

# Measuring Values and Committed Action With the Engaged Living Scale (ELS): Psychometric Evaluation in a Nonclinical Sample and a Chronic Pain Sample

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This article describes the development and evaluation of the Engaged Living Scale (ELS) as a new self-report, process-specific measure to assess an engaged response style as conceptualized in acceptance and commitment therapy (ACT). The psychometric properties of the ELS test scores were evaluated in both a nonclinical sample ( $N = 439$ ) and a clinical sample consisting of chronic pain patients who participated in a study on the effects of an online ACT intervention ( $N = 238$ ). Item analysis and exploratory factor analysis in the nonclinical sample suggested a 16-item version of the ELS with 2 subscales, Valued Living (10 items) and Life Fulfillment (6 items). A bifactor model with 2 specific factors and 1 general underlying factor showed the best fit in confirmatory factor analyses in the chronic pain sample. In both samples, the scores on the ELS and its subscales showed good internal consistency and construct validity by consistent patterns of relationships with theoretically related process and outcome variables, such as psychological well-being, anxiety/depression, acceptance, mindfulness, and pain interference in daily life. Furthermore, in the chronic pain sample, the ELS showed incremental validity in explaining anxiety and depression, positive mental health, and pain interference beyond both acceptance and mindfulness. This study suggests the ELS shows promise as a useful tool for the measurement of an engaged response style, enabling more comprehensive evaluation of working mechanisms of ACT.

**Keywords:** acceptance and commitment therapy, values, bifactor model, psychometric properties, chronic pain

New developments within cognitive behavioral therapies emphasize accepting rather than controlling and changing negative private experiences, such as depressive thoughts and chronic pain. An example of newly developed treatments from this perspective on psychopathology is acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999, 2011), as ACT aims to enhance acceptance in order to be able to evaluate and engage in valued life activities. A growing body of research shows ACT to be effective for a range of psychopathology and other problems, such as depression and anxiety (e.g., Bohlmeijer, Fledderus, Rokx, & Pieterse, 2011; Fledderus, Bohlmeijer, Pieterse, & Schreurs, 2012; Forman, Herbert, Moitra, Yeomans, & Geller, 2007; Roemer, Orsillo, & Salters-Pedneault, 2008; Twohig, Hayes, & Masuda, 2006), stress (Brinkborg, Michanek, Hesser, & Berglund, 2011), psychotic disorders (Gaudiano & Herbert, 2006), and chronic pain (McCracken, Vowles, & Eccleston, 2005; Veehof, Oskam,

Schreurs, & Bohlmeijer, 2011; Wicksell, Ahlqvist, Bring, Melin, & Olsson, 2008; for a general review of the effectiveness of ACT, see Öst, 2008; Powers, