ORIGINAL ARTICLE

Personality, Cognition, and Adaptability to the COVID-19 Pandemic: Associations with Loneliness, Distress, and Positive and Negative Mood States

Avi Besser[1] · Gordon L. Flett[2] · Taryn Nepon[2] · Virgil Zeigler-Hill[3]

Abstract

The current research examined personality and individual difference factors associated with the perceived ability to adapt to the significant challenges accompanying the ongoing public health crisis concerning the COVID-19 pandemic. This cross-sectional study investigated the associations among self-reported adaptability to the pandemic and personality predispositions (dependency, self-criticism, mattering, and self-esteem), cognitive factors (positive, negative, and loneliness automatic thoughts), loneliness, distress, and mood states. A sample of 462 college students from Israel completed an online questionnaire after 10 weeks of social distancing during the COVID-19 pandemic. The results confirmed that personality vulnerability factors underscored by a negative sense of self (i.e., self-criticism and dependency) and individual difference factors reflecting self-esteem, feelings of mattering, and fear of not mattering are associated in meaningful ways with adaptability to the pandemic, loneliness, distress, negative mood states, and positive mood states. Most notably, higher self-reported adaptability to the pandemic is associated with lower dependency, self-criticism, and fear of not mattering, and higher levels of self-esteem and mattering. The findings attest to the central role of adaptability and related individual difference factors in acclimatizing to the numerous changes and challenges associated with the COVID-19 crisis. The theoretical and practical implications of our findings are discussed.

Keywords Coronavirus · COVID-19 · Personality · Adaptability · Dependency, self-criticism, self-esteem, mattering · Loneliness, distress

---

Avi Besser and Gordon L. Flett contributed equally to this work.

✉ Avi Besser
   avibe@hac.ac.il

✉ Gordon L. Flett
   gflett@yorku.ca

Extended author information available on the last page of the article

At present, people around the world are coping with the COVID-19 pandemic which is a global health crisis that has already claimed the lives of over 1.1 million people. We are all experiencing a prolonged stress situation that has most, if not all, of the elements that create conditions for significant and persistent distress. Most accounts of the stress and challenges involve a focus on the uncertainty and the threat to health and well-being of the individual person and her or his friends and family members. Stress also is being experienced by the significant disruption to people's daily routines and lives in general. Some of this stress and distress comes from people learning things about themselves that perhaps they never wished to learn as those individuals who thought they were resilient find out that they are actually quite vulnerable. Of course, there are also significant economic difficulties being experienced worldwide as businesses are lost and millions of people around the world are unemployed for the first time in their lives, and there is profound economic anxiety (see Bareket-Bojmel et al. 2020). Finally, when people are upset, they turn to other people for comfort and support, yet it is prescribed by health officials and government leaders that this must be done at a distance and online in most instances. Attempts to stop the spread and transmission of COVID-19 are centered primarily on engaging in physical distancing. This practice has been called social distancing to reflect the fact that people are to stay physically apart from other people. This necessity amounts to a form of separation that is believed to significantly escalate feelings of isolation in ways that may contribute to unprecedented levels of loneliness. The research described below was inspired largely by our interest in examining loneliness and the factors that are associated with it.

Clearly, by all accounts, the current pandemic represents a strong, evolving situation that needs to be understood on multiple levels. It seemed imperative to us to try to understand it from a personality and individual differences perspective. The vast majority of research investigations in the personality field do not take the situation into account despite classic calls for a joint focus on personality and the situation and evidence of the utility of this approach (see Endler and Magnusson 1976; Endler and Parker 1992; Magnusson and Endler 1977; Mischel and Shoda 1995). It has been suggested that attempts to understand personality vulnerability factors and the experience of stress and distress must be extended to include an emphasis on the personality–situation interaction (see Flett et al. 1995). Flett and associates (Flett et al. 1995) observed the need for personality research that incorporates a detailed analysis of contextual factors in the environment that impact behavior (also see Coyne and Whiffen 1995). An observation made 15 years ago still applies. That is, it was noted that, "Although the benefits of such an approach have been acknowledged widely, it is generally the case that most personality studies do not attempt to examine personality factors within the context of concurrent situational factors" (Flett et al. 1995, p. 316).

The present research reflects this emphasis and includes an explicit focus on individual differences in dependency and self-criticism as described by Blatt and his colleagues (e.g., Blatt and Zuroff 1992). Both self-criticism and dependency reflect a negative model of the self but for different reasons. According to Blatt and Zuroff (1992, 2002), self-criticism entails an introjective orientation with a focus on achieving personal goals and competing successfully with others being highly competitive. Self-critical people engage in harsh self-scrutiny and gain little satisfaction from their accomplishments due to a perfectionistic orientation that can become highly individualistic and may distance them from other people. Alternatively, dependency reflects unrequited interpersonal needs and an anaclitic orientation that involves a preoccupation with other people and requiring them to keep in close proximity. Dependent individuals see themselves as being helpless and weak on their own and often have

abandonment fears, which could be activated by being socially isolated during the pandemic. In essence, dependency reflects a personality orientation underscored by a need for relatedness and association with significant others, whereas self-criticism reflects a personality orientation guided by a need for self-definition, individualization, and personal identity (see Blatt and Blass 1996).

There is now a voluminous research literature that attests to the vulnerability of the self that is inherent in self-criticism and dependency, especially within the context of daily life stress (Dunkley et al. 2003), but most of this research has been conducted without taking the situational or life context into account. However, there are some noteworthy exceptions (e.g., Casalin et al. 2014; Sharhabani-Arzy et al. 2005) and some clear examples of why and how contexts matter. For instance, evidence of the need for a stress threshold model emerged from a prospective study of self-criticism and dependency in postpartum adjustment among women with high-risk versus low-risk pregnancies (see Besser et al. 2007). Other research examined self-criticism and dependency among three samples of participants (i.e., current undergraduate students, recently graduated students, and chronic pain patients) who had been exposed to missile attacks while living in the southern region of Israel (see Lassri et al. 2013). Analyses confirmed the presence of a significant interaction effect of self-criticism and terrorism-related stress predicting elevations in levels of general psychopathology.

Our central emphasis on dependency and self-criticism is due, in part, to the relevance of these personality orientations during a stressful time when highly impactful circumstances should elicit and activate concerns about being separated from others and perhaps being critical of less than optimal reactions to this public health crisis. It also reflects conceptualization and evidence highlighting that these orientations can operate as both traits and in a more state-like manner; it has been emphasized that these personality orientations become more accessible as a result of current moods and social contexts (see Zuroff et al. 1999; Zuroff et al. 2016). Our focus on adaptability reflects how closely suited the adaptability construct is to the challenges that face people through the pandemic. Adaptability has been conceptualized and defined as "… the capacity to constructively regulate psycho-behavioral functions in response to new, changing, and/or uncertain circumstances, conditions, and situations" (Martin et al. 2013, p. 728). Adaptability is seen as being required and called for at various points throughout a person's lifespan. Although it can seem similar, adaptability is distinguished from resilience (see Martin 2017). Our focus on adaptability and the stress of the COVID-19 pandemic is in keeping with Selye's (1993) observation that "… all demands upon our adaptability do evoke the stress phenomenon" (p. 7).

The current research was based on a modified version of adaptability that was intended to specifically capture adaptability in response to the pandemic. Martin and associates (Martin et al. 2013) developed the Adaptability Scale. This nine-item self-report inventory reflects an emphasis on general adaptability in terms of abilities to modify cognition, behavior, and emotion. We determined that small modifications would result in a measure that would tap into meaningful individual differences in adaptability among students who were undergoing and required to cope with the COVID-19 global health pandemic. The use of this measure while the current pandemic and all of its challenges were still unfolding seemed particularly appropriate given that all respondents were required to respond to items that reflected a concept and an orientation that was highly relevant to their current daily lives.

An overarching premise guiding our investigation was our contention that whether a person is able to develop a high level of adaptability is a reflection, in part, of whether they have a positive self-definition. Moreover, when adaptability is put into practice and yields positive

outcomes, that should further add to a positive self-concept. Conversely, people with a negative self-concept will lack the sense of efficacy and capability that promotes the feeling and the actual ability to adapt. Accordingly, this study included various individual difference measures to reflect the presence of either a positive self or a negative self. This included personality factors associated with a negative sense of self (i.e., dependency and self-criticism) and a positive sense of self (i.e., self-esteem and mattering) as well as cognitive measures that also varied in their valence (i.e., positive automatic thoughts and negative automatic thoughts). This distinction was also reflected in our outcome measures tapping not only current adjustment by assessing stress, distress, and negative emotions but also the current experience of positive emotions.

