19±0.78 | 4.25±0.75 | 4.08±0.82 | 3.96±0.86 |
| Mental health mood scales | 4.14±0.80 | 4.25±0.74 | 3.91±0.86 | 3.75±0.93 |
| Goal setting | 4.11±0.80 | 4.21±0.74 | 3.90±0.89 | 3.73±0.92 |
| Ability to personalize the length of the intervention | 4.10±0.81 | 4.17±0.77 | 3.97±0.86 | 3.83±0.92 |
| Practice scenarios | 3.96±0.88 | 4.05±0.84 | 3.78±0.91 | 3.65±1.00 |
| Peer support | 3.90±0.91 | 3.94±0.86 | 3.81±0.96 | 3.76±0.93 |
| Journals | 3.81±0.96 | 3.93±0.92 | 3.58±0.95 | 3.40±1.09 |
| Opportunity to engage with family/friends | 3.55±1.07 | 3.58±1.09 | 3.48±1.04 | 3.41±0.97 |

**Figure 1**

*Schedule of Study Measures*

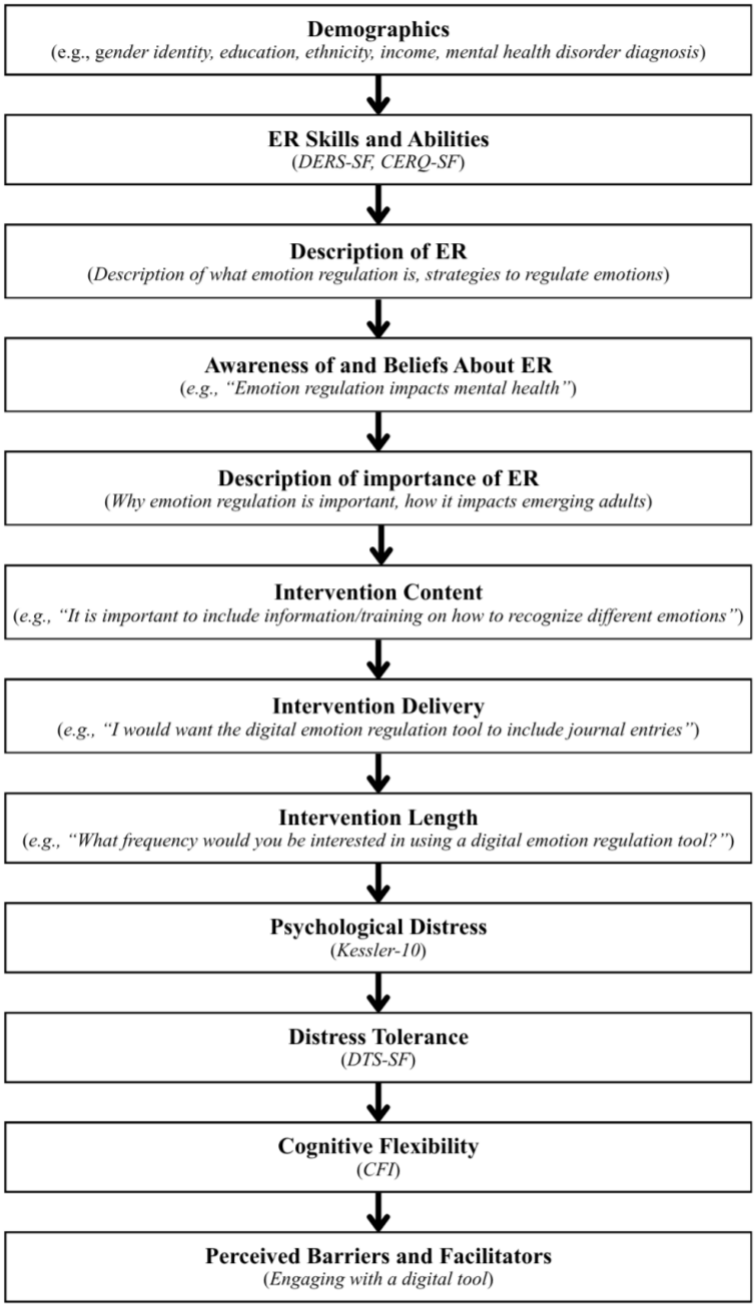
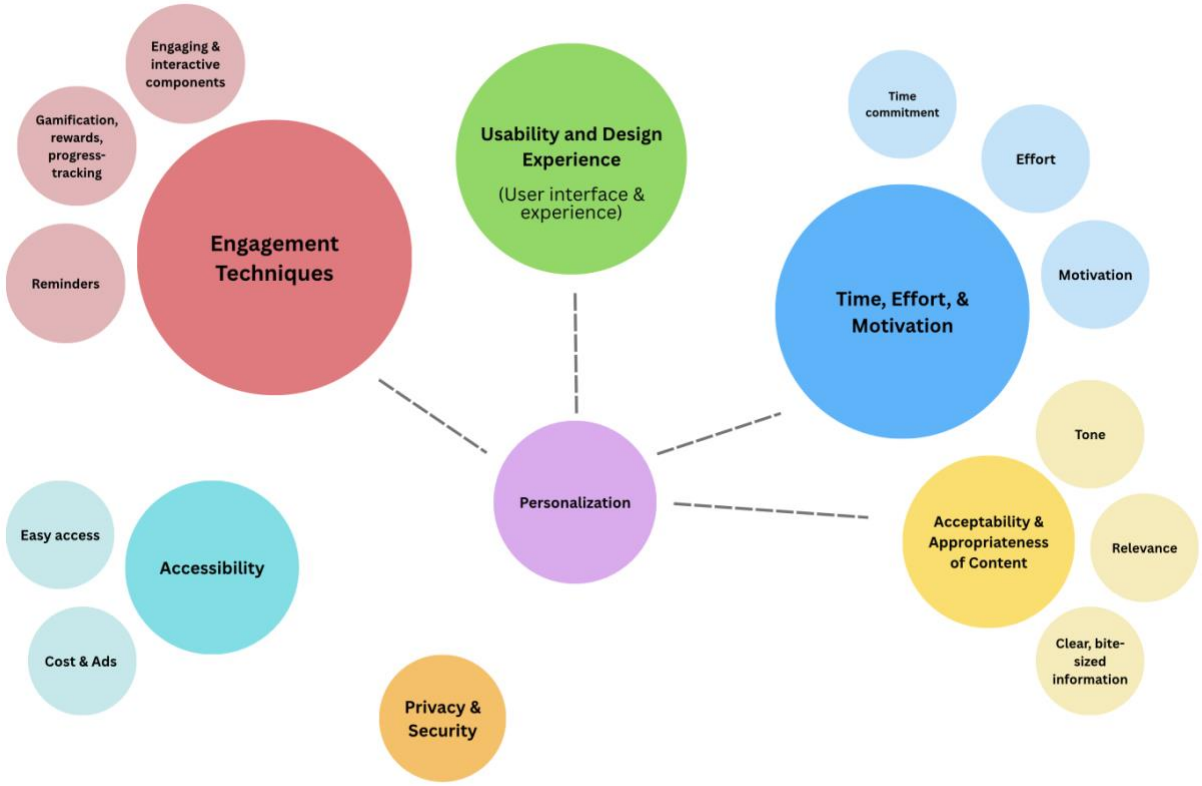


