



# The relationship between value-based actions, psychological distress and well-being: A multilevel diary study

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Although value-based actions are often associated with improved mental health outcomes, few studies have explored this relationship on a daily level. The aim of this diary study was to explore how value-based actions change over time and assess how these fluctuations are associated to psychological distress and well-being both within- and between-day. Ninety-seven Canadian post-secondary students ( $n = 1581$  observations) took part in this study. For 21 consecutive days, they were invited to complete end-of-day diaries (EOD) querying their daily level of distress, well-being and value-based actions. The questionnaires were sent to each student's mobile phone at a random time between 18:00 p.m. and 22:30 p.m. Data were analysed using multilevel modeling and time-lagged analysis. The results show that 1) daily value-based actions were negatively associated with daily distress and positively associated with daily well-being, 2) well-being reported in a given daily diary predicted next-day value-based actions, and 3) greater variability in daily value-based actions was associated with marginally lower daily well-being and steepened increases in daily distress over time.

**Keywords:** Acceptance and commitment therapy, Value-based actions, Daily diary methods  
Psychological well-being, Psychological distress, Longitudinal study

Acceptance and Commitment Therapy (ACT; Hayes et al., 2012) is a “third wave” cognitive behavioral therapy based on Relational Frame Theory (Hayes, 2004), which posits that both language and cognition depend on learned “relational frames” linking past events to future behavior. As such, ACT encourages the decoupling of relational frameworks from one's present-moment goals and behaviors and helps individuals develop greater psychological flexibility, that is, the ability to be in contact with their experiences while engaging in values-based actions regardless of the presence or absence of distressing symptoms. In ACT, individuals are invited to develop three response styles: 1) an *open response style* (i.e., open fully to unwanted experiences such as difficult emotions and step back from distressful thoughts, without considering them as the exact reflection of reality, or as

rules to be followed), 2) a *centered response style* (i.e., pay attention to their internal and external experience, as it unfolds in the moment, with non-judgment and observe their thoughts, emotions or sensations maintaining a wider and impartial perspective) and 3) an *engaged response style* (i.e., stay connected to personal values or areas of life that are important and engage in committed actions; Hayes et al., 2012).

Although all response styles are essential to the development of psychological flexibility, the *engaged response style* holds a special place in ACT. In fact, Harris (2009) sustains that this form of therapy “is aimed toward one outcome: mindful, values-congruent living or, in lay terms, a rich, full, and meaningful life. It's the outcome that motivates everything we do in ACT” (p. 189). Thus, it is not surprising that participants who take part in ACT spend a fair amount of time clarifying their values and engaging in committed actions. In contextual behavioral science, *values* are conceptualized as freely chosen patterns of activity that define an evolving life path (Hayes et al., 2012). They can be thought of as personally meaningful principles for living that organize and direct current action in a given domain (e.g., family, work; Lundgren et al., 2012). Unlike goals (i.e., get an A in my sociology class), which are future focused and defined by an obtainable end-point, values (e.g., be a loving mother) cannot be completed, achieved or attained (Finkelstein-Fox et al., 2019). Value-based actions (or committed actions)

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are behaviors that allow participants to act in the direction of their personal values, even in the presence of external or internal obstacles.

Over the years, assessment tools such as the Valuing Questionnaire (VQ; Smout et al., 2014), the Engaged Living Scale (ELS; Trompetter et al., 2013), the Valued Living Questionnaire (VLQ; Wilson et al., 2010) and the Bulls-Eye Values Survey (BEVS; Lundgren et al., 2012) have been developed to capture participants' self-reported values and committed actions (Barrett et al., 2019; Reilly et al., 2019). Studies conducted with these tools suggest that living one's life in coherence with one's personal values helps promote psychological well-being. In contrast, individuals who perceive a discrepancy between their values and their actions usually report more psychological distress. For instance, in a study realized with Swedish university students using the Bulls-Eye Values Survey (BEVS), Lundgren et al. (2012) showed that those who felt their actions were not consistent with their core values reported less well-being and more depression, anxiety and stress symptoms than those who thought there was no, or a small discrepancy, between their actions and personal values. In a study done with Australian university students, Smout et al. (2014) found that the Progress (e.g., enactment of values) and Obstruction (e.g., disruption of valued living) dimensions of the Valuing Questionnaire (VQ) demonstrated differential patterns of association with adjustment. Whereas the VQ Progress subscale demonstrated strong positive correlations with indicators of psychological well-being (e.g., self-acceptance, mastery and purpose), satisfaction with life and positive emotions, the VQ Obstruction subscale was strongly and positively correlated with depression symptoms and negative emotions.

### **1. The importance of examining value-based actions at the daily level**

Although encouraging, most studies published so far on values and value-based actions are cross-sectional and based on retrospective questionnaires. This is problematic for at least two reasons. First, if values are conceptualized as ongoing, dynamic cognitions that inform behavioral goals, it follows that specific actions in service of one's values should also vary over time and context (Smout et al., 2014). A time-varying perspective on values also suggests that a person's evaluation of his or her behaviors as consistent with personal values will fluctuate over time. There are days when people might feel they did not engage at all in values-based actions and others when they might sense a high level of coherence between what they do and value. Therefore, research designs need to rely on multiple time points so that they 1) provide a representative sampling of engaged response style assessments over time and 2) capture the within-person changes regarding such assessments both within-day and between-day. The present study adopts such a design.

Secondly, engaged response style is generally assessed via retrospective self-report questionnaires, which are subject to considerable recall and social desirability bias (Bolger & Laurenceau, 2013). In the VQ, for instance, respondents are asked to assess their engaged living behaviors during the past week (e.g., "I was proud about how I lived my life"). This question assumes that respondents are able to encode and accurately summarize their day-to-day engaged response style, but several studies suggest the details of past experiences are neither fully encoded into memory nor decoded at the time of recall, leading to bias in retrospective self-report assessments (Stone & Shiffman, 2002). For example, research has shown that negative emotional experiences (e.g., depression symptoms) are recalled more intensely in a long-term retrospective questionnaire (e.g., a week) compared to a daily questionnaire. In general, individuals also seem to tend to overestimate the frequency of their behaviors in a longer recall questionnaire (Schneider & Stone, 2016). To minimize recall bias of fleeting daily experience, methodologists have suggested that lag between daily experience and survey completion be as brief as possible (Stone & Shiffman, 2002).

To ensure comprehensive assessment of participants' experience across multiple timepoints with minimal lag between experience and survey completion, researchers have increasingly used Ecological Momentary Assessment (EMA). EMA entails repeated, intensive sampling of respondents' current experiences while they are engaged in their typical daily routines (Wenze & Miller, 2010). To date, the most frequent implementation of EMA is daily end-of-day diaries (EOD; Stone et al., 2007). Studies using EOD design typically require respondents complete a diary in the evening, at which point they reflect on their experience over the past 24 h (Stone & Shiffman, 2002). End-of-day diaries query participants in their natural environment about how they felt or what they did during the day, producing data with high ecological validity and allowing researchers to explore dynamic temporal relationships between variables of interest and assess within-person change processes that might be missed with more traditional cross-sectional research designs (Wenze & Miller, 2010). Specifically, this approach allows researchers to disentangle the relative contributions of people's general perceptions, habitual daily response pattern, and day-to-day variation around their habitual response. Accordingly, the present study uses EOD design.

### **2. Studies of value-based actions that use momentary data collection methods**

Vilardaga et al., (2015) note that despite their benefits, very few researchers have taken advantage of momentary data collection methods within the ACT community. To our knowledge, only two research groups have explored how value-based actions fluctuate on a daily level. Finkelstein-Fox et al. (2019) used EOD design in a study realized with

122 undergraduate students in a U.S. university to better understand what predicts value-based actions on a daily basis. After completing a baseline survey aimed at assessing their mindfulness, meaning in life and psychological flexibility disposition, participants completed daily surveys at 6 p.m. each day for 14 days. The authors showed that mindfulness, meaning in life and psychological flexibility dispositions were all positively associated with greater average daily value-based actions. In other words, students with higher levels of these qualities demonstrated more committed actions. Their results also indicate that students perceived they were less involved in committed actions on days they experienced more stressful events than usual.

Berghoff et al. (2018) also conducted a study using EOD design, this time with American university students ( $N = 104$ ) enrolled in a mindfulness meditation class. The authors wanted to explore how psychological flexibility processes interact with one another during day-to-day life (within-day analysis) and how they temporally relate to one another across days (between-day analysis). During 14 consecutive days, students received by email or text message a questionnaire at 5 p.m. and were asked to complete it by 11 p.m. At the within-day level, the authors showed that students reported less committed actions on days they reported high experiential avoidance (e.g., when they attempted to avoid uncomfortable private experiences such as thoughts or memories) and more committed actions on days they scored high on mindful awareness (e.g., when they felt in touch with and aware of their experiences). At the between-day level, they found no significant associations with value-based actions, suggesting that students were not more (or less) engaged in committed actions following days they reported high experiential avoidance, cognitive fusion, or mindfulness awareness.

### 3. Unanswered questions on daily value-based actions

The studies reviewed above provide valuable preliminary insight about daily predictors of value-based actions, but many questions remain unanswered.

First, it is not clear how one's baseline engaged response style (as measured by retrospective questionnaires) are associated with daily psychological distress and well-being (as measured by EOD). Although they may share the same items, these types of measurements rely on distinct frames of reference (two weeks vs a day, for example) and can randomized trial with emotionally distressed older adults who took part in a Mindfulness-Based Stress Reduction Program (MBSR) or a health education program. They compared performance of patient-reported measures of mindfulness, depression and anxiety symptoms using both retrospective questionnaires and EMA. They authors showed that correlations between both types of measurement ranged from small to medium at pre and post-intervention. They also showed that participants who took part in the MBSR program had

significantly higher mindfulness and significantly lower depression and anxiety than participants in the health education intervention at post-treatment. However, these changes were found with EMA, but were not detected by traditional retrospective questionnaires, suggesting that EMA increases the precision of detecting and quantifying clinically significant effects by reducing noise in estimated values. In line with the ACT literature, we expect higher levels of baseline value-based actions (as measured by retrospective questionnaires) to be associated with less daily distress and more daily well-being (as measured by EOD; H1). Considering recent evidence, we also expect that daily value-based actions will be a stronger predictor of these outcome variables than baseline value-based actions (H2).

Secondly, little is known about how daily value-based actions are associated to daily levels of distress and well-being. Do individuals report less negative and more positive emotion on days where they feel they are more engaged in value-based actions? Based on the ACT model and the empirical studies described above on the positive influence of engaged living on mental health, it follows that on days where people feel they are involved in committed actions, they will report less distress and more well-being as an outcome (H3a). However, according to the very same ACT model, it can also be predicted that commitment to value-guided action will trigger uncomfortable emotions, sensations or thoughts, temporarily enhancing awareness of concurrent distress as well as well-being (H3b). Recent research tends to support the latter argument. In an EMA study, Grégoire et al. (2020) explored the extent to which university students involved in a 5-weeks ACT intervention were engaged in daily committed actions. They showed that daily committed actions were positively associated with both daily well-being and daily stress; thus, acting in accordance with one's values may be rewarding (and thus have a positive impact on well-being) but also challenging and distressful.

To our knowledge, no studies have examined time-lagged relationships between these variables. Again, according to the ACT model, a person who reports a high level of value-based actions on Monday would be expected to report less psychological distress and more psychological well-being on Tuesday (H4a). But for the same reasons presented above, it can also be argued that the association between these variables could be reversed, such that greater well-being and lower distress on a given day increases subsequent engagement with value-based actions. Based on recent evidence, it can also be argued that a person reporting higher well-being/lower distress on Monday would be expected to report more value-based actions on Tuesday (H4b). Goldberg et al. (2020) conducted a diary study over a 12-weeks period with students enrolled in a mindfulness intervention. The authors found no evidence that time dedicated to meditation practice (surely a value-based action for participants taking part in a

mindfulness program) on a given day predicted positive or negative affect the following day. In contrast, they found that higher current day negative affect predicted 1) less subsequent day meditation practice time and 2) greater odds that participants would not practice at all the following day. Similarly, Pollack and Herres (2020) reported that daily negative affect was associated with next-day procrastination (but not vice versa), whereas positive affect neither predicted nor was predicted by lagged procrastination.

Do individuals report less distress and more well-being when their daily engaged response style is stable and consistent over time? This is not a trivial question, as there is an important distinction within ACT between valuing as a feeling (e.g., I feel my family is important) and valuing as an activity (e.g., I take concrete actions to take care of my family; Eifert & Forsyth, 2009). People can consider their family central to their life without engaging in any actions coherent with such value. The ACT model relies on the assumption that to live a rich and meaningful life, people need to have a clear understanding of their core values, but also act consistently in concordance with these values. As such, we would expect greater variability in daily levels of committed actions (i.e., less consistent value-directed action) to be related to more daily distress and less daily well-being (H5). Daily diary design is particularly well-suited to such a research question, as researchers may calculate the extent of variability between each of a single participant's end-of-day reports.

#### 4. The current study

The aim of this diary study was to explore how fluctuations in daily value-based actions over time are related to psychological distress and well-being both within and across days. Our hypotheses are summarized below.