Self-esteem and mattering were included as another main focus given general evidence of the benefits of self-esteem and mattering in adapting to life challenges (see Flett 2018). A series of analyses have underscored a sense of mattering to others as being vital in helping people adjust to the stress and psychosocial challenges arising out of being physically isolated and feeling socially isolated (see Casale and Flett 2020; Flett and Heisel 2020; Flett and Zangeneh 2020). These analyses—as well as work with the Anti-Mattering Scale (see Flett 2018)—further highlight that just as mattering is protective as a key element of self-worth experiences, marginalization experiences and feelings of not mattering contribute to feelings of stress and distress. The self-esteem and mattering concepts were highlighted in work by Morris Rosenberg (see Rosenberg 1965, 1979; Rosenberg and McCullough 1981). Mattering is the feeling of being important and significant to others and it is particularly relevant during times of transition (see Rosenberg and McCullough 1981). Mattering involves having value to others and giving value to others (Prilleltensky 2020). Research has established that elevated levels of mattering have strong negative associations with loneliness, self-criticism, and self-hate (Flett et al. 2020a; Flett et al. 2016; Joeng and Turner 2015).

Facets and Features of Loneliness

Given the emphasis throughout the pandemic on separation and the ability of people to cope with physical separation and social separation as well as evidence of substantially elevated levels of loneliness (see Kilgore et al. 2020), we recognized the current situation as a highly relevant context for potentially gaining new insight and understanding of the nature of loneliness and its correlates. Our interest in the associations between personality traits and loneliness goes back to earlier research on self-criticism, dependency, and loneliness (see Besser et al. 2003). Collectively, the results of various studies converge to suggest that both self-criticism and dependency are associated with elevated levels of loneliness, but stronger associations are found between self-criticism and loneliness (e.g., Besser et al. 2003). These associations merit further consideration within the context of a situation that may be making feelings of loneliness both stronger and more salient.

We sought to potentially gain new insights with an approach to loneliness that is unique and reflects our interest in understanding current experiences of loneliness from a state perspective. Specifically, we supplemented a standard measure of loneliness by also including a new automatic thoughts measure of loneliness that reflects the premise that some people are thinking frequently about their feelings of loneliness and their perception of being unable to control or escape these feelings of loneliness. These feelings are clearly on display or at least alluded to in case examples of people who suffer from chronic feelings of loneliness. These

feelings of loneliness are often mentioned when people are interviewed and asked to indicate how they would cope with loneliness if they were put into situations of physical and social isolation for a protracted period of time (see for instance, *the BBC Desert Island Discs* podcasts). Our emphasis on this element reflects our sense that physical isolation during the pandemic has resulted in many people having overwhelming feelings of anxiety that may have resulted in a cognitive preoccupation to the point that some people can no longer stand the thought of being lonely for any significant stretch of time. Moreover, from a social science perspective, while there has not been, to our knowledge, any research thus far on loneliness-related automatic thoughts, there have been several studies that have linked loneliness with the ruminative brooding that is known to prolong and exacerbate depression (e.g., Borawski 2019; Vanhalst et al. 2012; Zawadzki et al. 2013). The notion that there is a cognitive element to loneliness that remains to be addressed represents a potentially important extension of the loneliness construct.

This emphasis on the cognitive aspect of loneliness and the thoughts experienced during the pandemic is in keeping not only with analyses of loneliness and its clinical relevance (e.g., Heinrich and Gullone 2006) but also with conceptual descriptions of the need to consider self-criticism and dependency from a cognitive perspective. Flett et al. (1995) issued a call for a conceptual and empirical focus on the cognitive aspects of dependency based on past suggestions. For instance, Blatt and Shichman (1983) proposed that the self-critical, introjective style and the anaclitic, dependent style involve a cognitive component that extends to excessive cognitive rumination about themes that are directly related to these personality traits. Accordingly, although it was not our primary focus, one clear hypothesis for the current study is that self-criticism and dependency will be associated with more frequent negative automatic thoughts and less frequent positive automatic thoughts. Moreover, and most notably, participants with elevated levels of dependency would be especially prone to experience automatic thoughts about the experiences of loneliness.

Primary Goals of the Current Study

In summary, the design of the current study was shaped by three primary considerations. First, we sought to examine the role of a positive versus a negative self-concept in coping with the current global health crisis by including measures, both distal and proximal, that reflect risk and vulnerability due to their typical links with negative elements of the self, versus resilience and adaptation due to their typical links with positive elements of the self. Second, we focused on the concept of adaptability since it seems so highly relevant to the challenges facing people who must contend with the COVID-19 pandemic. Finally, the current study was designed to illuminate the experience of loneliness and associated individual differences as people try to adapt to life during a global pandemic.

As noted above, the current study included a focus on individual differences in dependency and self-criticism with a key component of this research being its focus on participants' reports of their adaptability to the pandemic. Regarding potentially protective factors, we also included multiple measures to investigate individual differences in feelings of mattering and not mattering as well as associated fears in line with recent analyses pinpointing mattering as a key protective resource that should help people withstand the isolation and uncertainties of the pandemic (see Casale and Flett 2020; Flett and Heisel 2020; Flett and Zangeneh 2020).

Method

Participants and Procedure

An email with a link to a secure online questionnaire was sent by the internal systems of five public higher education institutions in Israel (i.e., public academic colleges) to their undergraduate students requesting volunteers for a study concerning "personality and experiences of loneliness." This message was sent at the end of the 9th–10th week of social distancing and remote learning (i.e., about 75% of the way through the second semester of the academic year in Israel). Most students had at least one full semester of traditional face-to-face learning before the transition to online learning and would have spent most of the current semester isolated from campus (e.g., online synchronous and/or asynchronous learning). The secure online questionnaire included informed consent, demographic questions, information about personality characteristics, adaptability, mattering, loneliness, current levels of positive and negative emotions (i.e., in time of the pandemic), and general levels of these same emotions. A total of 899 students entered the website with 462 of those students actually completing the questionnaires (349 women [75.5%] and 113 men [24.5%]). Their mean age was 28.41 years (mode = 25.0; median = 26.0 years ($SD = 8.59$) and 41.1% of the participants were in their first academic year, 27.3% were in their second year, and 17.3% were in their third year. The academic majors of the participants were as follows: 42.4% social sciences, 23.8% sciences, 6.7% art, 2.6% law, 6.3% humanities, and 18.2% management studies. The sample consisted predominantly of participants who were single (71.9%), Jewish (86.8%), and currently unemployed or on forced/unpaid vacation due to the COVID-19 pandemic (59.5%). The self-reported current economic status of these participants was 5.6% "very good," 25.8% "good," 41.3% "moderate," 18.4% "not good," 5.2% "bad," and 3.7% "very bad." We decided that the sample size for this study should be at least 250 based on a power analysis (> .80) for the average effect size in social–personality psychology ($r \approx .21$; Richard et al. 2003) in conjunction with the guidelines for reducing estimation error in social-personality psychology ($N \geq 250$; Schönbrodt and Perugini 2013) but we deliberately oversampled in an effort to increase the *statistical power* of the study.

Participation in this study was voluntary. Participants were aware that they could withdraw from the study at any time. All participants provided their signed, informed consent. No social security numbers or other identifying data were collected nor were any invasive examinations conducted. This project was conducted with the approval of the Ethics Committee (IRB) of Hadassah Academic College.

Materials

Adaptability Adaptability was measured using a modified nine-item version of the Adaptability Scale (Martin et al. 2013). The modifications involved slightly rewording each of the nine items of the Adaptability Scale to focus on the COVID-19 pandemic situation rather than the decontextualized form of adaptability that was the focus of the original instrument. For example, the item "I am able to think through a number of possible options to assist me in *a* new situation" was altered to read "I am able to think through a number of possible options to assist me in *this* new situation." Each item from the Adaptability Scale was designed to reflect the following criteria: (a) appropriate cognitive, behavioral, or affective adjustment in response to (b) uncertainty and/or novelty that has (c) a constructive purpose or outcome. Martin and associates (Martin et al. 2013)

advised that adaptability can be operationalized as a higher-order factor (indicated by a cognitive–behavioral factor [six items] and an affective factor [three items]) or as a first-order factor (indicated by nine items). In the interest of parsimony, we adopted the latter operationalization and focused on the nine-item composite score for adaptability ($\alpha = .92$). Participants were asked to rate their level of agreement with each item using scales that ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). This instrument has been shown to demonstrate adequate psychometric properties (e.g., Martin et al. 2013). We found in another investigation with an independent sample of over 1200 students from Israel that this modified version of the instrument that was focused on adaptability to the pandemic also had an internal consistency of .92 (see Besser et al. 2020).