**Figure 2**

*Themes and Sub-Themes Identified on Facilitators and Barriers to Engaging with a Digital Emotion Regulation Tool*



Appendix A: Consent Form

**Study Name:** From Thrills to Skills: Exploring Emerging Adults' Needs and Preferences for a Digital Emotion Regulation Tool

**Researchers:**

| | | | |
|---|---|---|---|
| Dr. Jennine Rawana | Faculty Researcher | 131 BSB | rawana@yorku.ca |
| Laura Harris-Lane | Student Research Lead | 133D BSB | lharris1@yorku.ca |
| Dr. Madison Aitken | Faculty Researcher | 108B BSB | aitken@yorku.ca |
| Dr. Heather Prime | Faculty Researcher | 108D BSB | hprime@yorku.ca |
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| Kaja Bakken | Student Researcher | 133D BSB | kbakken@yorku.ca |
| Kate Y. Lee | Student Researcher | 133D BSB | katelee@yorku.ca |
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| Nicole Dimitrova | Student Researcher | 133D BSB | nicdim@yorku.ca |


**Purpose of the Research:** The purpose of this research is to explore the needs and preferences of emerging adults (i.e., ages 18-29 years old) for a digital emotion regulation tool (i.e., brief intervention/ resource to help emerging adults regulate their emotions). Findings from this study will be published in journals, presented at conferences, and shared through infographics on the REACH Lab website.

**What You Will Be Asked to Do in the Research:** This study will be conducted online. You will be asked questions related to your demographic information, managing emotions, mental health, content you would like to see in a digital emotion regulation tool, preferences for the delivery of digital emotion regulation tool, and factors that could make it easier and/or harder to use a digital tool and change behaviours. This survey will take approximately 30 minutes to complete, and you will be entered into a draw to win one of three $50 Everything gift cards (allows you to select a vendor of your choice; e.g., Amazon, Starbucks).

**Risks and Discomforts:** There are no serious foreseeable risks involved with participating in the current study. Some people may find answering questions related to personal issues, such as emotions, to be uncomfortable or distressing. If you become distressed, the following national resources are available:

- Kids Help Phone (ages 5-29 years): Call 1-800-668-6868 (toll-free) or text CONNECT to 686868. Available 24 hours per day, 7 days per week.
- Suicide Crisis Helpline: Call or text 9-8-8.
- Regional mental health supports can be found though the Government of Canada: https://www.canada.ca/en/public-health/services/mental-health-services/mental-health-get-help.html#a2

For information about mental health, substance use, and well-being, please visit:

- BridgetheGapp: https://bridgethegapp.ca/
- Free online courses available through the Centre for Addiction and Mental Health (CAMH): https://moodle8.camhx.ca/moodle/
- Canadian Association for Mental Health: https://cmha.ca/find-info/mental-health/general-info/

**Benefits of the Research and Benefits to You:** You may or may not benefit directly from this research. The main benefits of participating in this research include being entered into a draw to win one of three $50 Everything gift cards, which allows you to select from a list of vendors (e.g., Amazon, Starbucks, etc.). Other benefits of participating include contributing to the development of a digital emotion regulation intervention tailored to emerging adults.