**H1.** Baseline value-based actions are negatively associated with daily distress and positively associated with daily well-being.

**H2.** The introduction of daily value-based actions substantially reduces the above associations, such that daily value-based actions are a better predictor of daily distress and well-being than are baseline self-reports.

**H3a.** Daily value-based actions are negatively associated with daily distress and positively associated with daily well-being.

**H3b.** Daily value-based actions are positively associated with daily distress and daily well-being.

**H4a.** More daily value-based actions at time  $n$  are associated with less distress and more well-being at time  $n+1$ .

**H4b.** Less distress and more well-being at time  $n$  are associated with more value-based actions at time  $n+1$ .

**H5.** Variability in daily value-based actions (i.e., less consistent value-based action across days) is positively associated with average distress and negatively associated with well-being.

## 5. Method

### 5.1. Participants

Students from the (Université du Québec à Montréal) in Canada took part in this study during the winter semester of 2018. To be included in the study, students had to be fluent in French and own a mobile phone. To encourage participation as well as compliance, participants who completed more than 75% of the questionnaires (16 questionnaires or more) were entered in a random draw for an Ipad. One hundred and twenty-five students agreed to participate and provided data for the baseline assessment. Of this initial pool of participants, 98 (78%) also took part in the daily diary portion of the study. Among the 98 students participating in the daily diary portion, one participant provided only one daily diary was thus excluded for having insufficient data to calculate time-lagged variables for study analyses. The final sample thus included 97 students (80 females), with a mean age of 25.05 years ( $SD = 4.89$ ) who provided baseline data and a minimum of two daily diaries. The majority of this final sample was born in Canada (76%) and enrolled in an undergraduate program (88%). Participants who completed only the baseline assessment vs. those who completed daily diaries did not differ on any of the study variables ( $p$  values of logistic regressions predicting participation in daily diary component were all  $\leq .19$ ).

### 5.2. Procedure

Students were recruited at the beginning of lectures. Using a standardized research script, the research assistant would briefly explain the purpose of the study, trained students on how to download, install, configure and use Metricwire ([www.metricwire.com](http://www.metricwire.com)), the diary mobile application used in this study and then answer students' questions. Students who wanted to take part in the study were invited to sign a written informed consent form and complete a questionnaire aimed at collecting demographic and baseline data.

Data collection lasted three consecutive weeks from the moment students installed the Metricwire application on their mobile phone. Data collection did not start on the same date for all students. An interval-based prompting strategy was used as well as a random schedule. Students were prompted once per day at a random time of day between 18:00 and 22:30 in the evening for a total of 21 intended prompts. We sampled random moments of the

evening, assuming there would be time when students would be less available (during dinnertime, for instance) or time they would be in a specific mood (more tired around bedtime). When prompted, students would receive a notification (push alert) on their phone advising them they had received a new questionnaire and would be invited to respond right away. If they were not able to complete the questionnaire within 30 min, they would receive another notification reminding them that they had a pending survey in Metricwire. If the questionnaire was not completed after 120 min, it would disappear from the application so that students would no longer be able to access it, and it would be considered as a missed prompt in the database.

### 5.3. Measures

#### 5.3.1. Baseline measures

The baseline questionnaire was aimed at measuring the following indicators: 1) psychological distress, 2) psychological well-being and 3) value-based actions.

As mentioned, psychological distress is a mental health outcome typified by behavior and psychophysiological symptoms such as anxiety, depression and stress (Dohrenwend et al., 1980). Anxiety and depressive symptoms were measured with the French version of the *General Anxiety Disorder Questionnaire-7* (GAD-7; Micoulaud-Franchi et al., 2016; Spitzer et al., 2006) and the French version of the *Patient Health Questionnaire-9* (PHQ-9; Carballeira et al., 2007; Kroenke & Spitzer, 2002), respectively. The GAD-7 is a brief scale (7 items) aimed at assessing general anxiety disorder symptoms while the PHQ-9 is a 9-item scale used to detect depression symptoms. Participants were asked how often during the last week they were bothered by anxiety (e.g., *not being able to stop or control worrying*) and depression symptoms (e.g., *feeling down, depressed, or hopeless*). Both scales were scored on a 4-point Likert-type scale ranging from 0 (*never*) to 3 (*almost every day*) and were based on the sum of all their respective items (Cronbach  $\alpha = 0.77$  for depression and .83 for anxiety). Stress was measured using the French version of the *Psychological Stress Measure* (PSM-9; Lemyre & Lalande-Markon, 2009; ). Students were asked how often over the last week they had experienced various manifestations of stress (e.g., *I felt rushed*) using a 6-point Likert scale ranging from 1 (*never*) to 6 (*always*). Overall stress scores were obtained by taking the mean of all 9 items (Cronbach  $\alpha = 0.86$ ). Higher scores on the GAD-7, PHQ-9 and PSM-9 reflect greater symptom severity.

Well-being was measured with two scales: the French version of the *Warwick-Edinburgh Mental Well-Being Scale* (WEMWBS; Tennant et al., 2007; Trousselard et al., 2016) and the French version of the *Subjective Vitality Scale* (SVS; Bostic et al., 2000; Salama-Younes et al., 2009). The WEMWBS is a 14-item scale of mental well-being that cover

subjective well-being and psychological functioning. All items are worded positively and address aspects of positive mental health. In this study, items were related to the previous week (e.g., *This week, I felt good about myself*) and students were invited to indicate their level of agreement with these items using a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). A higher score (obtained by taking the sum of all items) on the WEMWBS indicates more well-being (Cronbach  $\alpha = 0.86$ ). Students were also invited to indicate their level of agreement with the six positively-worded statements contained in the SVS (e.g., *This week, I felt alive and vital*) and those items were rated on a 7-point scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). A higher score (formed by taking the mean of all items) indicates more subjective vitality (Cronbach  $\alpha = 0.88$ ).

Value-based actions were measured with the *Engaged Living Scale* (ELS; Trompetter et al., 2013), a 16-item scale designed to assess an engaged response style as conceptualized in ACT. It contains two subscales - Valued Living (defined as one's clarity of personal values and acting accordingly to them; e.g., *I have values that give my life more meaning*) and Life Fulfilment (defined as a sense of fulfillment in life as a result of acting accordingly with personal values; e.g., *I am satisfied with how I live my life*). Items of the ELS are rated on a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). Higher scores (obtained by taking the mean of all items) express high clarity and engagement with personal values, and greater life fulfillment (Cronbach  $\alpha = 0.92$ ). Since the ELS was not available in French, the standard "forward-backward" procedure was applied to translate the scale from English into French (Brislin, 1970). We conducted an exploratory factor analysis on ELS items, with minimum residuals extraction. The smallest loading for the one-factor solution was 0.44, with all other loadings above 0.50. This solution accounted for 59% of shared variance among items. Further, the results of a parallel analysis suggested an optimal solution with 1 component. Together, these results boost confidence in the reliability of our translated measure.