Self-Criticism Self-criticism was assessed with a six-item measure based on items that Shahar and associates (Shahar et al. 2008) selected from the 66-item Depressive Experiences Questionnaire. Various authors have utilized this brief scale (e.g., Zuroff et al. 2016). This six-item self-criticism measure has items such as "Often I find I do not live according to my standards or ideals" and "I have a tendency to be very self-critical." All six items are worded positively to reflect self-criticism. Items were rated using a scale that ranged from 1 (*not at all*) to 7 (*very much*). The internal consistency of this subscale was .80 in the original study. It was estimated at .82 or greater in another recent study with university students (Bar et al. 2020). The six items had an internal consistency of .79.

Dependency Dependency was assessed with a six-item measure that consisted of items we selected for inclusion based on our review of the dependence facet of the Depression Experiences Questionnaire (see Blatt et al. 1995). We included items such as "I often think of the danger of losing someone who is close to me" and "Without support from others who are close to me, I would be helpless." We included five-items worded so that higher scores reflected dependence as well as one item that was reverse-scored. Items were rated using a scale that ranged from 1 (*not at all*) to 7 (*very much*). The six items had an internal consistency of .73.

The Single-Item Self-Esteem Scale This one-item scale was constructed as a briefer assessment of self-esteem than existing measures such as the Rosenberg Self-Esteem Scale (see Robins et al. 2001). Respondents indicated their level of agreement with the item "I have high self-esteem" on a scale that ranged from 1 (*not very true of me*) to 5 (*very true of me*). This very brief measure and the Rosenberg Self-Esteem Scale yield comparable patterns of results (e.g., Robins et al. 2001). This measure is particularly well suited to assessments in which economy of measurement is a consideration.

The General Mattering Scale (GMS) The GMS developed by Marcus and Rosenberg (1987) is a five-item scale that measures the extent to which people perceive that they matter to others. A representative item is "How important do you feel you are to other people?" Items were rated using a scale that ranged from 1 (*not at all*) to 4 (*a lot*). Higher scores indicate greater levels of perceived mattering. Factor analysis has shown that this scale is a unidimensional measure with good reliability and validity (Taylor and Turner 2001). The internal consistency of this measure in our study was .85.

Anti-Mattering Scale The five-item Anti-Mattering Scale (AMS; Flett 2018; Flett et al. 2020a, b) measures the extent to which individuals feel like they do not matter to others. It is designed to parallel the GMS but focuses on feelings of not mattering to reflect a perspective

of feeling marginalized and it predicts unique variance in outcomes beyond what is explained by the GMS (see Flett et al. 2020a, b). Sample items include "How much do you feel like you don't matter?" and "How often have you been treated in a way that makes you feel like you are insignificant?" Items were rated using a scale that ranged from 1 (*not at all*) to 4 (*a lot*). Higher scores on this scale indicate greater levels of anti-mattering. The AMS items had an internal consistency of .87 in the current study.

Fear of Not Mattering Scale This five-item measure is newly created by Flett (2020) to assess the fear of becoming insignificant and unimportant to other people. Sample items include "Are you afraid that you will not matter to other people?" and "Do you worry that others will see you as unimportant or insignificant?" Items were rated on a scale that ranged from 1 (*not at all*) to 4 (*a lot*). Evidence from another sample of Canadian university students attests to the internal consistency of this measure with an alpha of .91 (McComb et al. 2020). The internal consistency for this measure in the current study was .91.

ATQ-N This eight-item scale was created by Netemeyer et al. (2002) as a short version of the 30-item Automatic Thoughts Questionnaire (Hollon and Kendall 1980). This version includes items that were selected because they had item-total correlations of .50 or greater and two items each were selected to reflect the four themes found to characterize the original 30-item ATQ by Hollon and Kendall (1980). Analyses by Netemeyer et al. (2002) confirmed that the eight-item version had a high internal consistency of .92 and scores on this measure were very highly correlated with overall scores on the 15-item and 30-item versions. This version included items such as "I'm worthless," "I'll never make it," and "I'm so disappointed in myself." Item responses ranged from 1 (*not at all*) to 5 (*almost all the time*). The internal consistency for this instrument was .90 in the current sample.

ATQ-P This scale was a five-item measure based on items taken from the positive thoughts version of the 30-item Automatic Thoughts Questionnaire (see Ingram et al. 1995). It has items such as "I am a lucky person," "My future looks bright," and "There are many people who care about me." Items were rated on a scale that ranged from 1 (*not at all*) to 5 (*almost all the time*). The internal consistency was .80 in the current sample.

Loneliness Automatic Thoughts Questionnaire The Loneliness Automatic Thoughts Questionnaire (LATQ; Flett et al. 2020a, b) was developed for the present study. It consists of nine thoughts that are related to the current experience of loneliness. The concept of loneliness-related automatic thoughts was informed by case accounts of lonely people characterized by ruminative thoughts and tendencies (e.g., Cheng and Merrick 2017; Lui 2017; Tarocchi et al. 2013). It was also informed by the work by Horowitz and associates (Horowitz et al. 1982) that described a fuzzy set prototype for loneliness that linked loneliness almost inextricably with depression and associated negative judgments of the self. Relevant themes include a sense of being different from others, something being wrong with the self, and a sense of "I cannot" that is typically applied to positive interpersonal behavior but we saw as relevant to not being able to control thoughts about loneliness. Sample items include "Why I am so lonely?" "I can't escape this loneliness," and "I can't stand to feel this alone."

We began with a 23-item pool. These items were then reduced to 12 items based on evaluations of item-wording and face validity. These were re-evaluated and reduced to 10 items with two items being slightly re-worded. These items were then administered to our

participants with instructions and response format similar to those used for the ATQ-N. Subsequent item analyses showed that when considered collectively, the 10 items had a high level of internal consistency and this was reflected in item-total correlations. However, one item had a mean that was lower than 2.00 and a standard deviation lower than 1.00 so this item was removed. The nine remaining items had an internal consistency of .92. The items along with scale features are shown in the Appendix.

UCLA Loneliness Scale-8 (ULS-8) An eight-item short form of the 20-item UCLA Loneliness Scale developed by Hays and DiMatteo (1987) was included to assess the frequency levels of overall loneliness from 1 (*never*) to 4 (*always*). The eight items were selected because they all loaded highly on a single factor. The authors reported a correlation of .91 between their eight-item version and the full 20-item version. Short-form versions of the UCLA Loneliness Scale have been used successfully in various studies (e.g., Franzoi and Davis 1985). The internal consistency of this measure was .79 in the current study.

Typical and Current Mood State Experiences This instrument captured the extent to which participants reported emotional experiences since the onset of social distancing and remote learning due to the COVID-19 pandemic (i.e., current experience) as well as retrospective ratings of their typical level of these same emotional experience in regular times (i.e., typical experience). The mood states assessed are listed below. We assessed both current ratings and ratings of prior experience because we felt it was important to illustrate and document how the pandemic has impacted college students. Ideally, we would have had the opportunity to assess students prior to the pandemic but, of course, the pandemic was not foreseeable. Nevertheless, our primary focus was on current mood states reflecting the three categories described below. These retrospective ratings also served to underscore that relative to before it was experienced, the pandemic impacted both positive and negative mood states.

One-item adjectives were included to assess current mood states. Participants made seven-point ratings of their current feelings. We grouped the adjectives into three categories that we labeled *distress* (stress, depression, and anxiety), *negative mood* (frustration, helplessness, and boredom), and *positive mood* (optimism, satisfaction, and enjoyment). Although these adjectives were quite different from each other, our composite measures yielded adequate levels of internal consistency. The respective alphas were .84, .74, and .82 for distress, negative mood, and positive mood. Higher scores reflect higher levels of distress, negative mood, and positive mood. As seen in Table 2, the correlation between distress and negative mood was stronger, as would be expected, than the negative links that distress and negative mood had with positive mood.

Analytic Strategy

Initially, we examined whether students assimilated to the experience of social distancing and isolation from campus and online distance learning (approximately 75% of the second semester had already been completed online). Paired samples *t* tests were used to examine mean differences for participants reported general vs. current emotional experiences (distress, negative mood, and positive mood experiences). Next, zero-order Pearson correlational analyses were then conducted to examine the associations among all of the measures.