**Voluntary Participation and Withdrawal:** Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer, to stop participating, or to refuse to answer particular questions will not influence the nature of the ongoing relationship you may have with the researchers or study staff, and York University either now, or in the future. If you stop participating, you will still be eligible to receive the promised compensation for agreeing to be in the project. In the event you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

**Confidentiality:** All of your responses to the questions asked during the survey will be kept confidential. Unless you specifically indicate your consent, your name will not appear in any report or publication of the research. Participants quotes may be used in knowledge-creation products; however, quotes will not contain identifying information. Data is not anonymous, as email addresses and IP addresses will be collected to remove fraudulent responses (i.e., bots). However, email and IP addresses will be assigned a unique ID, and will be stored separately from the data, in a password-protected file on a secure server. Only email addresses of participants who consent to being contacted about future research opportunities will be retained for ten years. All other email addresses, and all IP addresses will be permanently deleted. IP addresses from outside of Canada will be removed from the study.

Your data will be safely stored on the secure, password-protected survey platform, and will be transferred to Dr. Jennine Rawana's secure research server. Only research team members will have access to this information. The data files, which do not include identifying information will be kept indefinitely at York University. Confidentiality will be provided to the fullest extent possible by law. The data collected in this research project may be used –in an anonymized form– by members of the research team in subsequent research investigations exploring similar lines of inquiry. Such projects will still undergo ethics review by the HPRC, our institutional REB. Any secondary use of anonymized data by the research team will be treated with the same degree of confidentiality and anonymity as in the original research project.

The researchers acknowledge that the host of the online survey, QuestionPro, may automatically collect participant data without their knowledge. Although this information may be provided or made accessible to the researchers, it will not be used or saved without participant's consent on the researchers' system. Further, because this project employs e-based collection techniques, data may be subject to access by third parties as a result of various security legislation now in place in many countries and thus the confidentiality and privacy of data cannot be guaranteed during web-based transmission.

**Questions About the Research?** If you have questions about the research in general or about your role in the study, please feel free to contact Dr. Jennine Rawana either by telephone at (416) 736-2100, extension 20771 or by e-mail (rawana@yorku.ca). This research has received ethics review and approval by the Human Participants Review Sub-Committee, York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, please contact the Manager, Research Ethics in the Office of Research Ethics, York University (e-mail ore@yorku.ca). This office oversees the ethical conduct of research studies and is not part of the study team. Everything that you discuss will be kept confidential.

**Legal Rights:** Please select below that you "agree" or "disagree" to participate in this study. By selecting "agree" and continuing to complete this survey online, you are providing your consent to participate in this study and are indicating that you have read this Consent Form. Thank you.

Appendix B: Eligibility and Demographic Questions

**Screener Questions**

1. What is your age? Please select from the list below.
   - 17 years old or younger
   - 18 years old
   - 19 years old
   - 20 years old
   - 21 years old
   - 22 years old
   - 23 years old
   - 24 years old
   - 25 years old
   - 26 years old
   - 27 years old
   - 28 years old
   - 29 years old
   - 30 years old or older

2. What Canadian province or territory do you currently live in?
   - Alberta
   - British Columbia
   - Manitoba
   - New Brunswick
   - Newfoundland and Labrador
   - Northwest Territories
   - Nova Scotia
   - Nunavut
   - Ontario
   - Prince Edward Island
   - Quebec
   - Saskatchewan
   - Yukon
   - I am not currently living in a Canadian province or territory

**Demographic Questions**

3. Please indicate your gender identity/identities? Select all that apply.
   - Man
   - Woman
   - Non-binary
   - Transgender
   - Two-Spirit
   - Gender fluid
   - I prefer to self-identify: _____

4. What is your ethnic background? Select all that apply.
   - Black (e.g., African and African heritage people from the Caribbean, Americas, Europe, etc.)
   - East Asian (e.g., Chinese, Japanese, Korean, etc.)
   - Hispanic or Latinx (including Indigenous persons from Central and South America)
   - Indigenous peoples of North America

- Indo-Caribbean (e.g., Trinidadian, Guyanese, etc.)
- Person of mixed origin (e.g., with one parent member of a visible/racialized minority group)
- South Asian (e.g., Indian, Pakistani, Bangladeshi, etc.)
- Southeast Asian (e.g., Filipino, Thai, Vietnamese, etc.)
- West Asian (e.g., Iranian, Lebanese, Afghan, etc.)
- White/Caucasian
- I prefer to self-identify: _____