At baseline, sociodemographic information was also gathered (e.g., age, sex, country of birth).

#### 5.4. Daily EOD measures

Daily EOD measures were specially adapted for our study because they do not impose excessive burden on participants and are thus useful for collecting data over long periods of time (Stone & Shiffman, 2002). In previous research conducted by Grégoire and his colleagues (2020), participants who were randomly sampled throughout the day (between 8:30 a.m. and 8:30 p.m.) mentioned at the end of the study that while they were in the middle of important and meaningful activities (e.g., a class, a dinner with a romantic part-

ner), they would not check their phones and take the time to complete a questionnaire. Given the present study's goal of learning about participant engagement in meaningful activities, we chose to use end of day diaries, rather than random daily prompts.

Since participants had to fill out the same questionnaire many times during this study, the questionnaire had to be short in order to promote compliance (Palmier-Claus et al., 2011). Therefore, the daily measures were kept brief. Items from the *General Anxiety Disorders Questionnaire-2* (GAD-2), the *Patient Health Questionnaire-2* (PHQ-2) and the *Psychological Stress Measure* (PSM-9) were used to measure daily psychological distress. The GAD-2 is used to quickly screen for anxiety symptoms and disorders (Kroenke et al., 2007; Plummer et al., 2016) while the PHQ-2 is a brief measure aimed at detecting depression and grading its severity (Löwe et al., 2005). As previously mentioned, the PSM-9 comprises items aimed at assessing various manifestations of stress (Lemyre & Lalonde-Markon, 2009). When prompted in the evening, students were asked how often they were bothered by the following problems during the day: 1) *Feeling nervous, anxious, or on edge* (GAD-2), 2) *emphNot being able to stop or control worrying* (GAD-2), 3) *Little interest or pleasure in doing things* (PHQ-2), 4) *Feeling down, depressed or hopeless* (PHQ-2) and 5) *Feeling stressed* (PSM-9) on a Likert scale ranging from 0 (*not at all*) to 100 (*almost all day*). All five items were averaged to create a composite score for psychological distress such that high scores reflect more distress (Cronbach  $\alpha = 0.88$ ).

Daily well-being was captured with two items of the SVS (*Today, I felt awake and alert*, *Today, I had energy and spirit*) and one item of the WEMWBS (*Today, I felt happy*) adapted for daily use. Those items were averaged to create a composite score for psychological well-being such that higher scores reflect more well-being (Cronbach  $\alpha = 0.88$ ). The items were adapted to daily use and students were asked to rate their answers using a Likert scale ranging from 0 (*strongly disagree*) to 100 (*strongly agree*).

Daily value-based actions were measured with five items of the Engaged Living Scale (ELS; Trompetter et al., 2013) adapted for daily use (e.g., *Today, I made choices based on my values, even if it is stressful*). Again, students were asked to rate their answers using a Likert scale ranging from 0 (*strongly disagree*) to 100 (*strongly agree*). Higher scores (obtained by taking the mean of all four items) reflected greater daily value-based actions (Cronbach  $\alpha = 0.82$ ). Composite daily scores for distress, well-being, and value-based actions were each divided by 100, thus bringing them within a 0–1 interval, in order to avoid combining variables with different orders of magnitude in the analyses.

## 6. Data analysis

A priori power analyses are notoriously difficult to conduct for multi-level analyses (Matuschek et al., 2017), in part because of complexities associated with random effects. Therefore, we based our sample size estimation on past studies with similar designs examining similar constructs: namely, G goire et al. (2020), Goldberg et al. (2020), Moore et al. (2016), and Pollack and Herres (2020), with Ns ranging between 25 and 67. Given the unknown effect sizes for certain relations (e.g., lagged effects), we aimed for a sample size substantially higher than those in the studies just mentioned. With a sample size of  $N = 97$ , power was deemed sufficient for the current study.

**Baseline composite scores for psychological well-being and distress.** In the baseline assessment data, measures of psychological distress were substantially interrelated ( $r > 0.54$ ), and loaded strongly on a single factor (loadings  $> 0.72$ ), justifying the creation of a single distress composite index. To do so, we extracted factor scores (regression method) from a minimum residuals factor analysis with PSM-9, GAD-7, and PHQ-9 as indicators of a single factor. Interrelations among variables were similar for psychological well-being ( $r = 0.69$ , loadings  $> 0.83$ ), so we used the same approach to create well-being composite scores. For daily diary data, composite scores had already been created by computing mean values across related items.

**Missing data.** In the baseline assessment data, none of the study variables had any missing values (psychological well-being, psychological distress). In the case of daily diary data, very few observations were missing (0.76% for psychological distress, 0.13% for psychological well-being, and 0.13% for value-based living). Therefore, we simply performed a listwise deletion of missing observations. Finally, one diary had missing observations for all variables and was therefore removed from the dataset, leaving a total of 1581 daily diaries for analyses.

**Outliers.** Univariate outliers were winsorized, whereby extreme values outside three median absolute deviations around the median (1.79% of observations) were brought within that interval (Leys et al., 2013). We detected multivariate outliers using Mahalanobis distances evaluated at a stringent level of  $p < .001$ . Eight outliers (0.38% of diaries) were identified this way in the daily diary data. However, Mahalanobis distances for these observations were not extreme and visually not separate from the rest of the distribution. Therefore, they were left untouched. We did not detect any multivariate outliers in the baseline assessment data.

**Analytic strategy.** Given the nested nature of the data (diary assessments nested within individuals), all regressions were conducted using multilevel modeling and implemented with R (R Core Team, 2017) package lme4 (Bates et al., 2015), using Full-Information Maximum Likelihood estimation. All models included random intercepts. We

added random slopes where necessary, based on results from likelihood ratio tests comparing nested models. In other words, we included more complex random effects if doing so statistically significantly improved model fit. Nagakawa and Schielzeth's pseudo- $R^2$  (NS- $R^2$ ) are reported as variance-accounted-for measures of effect sizes (Nagakawa & Schielzeth, 2013).

Statistical assumptions of normality, linearity, and homoscedasticity were verified by visually examining residuals. Models predicting daily psychological distress and well-being had mildly asymmetric residuals (skewness = 0.77 and -0.61, respectively). A log transformation of outcome variables neither changed the results nor addressed the issue. Considering that the issue was mild and reflects asymmetries typically found in psychological adjustment measures in non-clinical samples, we took no further measures. Random effects' normality, linearity, and homoscedasticity were all non-problematic. There were also no issues of multicollinearity (VIFs all < 2.50).