The hypotheses for the present study were consistent with a path model by which personality predisposition variables were assumed to be associated with mattering variables and both were assumed to be associated with automatic thoughts variables with mattering variables being expected to add to the explained variance in automatic thoughts beyond what could be explained by the personality variables. Moreover, personality predispositions, mattering, and automatic thoughts variables were assumed to be associated with adaptability to the COVID-19 pandemic, with mattering expected to add to the explained variance in adaptability to the COVID-19 pandemic beyond what could be explained by the personality variables. Moreover, the automatic thoughts variables were expected to add to the explained variance in adaptability to the COVID-19 above and beyond what could be explained by the personality and mattering variables. Finally, personality, mattering, automatic thoughts, and adaptability were assumed to be associated with emotional mood states. Each was expected to add to the explained variance in current mood states above and beyond the previous predictors. Figure 1 presents the assumed model. Linear and hierarchical linear regressions that increase in their complexity were used to examine the associations presented in this model. Results for the analyses of this model are presented in Tables 3, 4, 5, and 6.[1]

Results

Mean Differences

As can be seen in Table 1, participants reported significantly higher levels of experiences in all current distress subscales (stress, anxiety, and depression) and current negative mood subscales (frustration, helplessness, and boredom) compared to their experience in general routine daily life. Moreover, they reported significantly lower levels of experiences in all current positive mood subscales (optimism, satisfaction, and enjoyment) compared to their experience in general routine daily life. The largest impact was found with respect to feelings of helplessness during the pandemic. Significant correlations among general and current emotional experiences indicate relative stability. The effect sizes for these paired samples t tests were computed according to Cohen (1988). As can be seen in Table 1, the results indicate that the effect sizes ranged from small (Cohen's $d = 0.29$) to high (Cohen's $d = 0.82$), and overall, they were medium in magnitude (mean Cohen's $d = 0.57$, SD = .13; see Chen et al. 2010). Overall, results indicated that students were not assimilated to the protracted experience of social distancing and isolation from campus and they continued to experience the time of pandemic as less positive in all aspects of emotional experiences. The current levels of composite scores of distress, negative mood, and positive mood scales were used in subsequent analyses.

We used composite scores to assess current levels of distress, negative mood states, and positive mood states in further analyses. This decision had the effect of reducing the number of outcome variables (from 9 to 3) and subsequently the number of models to be examined and related errors associated with a larger number of analyses.

---

[1] The models presented in these tables were not altered when demographic features (i.e., age, education/academic year, and economic status) were included as covariates.
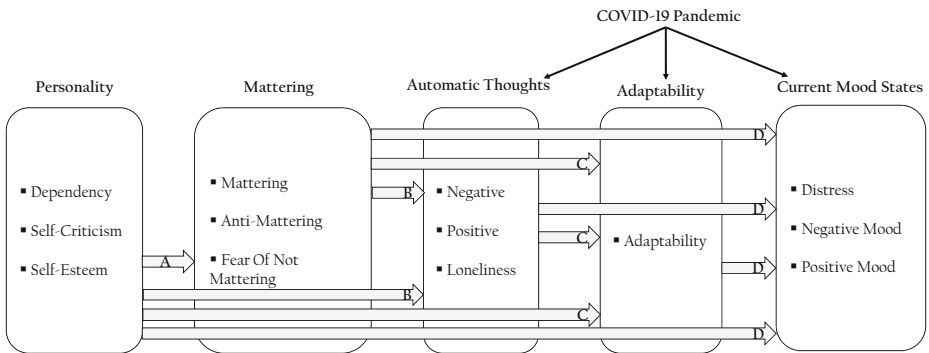
Fig. 1 The multivariate analyses model. Results for the arrow marked "A" are presented in Table 3, results for the arrows marked "B" are presented in Table 4, results for the arrows marked "C" are presented in Table 5, and the results for the arrows marked "D" are presented in Table 6

Univariate Analyses

Table 2 presents the zero-order correlations among the study variables. As can be seen in Table 2, study variables were all significantly correlated in the expected directions. As can be seen in Fig. 1, the present study contains five groups of predictive/outcome variables: personality predisposition variables (predictive), mattering variables (predictive and outcome), automatic thoughts variables (predictive and outcome), and adaptability variable (predictive and outcome) and current mood states (final outcomes). A series of linear and hierarchical linear regressions that increased in their complexity was performed to examine the unique contribution of each variable within each of the four predictors groups as well as the unique contribution of each group of predictors above and beyond the previous groups of predictor variables.

Table 1 Mean differences for general and current emotional experiences

	General		Current		t [461]	General and current	Effect size
Emotional Experiences	M	SD	M	SD		r	Cohen's d
Distress	3.18	1.38	3.91	1.74	−11.44***	.64***	.54
Stress	4.05	1.68	4.60	1.91	−6.32***	.45***	.29
Anxiety	3.02	1.74	3.83	2.03	−10.62***	.63***	.49
Depression	2.47	1.56	3.30	2.09	−11.39***	.67***	.53
Negative mood	2.79	1.24	3.96	1.64	−17.60***	.54***	.82
Frustration	3.23	1.62	4.25	1.96	−12.34***	.52***	.57
Helplessness	2.45	1.46	3.73	2.03	−15.48***	.52***	.72
Boredom	2.70	1.51	3.89	2.07	−13.17***	.45***	.61
Positive mood	5.25	1.18	4.34	1.44	13.76***	.44***	.65
Optimism	5.31	1.43	4.63	1.62	10.04***	.54***	.46
Satisfaction	5.04	1.38	4.05	1.73	11.90***	.35***	.55
Enjoyment	5.38	1.33	4.35	1.71	12.02***	.28***	.56

$N = 462$

***$p < .0001$

Table 2 Zero-order correlations, means, and standard deviations for the variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Dependency	—													
2. Self-criticism	.55***	—												
3. Self-esteem	-.43***	-.34***	—											
4. Mattering	-.27***	-.26***	.42***	—										
5. Anti-mattering	.40***	.41***	-.47***	-.58***	—									
6. Fear of not mattering	.63***	.48***	-.46***	-.46***	.58***	—								
7. ATQ-negative	.58***	.54***	-.49***	-.44***	.52***	.49***	—							
8. ATQ-positive	-.39***	-.37***	.44***	.59***	-.51***	-.43***	-.59***	—						
9. Adaptability	-.41***	-.38***	.39***	.40***	-.43***	-.38***	-.54***	.56***	—					
10. Distress	.54***	.48***	-.36***	-.34***	.40***	.39***	.62***	-.52***	-.55***	—				
11. Negative mood	.47***	.44***	-.29***	-.27***	.37***	.37***	.53***	-.49***	-.50***	.77***	—			
12. Positive mood	-.38***	-.40***	.33***	.38***	-.34***	-.34***	-.45***	.54***	.55***	-.58***	-.59***	—		
13. UCLA	.44***	.39***	-.47***	-.66***	.64***	.55***	.50***	-.53***	-.39***	.38***	.37***	-.37***	—	
14. LATQ	.57***	.43***	-.33***	-.37***	.42***	.46***	.57***	-.40***	-.40***	.49***	.48***	-.41***	.53***	—
Mean	3.64	4.13	4.57	3.0	2.06	2.06	2.14	3.19	5.13	3.91	3.96	4.34	1.90	1.91
SD	1.30	1.30	1.65	0.67	0.73	0.89	0.88	0.82	1.20	1.74	1.64	1.44	0.62	0.88

N = 462

ATQ Automatic Thoughts Questionnaire, *UCLA* UCLA Loneliness Scale, *LATQ* Loneliness Automatic Thoughts Questionnaire

***$p < .0001$

Multivariate Analyses

Multivariate analyses were designed to examine the associations presented in Fig. 1. This model consisted of four stages:

A. *Association of personality predispositions and mattering variables*

As can be seen in Table 3 (arrows marked as "A"), while controlling for the shared variance of self-criticism, dependency and self-esteem, self-esteem was positively associated with mattering and negatively associated with anti-mattering and fear of not mattering.

Dependency and self-criticism were positively associated with fear of not mattering and anti-mattering, whereas self-criticism was negatively associated with mattering. This model significantly explained 20% of the variance in mattering, 30% of the variance in anti-mattering, and 46% of the variance in fear of not mattering.

B. *Associations of personality predispositions and mattering variables with automatic thoughts variables*

As can be seen in Table 4 (arrows marked as "B"), controlling for shared variance of personality variables as well as among the mattering variables and their shared variance with the personality variables, both personality trait vulnerability measures explained significant variance in automatic thoughts related to the COVID-19 pandemic. Specifically, dependency and self-criticism were positively associated with negative automatic thoughts, loneliness, and loneliness automatic thoughts and were negatively associated with positive automatic thoughts. Self-esteem was negatively associated with negative automatic thoughts and loneliness and positively with positive automatic thoughts and negatively with loneliness automatic thoughts ($p < .06$ two-tailed). Mattering variables were found to significantly add to the explained variance in automatic thoughts beyond the explained variance attributed to the personality measures. Specifically, mattering was negatively associated with negative automatic thoughts, loneliness, and loneliness automatic thoughts, whereas it was positively associated with positive automatic thoughts. In contrast, anti-mattering was found to be positively associated with negative automatic thoughts, loneliness, and loneliness automatic thoughts, whereas it was negatively associated with positive automatic thoughts. Fear of not mattering was only uniquely and significantly associated with high levels of loneliness. This model significantly explained 51% of the variance in negative automatic thoughts, 45% of the variance in positive automatic thoughts, 58% of the variance in loneliness, and 40% of the variance in loneliness automatic thoughts.