5. What is the highest level of education you have completed?
   - Less than high school diploma
   - High school diploma or equivalent (e.g., GED)
   - College degree/diploma
   - Undergraduate degree
   - Master's degree
   - Doctoral degree
   - Other, please specify: _____

*6.* Are you currently a student?
   - Yes *(proceed to question 7)*
   - No *(skip to question 9)*

7. Please select your current level of studies and enter how many years you have completed:
   - College/Diploma: _____
   - Undergraduate degree: _____
   - Master's degree: _____
   - Doctoral degree: _____
   - Other, please specify the program and number of years you have completed: _____

8. Which option best describes your field of study?
   - Arts, humanities, and social sciences (e.g., psychology, sociology, anthropology, history)
   - Business (e.g., commerce, marketing)
   - Computing (e.g., computer sciences, technology)
   - Engineering and applied sciences
   - Health sciences (public health, epidemiology)
   - Professional program (e.g., nursing, pharmacy, medicine, law, dentistry, social work)
   - Life and physical sciences (e.g., physics, chemistry, biology)
   - I am not sure, my program is: _____
   - My program does not fit within these categories. Please specify your program: _____

9. Sometimes students experience academic difficulties. Have you or are you currently experiencing one or more of the following in an academic semester? Please select all that apply:
   - Missed or failed more than one assignment and/or exam
   - Attendance concerns (e.g., repeated absences; regularly coming late and/or leaving early; sleeping in class)
   - Failed one or more courses
   - Received an academic warning
   - Multiple requests for deadline extensions, incomplete assignment submissions, and/or withdrawing from courses
   - Other, please specify: _____
   - None of these apply to me

10. What is the highest level of education your parents have completed?

| Parent 1 | Parent 2 | |
|---|---|---|
| ☐ | ☐ | Less than high school |
| ☐ | ☐ | High school diploma or equivalent (e.g., GED) |
| ☐ | ☐ | Some college or university studies |
| ☐ | ☐ | College diploma |
| ☐ | ☐ | Bachelor's degree |
| ☐ | ☐ | Some post graduate studies (e.g., Masters, PhD) |
| ☐ | ☐ | Graduate degree (e.g., Masters, PhD) |
| ☐ | ☐ | Not applicable/prefer not to answer |

Has anyone in your immediate family (other than yourself) attended post-secondary education in Canada (e.g., university, college)? Immediate family refers to parents and siblings.

- Yes
- No

11. What is your total annual household income? *Please include yourself and any family members you live with.*
    - $0 – $24,999
    - $25,000 – $49,999
    - $50,000 – $74,999
    - $75,000 – $99,999
    - $100,000 – $124,999
    - $125,000 – $149,999
    - $150,000 – $174,999
    - $175,000 – $199,999
    - $200,000 or more

12. Who do you currently live with?
    - Alone
    - Family
    - Friend(s)
    - Roommate(s)
    - Romantic partner
    - Other, please specify:

13. Were you born in Canada?
    - Yes *(skip to question 16)*
    - No *(complete questions 14 and 15)*

14. How long have you lived in Canada? _____

15. What country were you born in?

16. Have you been diagnosed with a mental health disorder?
    - Yes, I have been diagnosed with a mental health disorder (proceed to question 18)
    - No, I have **not** been diagnosed with a mental health disorder, but **I believe** I have a mental health disorder (proceed to question 18)

- No, I have **not** been diagnosed with a mental health disorder, and **I do not believe** I have a mental health disorder (skip to next questionnaire)

17. Please indicate what mental health disorder(s) you have been diagnosed with. Select all that apply:
    - Alcohol use disorder
    - Anxiety disorder (e.g., generalized anxiety disorder, panic disorder)
    - Attention-deficit/hyperactivity disorder (ADHD)
    - Autism spectrum disorder
    - Bipolar disorder
    - Depression
    - Dissociative disorder
    - Eating or body dysmorphic disorder
    - Insomnia
    - Neurodevelopmental disorder (not listed)
    - Obsessive-compulsive disorder
    - Personality disorder
    - Schizophrenia or other psychotic disorder
    - Substance use disorder
    - Other, please specify: _____

18. Who did you receive your mental health disorder diagnosis (or diagnoses) from?
    - Psychologist
    - Primary care provider (e.g., Family Physician, Nurse Practitioner)
    - Psychiatrist
    - Therapist/Counsellor
    - Myself
    - Other, please specify: _____

19. Have you received treatment/support for your mental health disorder? Select all that apply:
    - Medication
    - Therapy (*continue to question 20*)
    - Peer support
    - Support from friends/family
    - Virtual support (e.g., help phones, chat boxes, apps or websites, etc.)
    - Other, please specify: _____