## 7. Results

### 7.1. Descriptive results

At baseline, participants suffered from mild anxiety ( $M_{GAD-7} = 6.59$ ,  $SD_{GAD-7} = 4.40$ ) and depression ( $M_{PHQ-9} = 7.46$ ,  $SD_{PHQ-9} = 4.74$ ) symptoms. They also reported moderate levels of stress ( $M_{PSM-9} = 3.38$ ,  $SD_{PSM-9} = 0.78$ ) and average levels of well-being ( $M_{WEMWBS} = 50.42$ ,  $SD_{WEMWBS} = 7.27$ ) and vitality ( $M_{VS} = 3.66$ ,  $SD_{VS} = 1.00$ ). Levels of value-based living endorsement were moderately high (MELS = 3.65, SDELS = 0.60). Participants completed 3 to 23 diaries,<sup>1</sup> with an average of 16.30 (SD = 4.82). A mixed effects regression with number of completed diaries as the dependent variable showed that the number of diaries completed was not associated with any of the study variables (all  $p > .36$ ). On average, participants reported fairly low levels of daily psychological distress ( $M = 0.29$ ,  $SD = 0.13$ ), and moderate to moderately high levels of daily psychological well-being ( $M = 0.61$ ,  $SD = 0.14$ ) and value-based actions ( $M = 0.69$ ,  $SD = 0.14$ ). Daily value-based actions levels remained stable over the course of the study ( $B = 0.002$ ,  $SE = 0.009$ ,  $t(df) = 0.276(105.742)$ ,  $p = .783$ ). Intraclass correlations for daily variables ranged between 0.33 and 0.38.

Table 1 displays correlations among the numerical variables used in analyses. The pattern of intercorrelations followed our expectations. Baseline measures were positively associated with their daily counterpart. The relation between psychological distress and well-being was negative as measured at baseline as well as in EOD assessments. Greater value-based actions were associated with less psychological distress but more well-being, also within and across levels. Variability in daily value-based actions was correlated negatively with daily distress and positively with daily well-

being.

### 7.2. Associations between baseline value-based actions and daily distress/ well-being

We conducted two sets of mixed effect regressions, with daily psychological distress and well-being as dependent variables, respectively. We entered demographic covariates (sex - male vs. female, age, and level of study - undergraduate vs. graduate) and days since the beginning of diary collection in a first step, and daily value-based actions in a second step. Table 2 displays fixed effects results for distress and Table 3 for well-being. None of the demographic variables were related to daily distress or well-being. Psychological well-being levels did not change over the course of the study, but there was an overall increase in daily distress levels in the sample.

The addition of random slopes for time significantly improved the prediction of distress ( $\chi^2 = 54.62$ ,  $df = 1$ ,  $p < .001$ ) and well-being ( $\chi^2 = 10.00$ ,  $df = 1$ ,  $p = .002$ ). The presence of random slopes (shown in Tables 2 and 3) indicates that trajectories of change in distress/well-being over the course of the study were not uniform across participants: distress/well-being went up for some, down for others, and at different rates. The introduction of sociodemographic covariates accounted for 3% variance in daily distress and 1% variance in daily well-being, based on NS- $R^2$  values.

Supporting H1, participants who reported greater value-based living at baseline also indicated lower levels of distress in their daily diaries, with an NS- $R^2$  of 0.05, and higher levels of daily psychological well-being, also with an NS- $R^2$  of 0.05. In line with H2, when daily value-based actions were entered in a third step (reported in the next section), associations between baseline value-based actions and distress/well-being became statistically non-significant. This change indicates that diary-based assessment of value-based actions is a better predictor of daily distress/well-being than its questionnaire-based counterpart.

### 7.3. Associations between daily value-based actions and daily distress/ well-being

We entered daily value-based actions in a third step, as additional predictors of daily psychological distress and well-being (steps 1 and 2 reported above). Following best practices for the disaggregation of between- and within-person effects in multilevel models (Curran & Bauer, 2011; Raudenbush & Bryk, 2001), the role of daily value-based actions was decomposed into two effects. The first one, a between-person effect, was operationalized as the person's mean level of value-based actions throughout the study (i.e.,

<sup>1</sup>The study lasted 21 days, but because of a mistake in the configuration of Metricwire, one participant had the opportunity to complete 23 diaries instead of 21.

**Table 1***Correlations among numerical study variables.*

	1	2	3	4	5	6	7	8	Range
1. Age	–	0.07	–0.05	0.04	0.03	–0.05	0.01	0.04	[18.00; 37.34]
2. Baseline psychological distress		–	–0.62***	–0.42***	0.58***	–0.35***	–0.12	–0.01	[–1.60; 1.94]
3. Baseline psychological well-being			–	0.59***	–0.30**	0.39***	0.27**	0.08	[–2.09; 2.48]
4. Baseline value-based living				–	–0.23*	0.33**	0.35***	0.10	[1.88; 5.00]
5. Daily psychological distress					–	–0.46***	–0.33**	0.24*	[0.03; 0.73]
6. Daily psychological well-being						–	0.72***	–0.25*	[0.31; 0.89]
7. Daily value-based actions							–	–0.22*	[0.30; 0.95]
8. Variability in daily value-based actions								–	[0.05; 0.44]

Note. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Table 2***Regressions predicting daily psychological well-being.*

Fixed effects	Step 1			Step 2			Step 3			Step 4			CI low	CI high
	B	SE	p	B	SE	p	B	SE	p	B	SE	p		
Constant	0.61	0.11	<.001	0.32	0.13	.019	0.07	0.11	.524	0.10	0.11	.346	–0.10	0.31
Time (10 days)	0.00	0.01	.949	0.00	0.01	.928	0.00	0.01	.748	0.00	0.01	.738	–0.02	0.01
Sex - Male	0.05	0.04	.185	0.03	0.04	.490	0.03	0.03	.368	0.03	0.03	.358	–0.03	0.08
Age	0.00	0.00	.766	0.00	0.00	.763	0.00	0.00	.514	0.00	0.00	.613	–0.01	0.00
Study level - Undergraduate	–0.04	0.05	.391	–0.01	0.04	.872	0.01	0.03	.825	0.02	0.03	.592	–0.05	0.08
Baseline value-based actions				0.08	0.02	.002	0.02	0.02	.258	0.03	0.02	.133	–0.01	0.07
Between-person daily value-based actions							0.67	0.08	<.001	0.63	0.08	<.001	0.48	0.78
Within-person daily value-based actions							0.65	0.03	<.001	0.65	0.03	<.001	0.58	0.71
Variability in daily value-based actions										–0.32	0.18	.077	–0.65	0.02
RandomEffects	Var	SD		Var	SD		Var	SD		Var	SD		CI low	CI high
Intercept	0.017	0.13		0.015	0.12		0.009	0.09		0.008	0.09		0.005	0.011
Days slope	0.002	0.05		0.003	0.05		0.001	0.03		0.001	0.03		0.000	0.002
Within-person value-based actions slope							0.044	0.21		0.044	0.21		0.021	0.078
Residuals	0.034	0.18		0.034	0.18		0.021	0.15		0.021	0.15		0.020	0.023