C. *Associations of personality predispositions, mattering variables, and automatic thoughts variables with adaptability to the COVID-19 pandemic*

As can be seen in Table 5 (arrows marked as "C"), controlling for substantial shared variance, all personality variables were significantly associated with adaptability to the COVID-19 pandemic with dependency and self-criticism having negative associations with adaptability, whereas self-esteem was positively associated with adaptability. Mattering variables added significantly to the explained variance in adaptability beyond the variance

Table 3 Summary of multiple regression analyses for personality variables predicting mattering variables ($N = 462$)

	Mattering					Anti-mattering					Fear of not mattering				
	B	SE(B)	β	p <	95% CI	B	SE(B)	β	p <	95% CI	B	SE(B)	β	p <	95% CI
Dependency	− .03	.03	− .05	.35	[− .08, .03]	.074	.03	.13	.008	[.02, .13]	.31	.03	.45	.0001	[.25, .36]
Self-criticism	− .06	.03	− .11	.03	[− .11, − .01]	.12	.03	.22	.0001	[.07, .17]	.11	.03	.16	.0001	[.05, .16]
Self-esteem	.15	.02	.36	.0001	[.11, .19]	− .15	.02	− .34	.0001	[− .19, − .11]	− .12	.02	− .22	.0001	[− .16, − .08]
R^2	.20					.30					.46				
F for ΔR^2	37.18***					65.27***					127.92***				
Observed statistical power	1.0					1.0					1.0				

***p < .0001

Table 4 Summary of hierarchical regression analyses for personality and mattering variables predicting automatic thoughts variables and loneliness ($N = 462$)

	ATQ-negative					ATQ-positive					UCLA					LATQ				
	B	SE(B)	β	$p <$	95% CI	B	SE(B)	β	$p <$	95% CI	B	SE(B)	β	$p <$	95% CI	B	SE(B)	β	$p <$	95% CI
Step 1																				
Dependency	.21	.03	.32	.0001	[.16, .27]	−.10	.03	−.16	.002	[−.16, −.04]	.10	.02	.22	.0001	[.06, .15]	.30	.03	.45	.0001	[.24, .37]
Self-criticism	.19	.03	.27	.0001	[.13, .24]	−.11	.03	−.17	.0001	[−.17, −.05]	.08	.02	.16	.001	[.03, .12]	.11	.03	.16	.0001	[.05, .17]
Self-esteem	−.14	.02	−.26	.0001	[−.18, −.10]	.16	.02	.32	.0001	[.11, .20]	−.12	.02	−.32	.0001	[−.15, −.09]	−.04	.02	−.08	.06	[−.09, .00]
R^2	.46					.26					.31					.35				
F for ΔR^2	130.14***					54.75***					67.30***					82.51***				
Step 2																				
Mattering	−.21	.05	−.16	.0001	[−.32, −.11]	.50	.05	.41	.0001	[.39, .61]	−.36	.04	−.39	.0001	[−.43, −.29]	−.20	.06	−.16	.001	[.32, −.09]
Anti-mattering	.21	.06	.17	.0001	[.10, .32]	−.16	.06	−.14	.004	[−.27, −.05]	.22	.04	.26	.0001	[.15, .29]	.16	.06	.13	.01	[.04, .28]
Fear of not mattering	−.06	.05	−.06	.22	[−.15, .04]	.03	.05	.03	.59	[−.07, .12]	.07	.03	.10	.04	[.00, .13]	−.00	.05	−.00	.97	[−.11, .10]
R^2	.51					.45					.58					.40				
F for ΔR^2	16.74***					49.81***					96.19***					11.30***				
Observed statistical power	1.0					1.0					1.0					1.0				

ATQ Automatic Thoughts Questionnaire, *UCLA* UCLA Loneliness Scale, *LATQ* Loneliness Automatic Thoughts Questionnaire

***$p < .0001$

explained by the personality variables with mattering having a positive association with adaptability and anti-mattering having a negative association with adaptability. Fear of not mattering was not significantly associated with adaptability.

Finally, the automatic thoughts variables significantly added to the explained variance beyond the variance explained by the personality and the mattering variables with negative automatic thoughts being negatively associated with adaptability and positive automatic thoughts being positively associated with adaptability. Loneliness and loneliness automatic thoughts were not found to be associated with adaptability. This model significantly explained 40% of the variance in adaptability to the COVID-19 pandemic.

D.   *Associations of personality predispositions, mattering variables, automatic thoughts variables, and adaptability to the COVID-19 pandemic with emotional experiences variables*

As can be seen in Table 6 (arrows marked as "D"), controlling for extensive shared variance, dependency and self-criticism were positively associated with distress and negative current mood state but negatively associated with positive current mood states. In contrast, self-esteem was negatively associated with distress and negative mood ($p < .08$ two-tailed) but positively associated with positive current mood. Mattering variables added significantly to the explained variance in current mood states with mattering being negatively associated with distress and positively associated with positive mood. anti-mattering was positively associated with distress

Table 5   Summary of hierarchical regression analyses for personality, mattering, and automatic thoughts variables and loneliness predicting adaptability ($N = 462$)

	Adaptability				
	B	SE(B)	β	$p <$	95% CI
Step 1					
Dependency	− .19	.05	− .20	.0001	[− .28, − .09]
Self-criticism	− .17	.05	− .18	.0001	[− .26, − .08]
Self-esteem	.18	.03	.25	.0001	[.11, .24]
R^2	.25				
F for ΔR^2	49.97***				
Step 2					
Mattering	.34	.09	.19	.0001	[.17, .52]
Anti-mattering	− .25	.09	− .15	.005	[− .43, − .08]
Fear of not mattering	.06	.08	.04	.46	[− .10, .21]
R^2	.31				
F for ΔR^2	13.08***				
Step 3					
ATQ-negative	− .26	.08	− .19	.001	[− .41, − .11]
ATQ-positive	.45	.08	.31	.0001	[.30, .60]
UCLA	.11	.11	.06	.32	[− .11, .33]
LATQ	− .08	.07	− .06	.23	[− .22, .05]
R^2	.40				
F for ΔR^2	17.81***				
Observed statistical power	1.0				

ATQ Automatic Thoughts Questionnaire, *UCLA* UCLA Loneliness Scale, *LATQ* Loneliness Automatic Thoughts Questionnaire

***$p < .0001$

and negative mood, whereas fear of not mattering was only positively associated with distress. Automatic thoughts added significantly to the explained variance in current mood states beyond the explained variance of personality variables and mattering variables. Specifically, negative automatic thoughts were positively associated with distress and negative mood, whereas positive automatic thoughts were negatively associated with distress and negative mood but positively associated with positive mood. Notably, loneliness scores were not significantly associated with current mood states, whereas loneliness automatic thoughts were positively associated with distress and negative mood but negatively associated with positive mood. Finally, adaptability to the COVID-19 pandemic significantly added in the expected directions to the explained variance in current mood states beyond the variance explained by the personality, mattering, and automatic thoughts variables despite the correlations between adaptability and the other predictors. This model explained 52%, 43%, and 42% of the variance in distress, negative mood, and positive mood, respectively.

Discussion

The current study examined the extent to which personality vulnerability factors reflecting risk and other personality factors representing resilience were associated with adaptability to the pandemic and associated thoughts and emotional experiences. A central theme of this research was the role of an internalized positive sense of self reflected by self-esteem and feelings of mattering versus a negative sense of self in being able to adjust successfully to the unique challenges posed by the COVID-19 global health crisis and all of the changes brought about as a result of this pandemic. A particular focus of this study was to evaluate individual differences factors (e.g., dependency, self-criticism) that could be used to account for the extent to which university students were able to adapt to conditions requiring them to engage in physical isolation that led to significant reductions in social contact.

Most notably, in addition to examining individual difference factors that were possibly associated with indicators that reflect current levels of stress, distress, and positive mood, the current study also examined the correlates of feelings of loneliness as the pandemic continued to spread. Our approach to loneliness represents a distinguishing feature of this study because we went beyond usual forms of assessment (e.g., relying on a measure such as the UCLA Loneliness Scale) to also consider loneliness from a cognitive perspective. This reflected our attempt to identify people who are less able to adapt and cope with feelings of loneliness. This extended approach was designed to capture feelings of isolation during the pandemic that are accompanied by thoughts concerning loneliness as well as how to potentially escape this loneliness.

As expected, it was found that both self-criticism and dependency were associated with more negative emotional reactions and elevated levels of loneliness as well as lower reported adaptability to the pandemic. This study is unique in that it examined self-criticism and dependency in a particular life context (i.e., the COVID-19 pandemic and all of its uncertainties and disruptions) and few previous studies of these personality traits have examined them within the context of an ongoing stress situation that is impactful and highly relevant. One indication of the merits of examining these constructs in this situational context is the results obtained with the two loneliness measures. It has typically been the case in previous investigations, including some of our own past work, that self-criticism has a stronger association with loneliness than dependency does. This was not the case in the current study.