*If therapy not selected, skip to next questionnaire.*

20. When you received therapy, are you aware of what type of therapy you received? Select all that apply:
    - Cognitive behavior therapy
    - Dialectical behavior therapy
    - Acceptance and commitment therapy
    - Supportive counselling
    - Eye Movement Desensitization and Reprocessing (EMDR)
    - I don’t know what type of therapy I received
    - Other, please specify: _____

Appendix C: Difficulties in Emotion Regulation – Short Form

Please answer the following questions based on yourself. Please indicate how often the following statements apply to you by selecting the appropriate number from the scale.

| | Almost never | Sometimes | About half the time | Most of the time | Almost always |
|---|---|---|---|---|---|
| I pay attention to how I feel. | ☐ | ☐ | ☐ | ☐ | ☐ |
| I have no idea how I am feeling. | ☐ | ☐ | ☐ | ☐ | ☐ |
| I have difficulty making sense out of my feelings. | ☐ | ☐ | ☐ | ☐ | ☐ |
| I care about what I am feeling. | ☐ | ☐ | ☐ | ☐ | ☐ |
| I am confused about how I feel. | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I'm upset, I acknowledge my emotions. | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I'm upset, I become embarrassed for feeling that way. | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I'm upset, I have difficulty getting work done. | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I'm upset, I become out of control. | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I'm upset, I believe that I'll end up feeling very depressed. | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I'm upset, I have difficulty focusing on other things. | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I'm upset, I feel guilty for feeling that way. | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I'm upset, I have difficulty concentrating. | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I'm upset, I have difficulty controlling my behaviors. | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I'm upset, I believe that there is nothing I can do to make myself feel better. | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I'm upset, I become irritated at myself for feeling that way. | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I'm upset, I lose control over my behavior. | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I'm upset, it takes me a long time to feel better. | ☐ | ☐ | ☐ | ☐ | ☐ |

Appendix D: Cognitive Emotion Regulation Questionnaire – Short Form

Everyone gets confronted with negative or unpleasant experiences, and everyone responds to them in their own way. By the following questions, you are asked to indicate what you generally think when you experience negative or unpleasant events.

Please read the sentences below and indicate how often you have the following thoughts by circling the most suitable answer.

| | Almost Never | Rarely | Sometimes | Often | Almost Always |
|---|---|---|---|---|---|
| 1. I think that I have to accept that this has happened. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. I often think about how I feel about what I have experienced. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. I think I can learn something from the situation. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. I feel that I am the one who is responsible for what has happened. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. I think that I have to accept the situation. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6. I am preoccupied with what I think and feel about what I have experienced. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7. I think of pleasant things that have nothing to do with it. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8. I think that I can become a stronger person as a result of what has happened. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 9. I keep thinking about how terrible it is what I have experienced. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 10. I feel that others are responsible for what has happened. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 11. I think of something nice instead of what has happened. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 12. I think about how to change the situation. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 13. I think that it hasn't been too bad compared to other things. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 14. I think that basically the cause must lie within myself. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 15. I think about a plan of what I can do best. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 16. I tell myself that there are worse things in life. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 17. I continually think how horrible the situation has been. | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | | | | |
|---|---|---|---|---|---|
| 18. I feel that basically the cause lies with others. | ☐ | ☐ | ☐ | ☐ | ☐ |

Appendix E: Description of and Questions About Emotion Regulation




1) Please rate your agreement with the following statements:

| | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| Adolescents (ages 13-17 years old) often struggle with emotion regulation. | ☐ | ☐ | ☐ | ☐ | ☐ |
| Emerging adults (ages 18-29 years old) often struggle with emotion regulation. | ☐ | ☐ | ☐ | ☐ | ☐ |
| Adults (ages 30-64 years) often struggle with emotion regulation. | ☐ | ☐ | ☐ | ☐ | ☐ |
| Older adults (ages 65+ years) often struggle with emotion regulation. | ☐ | ☐ | ☐ | ☐ | ☐ |

2) Please rate your agreement with the following statements:

| | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| Emotion regulation impacts *mental health*. | ☐ | ☐ | ☐ | ☐ | ☐ |
| Emotion regulation impacts *physical health*. | ☐ | ☐ | ☐ | ☐ | ☐ |
| Emotion regulation impacts *well-being.* | ☐ | ☐ | ☐ | ☐ | ☐ |
| Individuals can regulate their emotions *by themselves*. | ☐ | ☐ | ☐ | ☐ | ☐ |

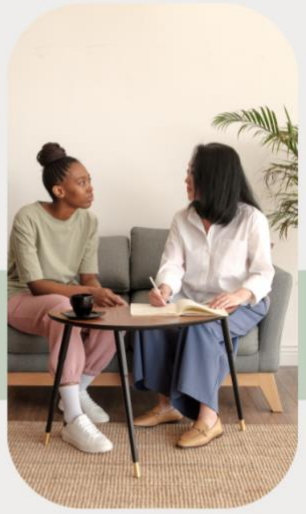
| | | | | | |
|---|---|---|---|---|---|
| Individuals can regulate their emotions *with others*. | ☐ | ☐ | ☐ | ☐ | ☐ |
| Individuals can live with mental health disorders and experience well-being. | ☐ | ☐ | ☐ | ☐ | ☐ |
| Emotion regulation skills can be improved. | ☐ | ☐ | ☐ | ☐ | ☐ |
| Emotion regulations skills are important. | ☐ | ☐ | ☐ | ☐ | ☐ |

Appendix F: Explanation About Emotion Regulation Importance

# Why is emotion regulation important?

Emerging adults (18–29 years old) have the **highest rates** of mental health disorders in Canada.