Note. B = unstandardized coefficient; SE = standard error; CI low = lower limit of 95% confidence interval; CI high = upper limit of 95% confidence interval

**Table 3***Regressions predicting daily psychological distress.*

Fixed effects	Step 1			Step 2			Step 3			Step 4			CI low	CI high
	B	SE	p	B	SE	p	B	SE	p	B	SE	p		
Constant	0.28	0.09	.004	0.46	0.12	<.001	0.54	0.13	<.001	0.51	0.13	<.001	0.27	0.75
Time (10 days)	0.03	0.01	.003	0.03	0.01	.003	0.03	0.01	.002	0.03	0.01	.002	0.01	0.05
Sex - Male	–0.07	0.03	.055	–0.05	0.03	.146	–0.06	0.03	.077	–0.06	0.03	.076	–0.12	0.00
Age	0.00	0.00	.536	0.00	0.00	.527	0.00	0.00	.273	0.00	0.00	.323	0.00	0.01
Study level - Undergraduate	0.02	0.04	.678	0.00	0.04	.921	–0.01	0.04	.885	–0.02	0.04	.697	–0.09	0.06
Baseline value-based actions				–0.05	0.02	.023	–0.03	0.02	.212	–0.04	0.02	.124	–0.08	0.01
Between-person daily value-based actions							–0.25	0.09	.007	–0.22	0.09	.025	–0.40	–0.04
Within-person daily value-based actions							–0.40	0.03	<.001	–0.40	0.03	<.001	–0.47	–0.34
Variability in daily value-based actions										0.30	0.20	.143	–0.09	0.69
RandomEffects	Var	SD		Var	SD		Var	SD		Var	SD		CI low	CI high
Intercept	0.013	0.11		0.012	0.11		0.012	0.11		0.012	0.11		0.007	0.015
Days slope	0.005	0.07		0.005	0.07		0.004	0.06		0.004	0.06		0.002	0.006
Within-person value-based actions slope							0.053	0.23		0.053	0.23		0.028	0.089
Residuals	0.024	0.15		0.024	0.15		0.018	0.13		0.018	0.13		0.016	0.019

Note. B = unstandardized coefficient; SE = standard error; CI low = lower limit of 95% confidence interval; CI high = upper limit of 95% confidence interval.



averaging across time points), reflecting people's average level of value-based actions during these 21 days. The second one, a within-person effect, was operationalized as the difference between value-based action on a given day and one's personal mean (i. e., person-mean value minus value at given time), reflecting people's moment-to-moment variation around their personal habitual value-based actions during these 21 days. These fixed effects are reported in Step 3 of Tables 2 and 3.

Supporting H3a over H3b both within-person and between-person effects of daily value-based actions on distress were negative and statistically significant, increasing NS-R<sup>2</sup> by 0.15. Also consistent with H3a, daily value-based actions coefficients (both within- and between-person) were significantly positively associated with daily psychological well-being. Their inclusion resulted in an NS-R<sup>2</sup> increase of 0.37. In other words, participants with higher average levels of value-based actions during the study reported lower daily psychological distress and greater well-being. On days when participants reported more value-based actions compared to their personal habitual level, they also reported lower psychological distress and greater well-being, controlling for their baseline levels of distress and well-being, and taking sociodemographic variables into account. Further, the addition of random slopes for daily value-based actions (within-person effect) statistically significantly improved the prediction of distress ( $\chi^2 = 37.95$ ,  $df = 1$ ,  $p < .001$ ) and of well-being ( $\chi^2 = 25.17$ ,  $df = 1$ ,  $p < .001$ ). The presence of random slopes (reported in Tables 2 and 3) indicates that the strength of the relationship between daily distress/well-being and value-based actions varies across participants: that is, value-based actions are more beneficial for some people than for others.

#### 7.4. Time-lagged associations between daily value-based actions and daily distress/well-being

We conducted mixed effect regressions predicting daily psychological distress and well-being, but dependent variables were lagged compared to predictors. This way, value-based actions measured at time  $n$  were put in relation with distress and well-being values measured at time  $n+1$ , so as to establish temporal precedence. In addition to time and sociodemographic variables, distress/well-being at time  $n$  and time lag since previous diary (in days) were included as covariates. To test H4b, we also examined the opposite temporal sequence. Namely, daily psychological distress and well-being measured at time  $n$  predicting lagged value-based actions (measured at time  $n+1$ ).

Contrary to H4a, value-based actions at time  $n$  were associated with neither distress ( $b = 0.03$ ,  $SE = 0.03$ ,  $t = 1.20$ ,  $p = .229$ ,  $95\%CI = [-0.02; 0.08]$  nor well-being ( $b = -0.03$ ,  $SE = 0.03$ ,  $t = -0.97$ ,  $p = .332$ ,  $95\%CI = [-0.10; 0.04]$ ) at time  $n+1$ . However, in partial support of H4b, greater well-being

on a given day was related to reports of greater value-based actions in the next diary ( $b = 0.07$ ,  $SE = 0.03$ ,  $t = 2.28$ ,  $p = .023$ ,  $95\%CI = [0.01; 0.14]$ ). Distress at time  $n$  was not associated with later value-based actions ( $b = -0.001$ ,  $SE = 0.03$ ,  $t = -0.03$ ,  $p = .974$ ,  $95\%CI = [-0.07; 0.06]$ ). Unsurprisingly, auto-regressive effects were positive and statistically significant in all cases, indicating that participants' level of distress/well-being and value-based actions tended to carry over to the next diary completed.

#### 8. Associations between stability in value-based actions and daily distress/well-being

Stability in the pattern of engaged living was operationalized as the within-person standard deviation of daily diary value-based action scores. Higher variability scores reflected greater instability in day to day reports in value-based actions, whereas lower scores reflected a more consistent pattern of value-based actions across daily diaries. We included this variability index as a fourth step in the prediction of daily psychological distress and well-being - following the three steps reported above to answer research questions 1 and 2. The results are shown in Tables 2 and 3, Partially consistent with H5, greater variability in value-based actions was associated with marginally lower daily well-being. However, this variability was not associated with daily distress.