Table 6 Summary of hierarchical regression analyses for personality, mattering, automatic thoughts variables, and loneliness and adaptability predicting emotional experiences (N = 462)

	Distress					Negative mood					Positive mood				
	B	SE(B)	β	p <	95% CI	B	SE(B)	β	p <	95% CI	B	SE(B)	β	p <	95% CI
Step 1															
Dependency	.48	.06	.35	.0001	[.35, .60]	.38	.06	.30	.0001	[.25, .50]	−.18	.06	−.16	.002	[−.29, −.07]
Self-criticism	.32	.06	.24	.0001	[.20, .44]	.32	.06	.25	.0001	[.20, .44]	−.28	.06	−.26	.0001	[−.39, −.18]
Self-esteem	−.14	.04	−.13	.002	[−.22, −.05]	−.08	.04	−.08	.08	[−.17, .01]	.15	.04	.18	.0001	[.08, .23]
R^2	.35					.27					.22				
F for ΔR^2	83.12***					57.68***					43.69***				
Step 2															
Mattering	−.36	.12	−.14	.003	[−.60, −.12]	−.16	.12	−.06	.20	[−.40, .08]	.50	.11	.23	.0001	[.28, .71]
	.29	.12	.12	.02	[.05, .54]	.32	.12	.14	.01	[.08, .57]	−.07	.11	−.03	.55	[−.29, .15]
Fear of not mattering	−.24	.11	−.12	.03	[−.45, .03]	−.07	.11	−.04	.52	[−.28, .14]	.06	.10	.04	.54	[−.13, .25]
R^2	.38					.30					.27				
F for ΔR^2	7.72***					4.57**					9.5***				
Step 3															
ATQ-negative	.56	.10	.28	.0001	[.35, .76]	.32	.11	.17	.002	[.11, .53]	−.04	.10	−.03	.65	[−.23, .15]
ATQ-positive	−.47	.10	−.22	.0001	[−.67, −.27]	−.56	.10	−.28	.0001	[−.76, −.36]	.64	.09	.37	.0001	[.46, .83]
UCLA	−.25	.15	−.09	.10	[−.54, .05]	−.00	.15	−.00	.95	[−.31, .29]	.11	.14	.05	.43	[−.16, .38]
LATQ	.23	.09	.11	.02	[.046, .41]	.34	.09	.18	.0001	[.16, .52]	−.26	.08	−.16	.002	[−.43, −.09]
R^2	.49					.40					.37				
F for ΔR^2	22.54***					19.97***					17.16***				
Step 4															
Adaptability	−.31	.06	−.21	.0001	[−.43, −.19]	−.28	.06	−.20	.0001	[−.40, −.15]	.35	.06	.30	.000	[.24, .46]
R^2	.51					.43					.42				
F for ΔR^2	24.92***					19.32***					40.32***				
Observed statistical power	1.0					1.0					1.0				

ATQ Automatic Thoughts Questionnaire, UCLA UCLA Loneliness Scale, LATQ Loneliness Automatic Thoughts Questionnaire

**p < .01, ***p < .0001

Both self-criticism and dependency were positively associated with loneliness and loneliness automatic thoughts, but it is worth noting that, in both instances, the associations for dependency were stronger than those observed for self-criticism, and this was especially the case in terms of the link between dependency and loneliness automatic thoughts. These findings are in keeping with the notion that it is useful to examine personality constructs from a personality–situation interaction perspective (see Flett et al. 1995) and dependency in particular is best examined in circumstances that involve interpersonal challenges such as the reduced social contact being experienced by our participants.

As noted earlier, a positive self-model was reflected in the current study by the inclusion of measures of self-esteem and mattering. The obtained pattern of results is consistent with the general premise that resilience is associated with a positive view of the self. Both self-esteem and mattering were associated with higher reported levels of adaptability to the pandemic. Self-esteem and mattering were also associated with more positive emotions and positive automatic thoughts as well as fewer negative emotions and negative automatic thoughts. The findings linking mattering with both greater adaptability and reports of better emotional functioning are in keeping with calls to promote mattering among college and university students (see Flett et al. 2019) and the potential applications of emphasizing the relational side of the student experience. This emphasis may be particularly important when students have limited on-campus opportunities to connect with others.

Multiple measures of mattering were included in the present study due to our expectation that having a sense of mattering to other people and a lower sense of fear about not mattering would constitute a source of reassurance and comfort for people coping with less social contact with significant people in their lives. This expectation was supported because students in this study reported less loneliness and fewer loneliness-related thoughts if they had higher levels of mattering and without the feeling and fear of not mattering to others. These results are in keeping with broad calls to promote feelings of mattering to help people cope with the isolation and other stressors and strains associated with living through the current global health crisis (see Flett and Heisel 2020; Flett and Zangeneh 2020).

Clearly, the central focus of our study involved individual differences in the perceived levels of ability to adapt to the pandemic reported by our participants. The conceptual approach guiding this work was that adaptability to the pandemic is the most proximal factor in a conceptualization that combines distal factors with more proximal influences (see Fig. 1). The relevance and salience of perceived adaptability was illustrated through its robust links with lower levels of negative emotion and higher levels of positive emotion as well as the strong links that it had with a greater frequency of positive automatic thoughts and less reported automatic thoughts reflecting the negative and loneliness.

Perhaps most revealing were the results showing that perceived adaptability explained unique variance in levels of distress and mood states even when controlling for personality, mattering, and automatic thoughts. These findings are noteworthy in several respects. For instance, these results demonstrate that self-reports of perceived adaptability as measured in the current study do not simply reflect a positive self-orientation and inflated sense of the self because numerous measures tapping into the self-concept had already been included as predictors and these variables have significant overlap with our measure of self-reported adaptability. More importantly, from a conceptual perspective, these findings attest to the role played by perceived adaptability and the need to include perceived adaptability as a central factor in models being developed to account for how people adjust to challenging circumstances that can impact their health and well-being and social worlds. While it is important to

consider resilience and the ability to bounce back from setbacks, it is also important to consider the ability to adapt and adjust to new, uncertain situations that can dramatically transform daily life.

The pattern of correlational results involving adaptability to the pandemic can be seen as yielding some unique insights into the nature of the adaptability construct. For instance, the cognitive component of adaptability includes a perceived capability to revise and adjust thinking in a way that is similar to cognitive flexibility. Our results indicate that cognitive adaptability is reflected by a tendency to experience frequent positive automatic thoughts while having relatively few negative automatic thoughts and thoughts about feelings of loneliness. One implication is that the promotion of adaptability will likely facilitate the type of cognitive orientation that would benefit people in the same way that effective cognitive behavior therapy and mindfulness training benefits people. More generally, our results illustrate that meaningful individual differences are being measured when adaptability is focused specifically on adaptability to the pandemic. The adaptability construct is itself quite adaptable because it is typically measured as a general disposition, but clearly, it can also be assessed with reference to specific contexts. Presumably, the measure could be modified to tap specific adaptability to any meaningful transition involving significant life change.

The focus of this study has been on a variable-centered approach, but it is important to consider these implications from a person-centered perspective, especially for students who do not perceive themselves as having adapted very well to the challenges posed by the pandemic. These students are seemingly characterized by a preponderance of negative emotional states and considerable stress, and they will also have frequent thoughts. These thoughts will not often be positive in nature and instead reflect depressogenic themes and thoughts about their loneliness. At an academic level, these characteristics and tendencies should limit the ability and capacity of these students to fully engage with the transition to online synchronous learning. Cognitive preoccupations and emotional arousal should add substantially to the challenges facing students who were already grappling with issues involving anxiety, depression, and self-doubt prior to the onset of the pandemic. Unfortunately, this will be at a time when social support and positive distractions are even less available as daily routines are disrupted and there is little opportunity to pursue long-term goals. If taken to the extreme, it is easy to envision a demoralized student who may be feeling trapped and perhaps defeated by current circumstances.

Collectively, our findings are consistent with calls to address the mental health concerns of people who are feeling overwhelmed and not able to easily adapt to their current and ongoing stressful situation. Our findings point to the need to direct counseling resources to students who have tendencies to be dependent and self-critical. These efforts can include preventive and proactive measures taken to promote general feelings of mattering and specific feelings of mattering and belonging in the university community in line with recommendations put forth by Flett and associates (Flett et al. 2019).