In fact, difficulties with emotion regulation is a **key factor** in how mental health disorders develop and worsen, and is very common among emerging adults.



Our team is looking to **create a digital tool** to help emerging adults improve their emotion regulation skills and abilities, to support mental health and well-being.

The next few questions will be used to help inform the design of the digital tool.

Appendix G: Perceived Importance of Content for Digital Tool

We would like to know what type of content you would like included in a digital emotion regulation tool. Below, you will see a list of potential topics that can be included.

Please rate the extent to which you disagree/agree with each statement. Some items may seem similar to what you have answered earlier.

**In a digital emotion regulation tool, it is important to include information/training on…**

| | Strongly disagree | Disagree | Somewhat disagree | Neutral | Somewhat agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| How to recognize different emotions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Understanding the differences between various emotions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| How emotions impact us physiologically (e.g., fight-or-flight response) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Strategies to regulate emotions by ourselves | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Strategies to regulate emotions with others | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Understanding how strategies to regulate emotions can be healthy and/or unhealthy *depending on how they are used*. | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Recognizing triggers of unhealthy responses to emotions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Preventing unhealthy responses to intense emotions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Finding healthy ways to manage intense emotions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Becoming more comfortable experiencing unwanted/anxiety-provoking emotions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Reducing the intensity of negative emotions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| How to self-monitor thoughts and feelings | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Managing behaviour when responding to emotions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| How behaviours influence our emotions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| How thoughts influence our emotions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Practicing mindfulness (i.e., awareness of the present moment; experiencing the moment with openness and acceptance) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Challenging negative assumptions we have about ourselves, others, or situations | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| How we can use our thoughts to change our emotional responses | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Cognitive flexibility (i.e., being flexible with our thoughts and behaviour as we respond to changing circumstances) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| How to change our perspectives to look at the positive aspects of a situation | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Learning about how interventions help us improve our abilities to regulate emotions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The relationships between emotion regulation difficulties and mental health disorders | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Impacts of difficulties with regulating emotions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| The importance of being willing to accept current emotions, even if they are unpleasant | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Regulating emotions within different cultural contexts | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

I would be interested in content on…

- Positive emotions
- Negative emotions
- Both positive and negative emotions

**In a digital emotion regulation tool, it is important to include information/training on…**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. Relaxation techniques | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. Improving problem-solving skills | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. Managing stress | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. Improving social skills | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. Improving communication skills | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6. Establishing a coping plan | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7. Self-compassion | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8. Spirituality/spiritual well-being | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

Appendix H: Preferences for Delivery of Digital Tool

1. We are interested in learning about how we can deliver content in an interesting and engaging way. How would you like to receive content?

| | Yes | No |
|---|---|---|
| Video clips | ☐ | ☐ |
| Audio clips | ☐ | ☐ |
| Text descriptions | ☐ | ☐ |
| Infographics | ☐ | ☐ |
| Games | ☐ | ☐ |
| Other, please specify: | | |

2. We are interested in learning about what features you feel are important for a digital emotion regulation tool. Please rate each of the following statements.

I would want the daily digital emotion regulation tool to include…

| | Strongly disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|
| Setting a personal goal for improving emotion regulation | ☐ | ☐ | ☐ | ☐ | ☐ |
| Journal entries | ☐ | ☐ | ☐ | ☐ | ☐ |
| Practice scenarios to apply learnings | ☐ | ☐ | ☐ | ☐ | ☐ |
| Self-monitoring of emotion regulation | ☐ | ☐ | ☐ | ☐ | ☐ |
| Guided exercises (e.g., for relaxation, regulating emotions) | ☐ | ☐ | ☐ | ☐ | ☐ |
| Mood rating scales (e.g., to monitor mental health) | ☐ | ☐ | ☐ | ☐ | ☐ |
| Peer support (i.e., support from individuals with lived experience of emotion regulation difficulties) | ☐ | ☐ | ☐ | ☐ | ☐ |
| Professional support | ☐ | ☐ | ☐ | ☐ | ☐ |
| Opportunities to engage family/friends in using the tool | ☐ | ☐ | ☐ | ☐ | ☐ |
| Options to *personalize how often* you engage with the digital tool | ☐ | ☐ | ☐ | ☐ | ☐ |
| Options to *personalize how long* you engage with the digital tool | ☐ | ☐ | ☐ | ☐ | ☐ |
| Options to *personalize the content* you would like to receive in the digital tool | ☐ | ☐ | ☐ | ☐ | ☐ |
| Other, please specify: | | | | | |

We are interested in learning about how you would like to engage with a digital emotion regulation tool, this includes how often you would use the tool, how long you would like to interact with the tool when you use it, and the total length of using the digital tool.