#### Supplementary analyses: Probing changes over time in psychological distress

Given that psychological distress increased over the course of the study and our hypothesis that more variability in value-based actions should be associated with greater distress (H5), we conducted supplementary exploratory analyses. Namely, we probed the interaction between time and our variability index in the prediction of daily distress (with mean-centered variables), to see whether having more consistent value-based actions might dampen increases in distress over time. This interaction was indeed statistically significant ( $B = 0.32$ ,  $SE = 0.14$ ,  $p = .03$ ), and is illustrated in Fig. 1. Participants who vary a lot in their daily level of value-based actions experienced increasing psychological distress over the course of the study (+1SD simple slope:  $B = 0.05$ ,  $SE = 0.01$ ,  $p < .001$ ). In contrast, distress remained stable over time for those who are very consistent in their daily value-based actions (-1SD simple slope:  $B = 0.01$ ,  $SE = 0.01$ ,  $p = .571$ ). The Johnson-Neyman interval indicates that increases of distress over time were statistically significant for variability values smaller than 0.03 below the mean.

#### Discussion

Although empirical work on values is expanding rapidly, there is still a lack of quantitative investigation of values

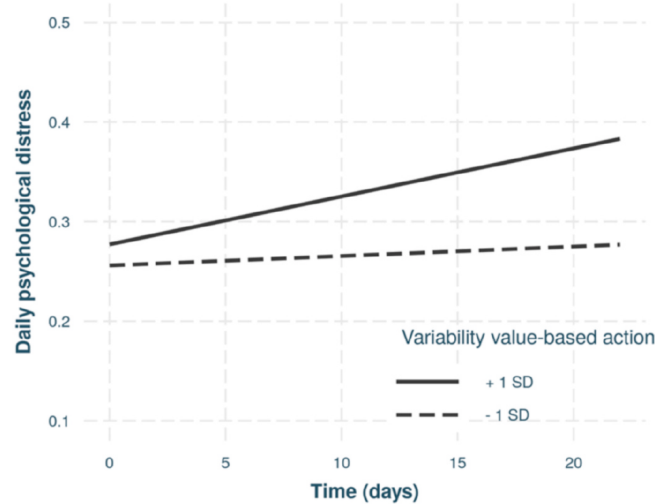
and value-related changes within the ACT research community (Reilly et al., 2019). Like others, we believe that such changes need to be assessed on a daily level since people assessment of their engaged response style is likely to fluctuate significantly over time and contexts (Berghoff et al., 2018; Finkelstein-Fox et al., 2019). The aim of this diary study was to explore how fluctuations in the engaged response style of university students over time were associated to their mental health, both within and across days.

The results showed that baseline value-based actions were associated with baseline psychological distress and well-being, which is consistent with the literature (Lundgren et al., 2012; Smout et al., 2014). More interestingly, they also showed that baseline value-based actions were associated with daily distress and well-being, but that these associations were no longer significant when daily value-based actions were introduced within the regressions. This suggests that compared to retrospective questionnaires, EOD methods are better predictors of daily distress and well-being (Lundgren et al., 2012; Smout et al., 2014). Supporting our first hypothesis, baseline engaged living was also associated with daily mental health indicators. This is not surprising, given that both baseline and daily measures shared similar items, differing only in frame of reference. However, the fact that these associations disappeared when including daily value-based actions underscores the crucial importance of measuring this construct at the daily level. As pointed out by Vilaradaga and his colleagues (2015) most studies conducted on ACT are still based on retrospective questionnaires and few researchers have used intensive longitudinal research designs and momentary data collection methods such EOD, despite the fact that psychological flexibility processes such as value-based actions might vary greatly within and between days. Although momentary data collection methods have their limitations (e.g., they can be costly), they also have several advantages. In particular, they have greater sensitivity to change and lead to more precise estimates of effect sizes – as illustrated in our results. If both baseline and daily measures were to be used in a randomized controlled trial aimed at assessing the impact of an ACT intervention, they might lead to different conclusions (Moore et al., 2016). Hopefully, both EMA and EOD will gain popularity in the future among the ACT research community and will begin to be used more often either in longitudinal studies or randomized controlled trials.

Daily value-based actions were also associated with daily levels of psychological distress and psychological well-being. On days when students reported being more engaged in committed actions, they also reported lower distress and greater well-being. This suggests that although engaging in committed actions might trigger uncomfortable emotions, it has an overall positive impact on how people feel on that day. Although authors have found relations between value-based

**Figure 1**

*Interaction between time and variability in value-based actions.*



actions and mental health in the past using cross-sectional research designs and retrospective questionnaires (Lundgren et al., 2012; Smout et al., 2014; Trompetter et al., 2013), this is the first study in which such a relationship was explored extensively over a 21-day period with end-of-day diaries. It would be interesting to verify if these results hold within an intervention context. In this study, no prior information was given to students about the definition of personal values according to ACT, nor were they invited to clarify their own values or convert those into value-based actions in an ACT-consistent way. Students may have reported less distress and more well-being because things happened to go well in their life, not necessarily because they were involved in value-based actions. Helping students to clarify both their personal values and value-based actions at the beginning of an ACT intervention and assessing subsequent fluctuations in their engaged response style over time would also help better understand why the strength of the relationship between daily distress/well-being and value-based actions varied across participants in the current study. Are certain types of value-based actions more beneficial than others, and might this differ depending on personality traits? How does acting in concordance with conflicting values impact distress and well-being? We believe these are fruitful research questions.

Using time-lagged analyses, we found no support for the hypothesis that value-based actions at time  $n$  would predict daily levels of psychological distress and psychological well-being at time  $n+1$ . However, we found partial support for the opposite temporal sequence such that reporting greater well-being at time  $n$  was associated with greater value-based actions at time  $n+1$ . This finding is partially consistent with the broaden-and-build theory of positive emotion (Fredrickson, 2001; Fredrickson & Joiner, 2018), which suggests that experiencing positive emotion broadens awareness of one's

adaptive self-regulatory abilities and resources, thus sustaining upward spirals of positive well-being over time.

Finally, greater variability in value-based actions was associated with marginally lower daily well-being and steepened increases in daily distress over the course of the study. Effect sizes for these relations were modest, but we used a fairly crude index of stability (standard deviation), as the present study attempted only a preliminary examination of stability in value-based actions. As such, these initial results are promising and suggest that future studies should not only assess how clear participants are about their core values or how generally committed they are to these values, but also how consistently they are putting these values into action day after day, and what contextual factors facilitate or undermine such consistency. For example, a person's motivation or ability to take such actions may depend on life domains and social contexts. Acting in accordance with one's values might be easy in family settings, but more difficult at school because of institutional restrictions. Similarly, performing value-based actions might be more straightforward when interacting with like-minded friends than with people with divergent views. Testing such ideas requires context-sensitive measures that can probe people's daily lives with high levels of granularity.