As noted above, one unique element of this study is that we included a newly developed measure of automatic thoughts about loneliness—the LATQ. Scores on this measure were associated with more frequent negative automatic thoughts and less frequent positive automatic thoughts. It is especially worth noting that this measure was associated with the ULS-8, but it was clearly not redundant with the ULS-8 in that the inclusion of the LATQ yielded some new insights. For instance, it was found that people with higher trait levels of dependency and self-criticism also report a tendency to experience thoughts about their loneliness. Also, the correlations displayed in Table 2 indicate that the link

found between feelings of not mattering and loneliness reported by Flett and associates (Flett et al. 2016) was not only replicated in the current study, it was shown that frequently occurring and perhaps repetitive thoughts about loneliness are also associated with feelings of not mattering. This should be especially problematic for people who are physically isolating during the pandemic and have too much time to themselves, so they will likely have too many opportunities to consider just how alone and unimportant they seem from their own perspective. It is conceivable that frequent thinking and over-thinking about feelings of loneliness is a key element that is contributing directly to growing reports of the much higher prevalence of mental health problems and drug-related problems, including overdoses.

Limitations of the Current Study

It is useful to consider the current findings within the context of certain limitations. First, our current results are based on cross-sectional research and, as such, no inferences can be made about possible causal associations. Second, self-reports are always susceptible to response bias and this study is no exception. Third, it would have been helpful to assess more elements of the current living situations of our respondents so that we could take into account some unique elements that make the pandemic easier or more difficult to contend with. Finally, although it was not a central feature of our study, we must acknowledge the limitations inherent in asking our participants to retrospectively report on their emotional states as a supplement to their reports of current emotional states. These retrospective accounts may be substantially prone to bias and distortion but as we noted earlier, these reports were included to further underscore just how different life is for students now as they cope with the pandemic versus their sense of how things used to be for them. The results shown in Table 1 indicate that even though our sample included students who saw themselves as adapting reasonably well to their new circumstances, there were exceptionally large differences in current mood states compared with the seemingly halcyon days before the COVID-19 pandemic. These differences extended to positive emotional experiences as students reported less optimism, enjoyment, and satisfaction during these "pandemic days."

In summary, the results of the current study illuminated the differences among university students in their reactions to the COVID-19 pandemic. There were meaningful individual differences in reported adaptability to the pandemic and this was reflected in emotional and cognitive tendencies that apparently enhanced or detracted from the ability to adjust to this ongoing stressful situation. Support was found for our emphasis on the resilience that accompanies having established a positive sense of self and the risk and vulnerability that accompanies having a negative sense of self that can further fuel self-criticism, dependency, low self-esteem, and feelings of not mattering to other people. More generally, the current study attests to the value in conducting research from an individual difference perspective within the context of actual and ongoing life contexts that add a component that is often lacking from other research investigations.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflicts of interest.

Appendix: The Loneliness Automatic Thoughts Questionnaire

Listed below are a variety of thoughts that pop into people's heads. Please read each thought and indicate how frequently, if at all, the thought occurred to you *over the last week*. Please read each item carefully and circle the appropriate answers on the answer sheet in the following fashion (1 = "not at all," 2 = "sometimes," 3 = "moderately often," 4 = "often," and 5 = "almost all the time").

Items	Descriptive		
	M	*SD*	Loadings*
1. Why am I so lonely?	2.04	1.19	.79
2. I cannot stand to feel this alone	2.21	1.20	.80
3. It's weak to be this lonely	1.85	1.10	.78
4. I feel helpless being by myself for too long	1.95	1.11	.79
5. Will this loneliness ever end?	1.95	1.17	.78
6. I cannot escape this loneliness	1.73	1.08	.82
7. Something must be wrong with me to feel this alone	1.59	1.01	.79
8. I cannot handle feeling alone	1.87	1.13	.78
9. Other people are not this alone	2.01	1.18	.68
Eigenvalue			5.46
% of variance			60.66%

$N = 462$

*Principal component analysis

References

Bar, M., Schrieber, G., Geuron-Sela, N., Shahar, G., & Tikotzsky, L. (2020). Role of self-criticism, anxiety, and depressive symptoms in young adults' insomnia. *International Journal of Cognitive Therapy, 13*, 15–29.

Bareket-Bojmel, L., Shahar, G., & Margalit, M. (2020). COVID-19-related economic anxiety is as high as health anxiety: findings from the USA, the UK, and Israel. *International Journal of Cognitive Therapy*. https://doi.org/10.1007/S41811-020-00078-3.

Besser, A., Flett, G. L., & Davis, R. A. (2003). Self-criticism, dependency, silencing the self, and loneliness: a test of a mediational model. *Personality and Individual Differences, 35*, 1735–1752.

Besser, A., Priel, B., Flett, G. L., & Wiznitzer, A. (2007). Linear and nonlinear models of vulnerability to depression: personality and postpartum depression in a high-risk population. *Individual Differences Research, 5*, 1–29.

Besser, A., Flett, G. L., & Zeigler-Hill, V. (2020). Adaptability to a sudden transition to online learning during the COVID-19 pandemic: understanding the challenges for students. *Scholarship of Teaching and Learning in Psychology*. https://doi.org/10.1037/stl0000198.

Blatt, S. J., & Blass, R. B. (1996). Relatedness and self-definition: a dialectic model of personality development. In G. G. Noam & K. W. Fischer (Eds.), *The Jean Piaget Symposium Series. Development and vulnerability in close relationships* (pp. 309–338). Hillsdale: Erlbaum.

Blatt, S. J., & Shichman, S. (1983). Two primary configurations of psychopathology. *Psychoanalysis & Contemporary Thought, 6*, 187–254.

Blatt, S. J., & Zuroff, D. C. (1992). Interpersonal relatedness and self-definition: two prototypes for depression. *Clinical Psychology Review, 12*, 527–562.

Blatt, S. J., & Zuroff, D. C. (2002). Perfectionism in the therapeutic process. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism: theory, research, and treatment* (pp. 393–406). Washington, DC: American Psychological Association.

Blatt, S. J., Zohar, A. H., Quinlan, D. M., Zuroff, D. C., & Mongrain, M. (1995). Subscales within the dependency factor of the Depressive Experiences Questionnaire. *Journal of Personality Assessment, 64*, 319–339.

Borawski, D. (2019). Authenticity and rumination mediate the relationship between loneliness and well-being. *Current Psychology*. https://doi.org/10.1007/s12144-019-00412-9.

Casale, S., & Flett, G. L. (2020). Interpersonally-based fears during the COVID-19 pandemic: reflections on the fear of missing out and the fear of not mattering constructs. *Clinical Neuropsychiatry: Journal of Treatment Evaluation, 17*, 88–93.

Casalin, S., Luyten, P., Besser, A., Wouters, S., & Vliegen, N. (2014). A longitudinal cross-lagged study of the role of parental self-criticism, dependency, depression, and parenting stress in the development of child negative affectivity. *Self and Identity, 13*, 491–511.

Chen, H., Cohen, P., & Chen, S. (2010). How big is a big odds ratio? Interpreting the magnitudes of odds ratios in epidemiological studies. *Communications in Statistics - Simulation and Computation, 39*, 860–864. https://doi.org/10.1080/03610911003650383.

Cheng, P.-H., & Merrick, E. (2017). Cultural adaptation of dialectical behavior therapy for a Chinese international student with eating disorder and depression. *Clinical Case Studies, 16*, 42–57. https://doi.org/10.1177/1534650116668269.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences (2nd ed.)*. Hillsdale: Lawrence Erlbaum Associates.

Coyne, J. C., & Whiffen, V. E. (1995). Issues in personality as diathesis for depression: the case of sociotropy/dependency and autonomy/self-criticism. *Psychological Bulletin, 118*, 358–378.

Dunkley, D. M., Zuroff, D. C., & Blankstein, K. R. (2003). Self-critical perfectionism and daily affect: dispositional and situational influences on stress and coping. *Journal of Personality and Social Psychology, 84*, 234–252. https://doi.org/10.1037/0022-3514.84.1.234.

Dunkley, D. M., Starrs, C. J., Gouveia, L., & Moroz, M. (2020). Self-critical perfectionism and lower daily perceived control predict depressive and anxious symptoms over four years. *Journal of Counseling Psychology*. https://doi.org/10.1037/cou0000425.

Endler, N. S., & Magnusson, D. (1976). Toward an interactional psychology of personality. *Psychological Bulletin, 83*, 956–974.

Endler, N. S., & Parker, J. D. A. (1992). Interactionism revisited: reflections on the continuing crisis in the personality area. *European Journal of Personality, 6*, 177–198.

Flett, G. L. (2018). *The psychology of mattering: understanding the human need to be significant*. Cambridge: Academic Press/Elsevier.

Flett, G. L. (2020). *The fear of not mattering: development and correlates of a new measure*. Manuscript in preparation.

Flett, G. L., & Heisel, M. J. (2020). Aging and feeling valued versus expendable during the Covid-19 pandemic & beyond: a review & commentary of why mattering is fundamental to the health & well-being of older adults. *International Journal of Mental Health and Addiction*. https://doi.org/10.1007/s11469-020-00339-4.