3. Would you be interested in using a brief digital emotion regulation each day?
   ☐ Yes

☐ No

**For participants who responded 'Yes' to Question 3**

4. What is the most amount of time you would be interested in using a daily emotion regulation tool? Please select the maximum amount of time.
   - ☐ 5 mins
   - ☐ 10 mins
   - ☐ 15 mins
   - ☐ 20 mins
   - ☐ 30 mins
   - ☐ Other, please specify: _____

5. In total, how many days/weeks would you prefer to use a daily emotion regulation tool?
   - ☐ 3 days
   - ☐ 5 days
   - ☐ 1 week
   - ☐ 2 weeks
   - ☐ 4 weeks
   - ☐ 8 weeks
   - ☐ Other, please specify: _____

**Proceed to K10 measure**

**For participants who responded 'No' to Question 3**

6. What frequency would you be interested in using a digital emotion regulation tool?
   - ☐ One-time only
   - ☐ A few times per week
   - ☐ Weekly
   - ☐ Bi-weekly
   - ☐ Monthly
   - ☐ As needed
   - ☐ I would not use a digital emotion regulation tool (skip to question 8)

7. What is the maximum amount of time you would be interested in using a digital emotion regulation tool during a single session? (i.e., each time you use it).
   - ☐ 5 mins
   - ☐ 10 mins
   - ☐ 15 mins
   - ☐ 20 mins
   - ☐ 30 mins
   - ☐ 60 mins
   - ☐ Other, please specify: _____

**Proceed to K10 measure**

| **For participants who indicated 'I would not use a digital emotion regulation tool' in Question 6** |
| --- |
| 8. We are interested in learning about why you are not interested in using a digital emotion regulation tool. We would greatly appreciate your perspectives in the space below: |
| **Participants complete K10, DTS-SF, and CFI measures, before survey ends.** |

Appendix I: Kessler-10 Psychological Distress Questionnaire

The following questions ask about how you have been feeling **during the past 30 days**. For each question, please select the option that best describes how often you had this feeling.

| | None of the time | A little of the time | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|---|
| 1. During the last 30 days, about how often did you feel tired out for no good reason? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. During the last 30 days, about how often did you feel nervous? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. During the last 30 days, about how often did you feel so nervous that nothing could calm you | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. During the last 30 days, about how often did you feel hopeless? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. During the last 30 days, about how often did you feel restless or fidgety? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6. During the last 30 days, about how often did you feel so restless you could not sit still? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7. During the last 30 days, about how often did you feel depressed? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8. During the last 30 days, about how often did you feel that everything was an effort? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 9. During the last 30 days, about how often did you feel so sad that nothing could cheer you up? | ☐ | ☐ | ☐ | ☐ | ☐ |
| 10. During the last 30 days, about how often did you feel worthless? | ☐ | ☐ | ☐ | ☐ | ☐ |

Appendix J: Distress-Tolerance Scale – Short Form

Think of times that you feel distressed or upset. Select the item that best describes your beliefs about feeling distressed or upset. Please answer regarding your feelings of distress 'in general', that is, on the average.

| | Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |
|---|---|---|---|---|---|
| I can’t handle feeling distressed or upset. | ☐ | ☐ | ☐ | ☐ | ☐ |
| My feelings of distress are so intense that they completely take over. | ☐ | ☐ | ☐ | ☐ | ☐ |
| I’ll do anything to avoid feeling distressed or upset. | ☐ | ☐ | ☐ | ☐ | ☐ |
| Being distressed or upset is always a major ordeal for me. | ☐ | ☐ | ☐ | ☐ | ☐ |

Appendix K: Cognitive Flexibility Inventory

Please use the scale below to indicate the extent to which you agree or disagree with the following statements.

| | Strongly disagree | Disagree | Somewhat disagree | Neutral | Somewhat agree | Agree | Strongly agree |
|---|---|---|---|---|---|---|---|
| I am good at "sizing up" situations | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| I have a hard time making decisions when faced with difficult situations | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| I consider multiple options before making a decision | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I encounter difficult situations, I feel like I am losing control | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| I like to look at difficult situations from many different angles | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| I seek additional information not immediately available before attributing causes to behaviour | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| When encountering difficult situations, I become so stressed that I cannot think of a way to resolve the situation | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| I try to think about things from another person's point of view | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| I find it troublesome that there are so many different ways to deal with difficult situations | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| I am good at putting myself in others' shoes | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I encounter difficult situations, I just don't know what to do | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| It is important to look at difficult situations from many angles | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| When in difficult situations, I consider multiple options before deciding how to behave | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| I often look at a situation from different viewpoints | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| I am capable of overcoming the difficulties in life that I face | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| I consider all of the available facts and information when attributing causes to behaviour | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| I feel like I have no power to change things in difficult situations | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| When I encounter difficult situations, I stop and try to think of several ways to resolve it | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| I can't think of more than one way to resolve a difficult situation I'm confronted with | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| I consider multiple options before responding to difficult situations | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

Appendix L: Facilitators and Barriers to Engaging with a Digital Tool

There can be many factors that make it easier and harder to engage with a digital tool to improve our well-being (e.g., time, technology, knowing about the intervention, personalization, etc.). We are interested in learning more about your perceptions of what would make it easier and/or harder to use a digital tool to improve emotion regulation abilities, so we can integrate these factors in the design of the tool.