### 9.1. Strengths and limitations

This study has high external validity since students were assessed during 21 consecutive days in their natural environment, thus avoiding the bias potentially introduced by artificial or unfamiliar reporting contexts and allowing us to observe a greater range of response. It also has stronger internal validity than cross-sectional studies done with retrospective or global questionnaires since repeated measurements avoid the bias of one-time reports, and reduce the likelihood of a social desirability bias (Villardaga et al., 2015).

This study also has limitations. First, value-based actions were measured (both at baseline and daily) with items from the *Engaged Living Scale* (Trompetter et al., 2013), translated in French for the purpose of this research. Although the translation was conducted according to the "forward-backward" procedure (Brislin, 1970) and proved to be reliable according to the exploratory factor analysis, it was not properly validated. The psychometric properties of our French version of the ELS would need to be examined thoroughly in the future. Secondly, the daily composite scores used in this study may have lacked content validity, the degree to which a measure represents all facets of a construct and captures the construct in its entirety. Degroote et al. (2020) argue that items from traditional questionnaires are not always suited for short, repeated assessments in daily life, and therefore may not necessarily be valid for use in EMA studies. The authors also advise researchers to assess the content validity of their daily measures using the COSMIN

guidelines and the following criteria: relevance (e.g., Are the included items relevant for the construct of interest?), comprehensiveness (e.g., Are all key concepts included?) and comprehensibility (e.g., Are the instructions understood by the population of interest as intended?). Unfortunately, we were not able to properly assess all these dimensions. Therefore, we may not have accurately captured constructs such as daily distress, well-being and value-based actions. Thirdly, the daily questionnaires were sent in the evening, which might be a time when college students are tired, stressed, or engaging in homework assignments (Stone et al., 2007). Moreover, students were randomly prompted between 18:00 and 22:30. They were invited to complete the questionnaire right away, but had up to 120 min to fill it out. The fact that they could select the timing of recording within a 2-h period may have introduced a bias (e.g., students may have chosen to systematically complete the questionnaire when they were alone, just before going to bed, or remembered to do it when they felt especially distressed). Fourthly, the EOD diaries may have introduced memory distortions. Stone and Shiffman (2002) argue that mood can fluctuate over the course of a single day. Therefore, when used to assess anxiety or depression symptoms, EOD may also be subject to recency, peak, and summary biases. Finally, repetitive exposure to the same items for 21 days may have influenced participants' actual behaviors and experience, as suggested by the finding that daily distress increased over the course of the study. Evidence suggests that the mere act of measuring a behavior could have some impact on that behavior in the future (Levav & Fitzsimons, 2006). Here, repeatedly assessing engaged living may have led some participants to attend to the realization that many of their actions are less committed than they would like them to be. In turn, this realization might have led to more distress. For all these reasons, the results of our study should be interpreted with caution.

### 9.2. Future directions

In the future, time-lagged associations between daily value-based actions and daily distress/well-being should be explored further, potentially using shorter, within-day measurement lags. In our study, students were asked to complete only one daily questionnaire in the evening, which may have reduced our ability to detect between-assessment correlations. The influence of value-based actions on distress and well-being (or vice-versa) may operate within a shorter time frame than a day, such as a few hours. For example, acting in accordance with one's values at breakfast time may help feel better until around lunch time. This positive effect may wane over the rest of the day, making it difficult to capture the evening after. Value-based actions, but also distress and well-being, can vary greatly within a single day, such that a single daily diary measurement may amalgamate several committed actions-adjustment effects. According to

micro-developmental principles (Granott & Parziale, 2002), recording short-term changes in a construct requires an assessment frequency that is higher than the rate of change in that construct. Given that we know very little about the time frame of committed action's effects, it would be desirable for future research to use multiple assessments per day. This would help track between-assessment changes with greater sensitivity.

The fact that value-based actions reported in a given diary tended to carry over to the next diary also opens up new research questions. For instance, might it be the case that people engage in value-based actions at time  $n$  that leads them to do the same at time  $n+1$ , or is that by reflecting on their day at time  $n$  (and scanning for value-based actions they might have taken), these actions become more salient and therefore more prone to be replicated the following day? If so, a journaling practice in which participants are encouraged to reflect on what they did during the day to walk towards their values might be useful during interventions by enhancing participants' motivation to maintain consistent engagement with values over time.

To further minimize the risk of recall bias inherent to EOD diaries, it would also be valuable to conduct studies based on *event-based* monitoring in which assessments are triggered by the occurrence of value-based actions. Participants could identify a series of committed actions they wish to put forward in the upcoming weeks, determine when such actions occur during the day, and initiate an assessment. These studies should also aim at gathering information on the contextual factors that facilitate or impede these actions. At the moment, these factors are poorly understood and leave many questions unanswered. For instance, what types of physical environment and pedagogical style best support students in the adoption of value-based actions? What are the managerial practices or work arrangements that allow employees to adopt an engaged response style at work?

### 9.3. Clinical implications

The results of this study suggest that it is not only useful to help students clarify what is important for them, but also to support them in staying connected to their personal values and cultivate this simple yet powerful habit of regularly taking steps towards what matters. When they do, the data reported here suggest that students will likely report lower distress and greater well-being. Unfortunately, this level of support is beyond what most counselors within postsecondary institutions are able to offer, due to high demand for services (Jaworska et al., 2016) and time limitations. For that reason, longer-term peer support interventions focused on attention to and sustained engagement with personal values might prove fruitful. Although a peer-support model is often used in community and health settings (Gillard & Holley, 2014; Komaroff & Perreault, 2013; Perreault et al., 2015),

peer support aimed at promoting well-being is still rare in colleges and universities. Interventions that relies on clinical (e.g., behavioral activation techniques, observation grids, journaling) or technological (e.g., apps) strategies that help students stay focus on what matters to them on a day to day basis might also be valuable.

In conclusion, the present diary study provides initial evidence that people daily value-based actions are associated with their psychological distress and well-being on a within-day level. Our findings suggest that patterns of value-based actions (in addition to mean levels) may also influence psychological adjustment and suggest several exciting avenues of future research on the interplay between valued actions, well-being and distress in daily experience. These results should also encourage researchers within the ACT community to study psychological flexibility processes with methods that are sensitive to contextual characteristics (i. e., stressful event, mood) and moment to moment variation. Such contextual sensitivity lies at the heart of the notion of psychological flexibility. It is important that the measurement of this construct does justice to its conceptualization.

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