Flett, G. L., & Zangeneh, M. (2020). Mattering as a vital support for people during the COVID-19 pandemic: the benefits of feeling and knowing that someone cares during times of crisis. *Journal of Concurrent Disorders, 2*, 106–123.

Flett, G. L., Hewitt, P. L., Endler, N. S., & Bagby, R. M. (1995). Conceptualization and assessment of personality factors in depression. *European Journal of Personality, 9*, 309–350.

Flett, G. L., Goldstein, A. L., Pechenkov, I., Nepon, T., & Wekerle, C. (2016). Antecedents, correlates, and consequences of feeling like you don't matter: associations with maltreatment, loneliness, social anxiety, and the five factor model. *Personality and Individual Differences, 92*, 52–56.

Flett, G. L., Khan, A., & Su, C. (2019). Mattering and psychological well-being in college and university students: a review and recommendations for campus-based initiatives. *International Journal of Mental Health and Addiction, 17*, 667–680. https://doi.org/10.1007/s11469-019-00073-6.

Flett, G. L., Burdo, R., & Nepon, T. (2020a). Mattering, insecure attachment, rumination, and self-criticism in distress among university students. *International Journal of Mental Health and Addiction*. https://doi.org/10.1007/s11469-020-00225-z.

Flett, G. L., Nepon, T., Besser, A., & Rose, A. L. (2020b). *Alone in my mind: development, validity, and applications of the Loneliness Automatic Thoughts Questionnaire*. Manuscript in preparation.

Franzoi, S. L., & Davis, M. H. (1985). Adolescent self-disclosure and loneliness: private self-consciousness and parental influences. *Journal of Personality and Social Psychology, 48*, 768–780.

Hays, R. D., & DiMatteo, M. R. (1987). A short-form measure of loneliness. *Journal of Personality Assessment,*
    51, 69–81.

Heinrich, L. M., & Gullone, E. (2006). The clinical significance of loneliness: a literature review. *Clinical*
    Psychology Review, 26, 695–718.

Hollon, S. D., & Kendall, P. C. (1980). Cognitive self-statements in depression: development of an automatic
    thoughts questionnaire. *Cognitive Therapy and Research, 4,* 383–395.

Horowitz, L. M., French, R. D. S., & Anderson, C. A. (1982). The prototype of a lonely person. In L. Peplau &
    D. Perlman (Eds.), *Loneliness: a sourcebook of current theory, research, and therapy* (pp. 183–205). New
    York: John Wiley & Sons.

Ingram, R. E., Kendall, P. C., Siegle, G., Guarino, J., & McLaughlin, S. C. (1995). Psychometric properties of the
    Positive Automatic Thoughts Questionnaire. *Psychological Assessment, 7,* 495–507.

Joeng, J. R., & Turner, S. L. (2015). Mediators between self-criticism and depression: fear of compassion, self-
    compassion, and importance to others. *Journal of Counseling Psychology, 62,* 453–463.

Kilgore, W. D. S., Cloonan, S. A., Taylor, E. C., & Dailey, N. S. (2020). Loneliness: a signature mental health
    concern in the era of COVID-19. *Psychiatry Research, 290,* 1–3. https://doi.org/10.1016/j.
    psychres.2020.113117.

Lassri, D., Soffer-Dudek, N., Lerman, S. F., Rudich, Z., & Shahar, G. (2013). Self-criticism confers vulnerability
    to psychopathology in the face of perceived stress related to missile attacks: three longitudinal studies.
    International Journal of Cognitive Therapy, 6, 221–234.

Lui, P. P. (2017). Incorporating meta-emotions in integrative cognitive-affective therapy to treat comorbid
    bulimia nervosa and substance use disorders in a Latina American. *Clinical Case Studies, 16,* 328–345.

Magnusson, D., & Endler, N. S. (1977). Interactional psychology: current issues and future prospects. In D.
    Magnusson & N. S. Endler (Eds.), *Personality at the crossroads: current issues in interactional psychology.*
    Mahwah: Erlbaum.

Marcus, F. M., & Rosenberg, M. (1987). *Mattering: it's measurement and significance in everyday life.* The 57th
    annual Eastern Sociological Society Meeting, Boston, Massachusetts.

Martin, A. J. (2017). Adaptability—what it is and what it is not: comment on Chandra and Leong (2016).
    American Psychologist, 72, 696–698.

Martin, A. J., Nejad, H. G., Colmar, S., & Liem, G. A. D. (2013). Adaptability: how students' responses to
    uncertainty and novelty predict their academic and non-academic outcomes. *Journal of Educational*
    Psychology, 105, 728–746. https://doi.org/10.1037/a0032794.

McComb, S. E., Goldberg, J. O., Flett, G. L., & Rose, A. L. (2020). The double jeopardy of feeling lonely and
    unimportant: state and trait loneliness and feelings and fears of not mattering. Manuscript submitted for
    publication.

Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: reconceptualizing
    situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review, 102,*
    246–268.

Netemeyer RG, Williamson DA, Burton S, Biswas D, Jindal S, Landreth S, Mills G, Primeaux S. 2002.
    Psychometric properties of shortened versions of the Automatic Thoughts Questionnaire. *Educational and*
    Psychological Measurement 62:111–129. https://doi.org/10.1177/0013164402062001008.

Prilleltensky, I. (2020). Mattering at the intersection of psychology, philosophy, and politics. *American Journal*
    of Community Psychology, 65, 16–34. https://doi.org/10.1002/ajcp.12368.

Richard, F. D., Bond Jr., C. F., & Stokes-Zoota, J. J. (2003). One hundred years of social psychology
    quantitatively described. *Review of General Psychology, 7,* 331–363.

Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: construct validation
    of a single-item measure and the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin,*
    27, 151–161.

Rosenberg, M. (1965). *Society and the adolescent self-image.* Princeton: Princeton University Press.

Rosenberg, M. (1979). *Conceiving the self.* New York: Basic Books.

Rosenberg, M., & McCullough, C. B. (1981). Mattering: inferred significance and mental health among
    adolescents. *Research in Community and Mental Health, 2,* 163–182.

Schönbrodt, F. D., & Perugini, M. (2013). At what sample size do correlations stabilize? *Journal of Research in*
    Personality, 47, 609–612.

Selye, H. (1993). The history of the stress concept. In L. Goldberger & S. Breznitz (Eds.), *Handbook of stress:*
    theoretical and clinical aspects (2nd ed., pp. 7–17). New York: The Free Press.

Shahar, G., Soffer, N., & Gilboa-Schechtman, E. (2008). Sociotropy, autonomy, and self-criticism: are there
    distinguishable dimensions of cognitive-personality vulnerability? *Journal of Cognitive Psychotherapy, 22,*
    219–227.

Sharhabani-Arzy, R., Amir, M., & Swisa, A. (2005). Self-criticism, dependency and posttraumatic stress disorder among a female group of help-seeking victims of domestic violence in Israel. *Personality and Individual Differences, 38*, 1231–1240.

Tarocchi, A., Aschieri, F., Fantini, F., & Smith, J. D. (2013). Therapeutic assessment of complex trauma: a single-case time-series study. *Clinical Case Studies, 12*, 228–245.

Taylor, J., & Turner, J. (2001). A longitudinal study of the role and significance of mattering to others for depressive symptoms. *Journal of Health and Social Behavior, 42*, 310–325.

Vanhalst, J., Luyckx, K., Raes, F., & Goossens, L. (2012). Loneliness and depressive symptoms: the role of uncontrollable ruminative thoughts. *Journal of Psychology, 146*, 259–276.

Zawadzki, M. J., Graham, J. E., & Gerin, W. (2013). Rumination and anxiety mediate the effect of loneliness on depressed mood and sleep quality in college students. *Health Psychology, 32*, 212–222.

Zuroff, D. C., Blatt, S. J., Sanislow, C. A. I., Bondi, C. M., & Pilkonis, P. A. (1999). Vulnerability to depression: reexamining state dependence and relative stability. *Journal of Abnormal Psychology, 108*, 76–89.

Zuroff, D. C., Sadikaj, G., Kelly, A. C., & Leybman, M. J. (2016). Conceptualizing and measuring self-criticism as both a personality trait and a personality state. *Journal of Personality Assessment, 98*, 14–21.

Affiliations

Avi Besser[1] · Gordon L. Flett[2] · Taryn Nepon[2] · Virgil Zeigler-Hill[3]

[1]   Department of Communication Disorders, Interdisciplinary School for Sciences, Health and Society, Hadassah Academic College, 37 Hanevi'im St., 9101001 Jerusalem, Israel

[2]   Department of Psychology, York University, 4700 Keele Street, Toronto, Ontario M3J 1P3, Canada

[3]   Oakland University, Rochester, MI, USA