1. What may make it easier for you to engage with a digital tool to improve emotion regulation abilities?

| |
|---|
| |

2. What may make it harder for you to engage with a digital tool to improve emotion regulation abilities?

| |
|---|
| |

We appreciate that AI (e.g., ChatGPT) can be a helpful tool! To help us better understand our data, we are curious if you used AI in your open-ended responses. There is no right or wrong answer!

3. I used AI to generate responses to the text-box survey questions (e.g., asking AI to create a response to a question)

- ☐ Yes
- ☐ No
- ☐ I used AI in a different way to complete the survey, please specify: _____

**Supplemental Table 1**
*Additional Participant Demographics*

| **Demographic Variables** | ***N* (%)** |
|---|---|
| Household Income | |
| $0 – $24,999 | 289 (15.4) |
| $25,000 - $49,999 | 293 (15.6) |
| $50,000 - $74,999 | 260 (13.9) |
| $75,000 - $99,999 | 244 (13.0) |
| $100,000 - $124,999 | 230 (12.3) |
| $125,000 - $149,999 | 144 (7.7) |
| $150,000 - $174,999 | 114 (6.1) |
| $175,000 or $199,999 | 80 (4.3) |
| $200,000 or more | 175 (9.3) |
| Living Situation | |
| Living with family | 1191 (63.5) |
| Living with roommate(s) | 259 (13.8) |
| Living alone | 223 (11.9) |
| Living with a romantic partner | 130 (6.9) |
| Living with friend(s) | 48 (2.6) |
| Other | 18 (1.0) |
| Location of birth | |
| Born in Canada | 1245 (66.4) |
| Born outside of Canada | 626 (33.4) |
| Highest Level of Education Completed | |
| Less than high school diploma | 4 (0.2) |
| High school diploma or equivalent (e.g., GED) | 1286 (68.6) |
| College degree/diploma | 141 (7.5) |
| Undergraduate degree | 325 (17.3) |
| Master's degree | 98 (5.2) |
| Doctoral Degree | 5 (0.3) |
| Other | 10 (0.5) |

**Supplemental Table 2**

*Correlations between Emotion Regulation and Mental Health Variables*

| | | CERQ-SF | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. |
| 1. DERS-SF Total | — | | | | | | | | | | | | |
| *CERQ-SF* | | | | | | | | | | | | | |
| 2. Self-blame | .40** | — | | | | | | | | | | | |
| 3. Other blame | .18** | -.03 | — | | | | | | | | | | |
| 4. Rumination | .18** | .25** | .16** | — | | | | | | | | | |
| 5. Catastrophizing | .47** | .33** | .36** | .43** | — | | | | | | | | |
| 6. Positive refocusing | -.08** | -.04 | .15** | .02 | -.04 | — | | | | | | | |
| 7. Planning | -.20** | .06 | .00 | .17** | -.09** | .22** | — | | | | | | |
| 8. Positive reappraisal | -.27** | -.06 | -.02 | .16** | -.14** | .30** | .46** | — | | | | | |
| 9. Perspective taking | -.01 | .07* | .02 | .05 | -.10** | .29** | .27** | .31** | — | | | | |
| 10. Acceptance | -.06 | .14** | -.09** | .23** | -.01 | .08** | .25** | .36** | .25** | — | | | |
| 11. Kessler-10 Total | .68** | .40** | .14** | .24** | .47** | -.07 | -.15** | -.18** | -.05 | -.00 | — | | |
| 12. DTS-SF Total | -.62** | -.29** | -.22** | -.29** | -.49** | .03 | .10** | .18** | .09** | .08** | -.61** | — | |
| 13. CFI Total | -.46** | -.14** | -.18** | .08** | -.31** | .06 | .45** | .48** | .24** | .33** | -.35** | .41** | — |

*Notes: $p < .003$*, $p < .001$**;* DERS-SF = Difficulties with Emotion Regulation Scale – Short Form; CERQ-SF = Cognitive Emotion Regulation Questionnaire – Short Form, with subscales including: self-blame, other blame, rumination, catastrophizing, positive refocusing, planning, positive reappraisal, perspective taking, and acceptance; Kessler-10 = Kessler-10 Psychological Distress measure; DTS-SF = Distress-Tolerance Scale – Short Form; CFI = Cognitive Flexibility Inventory.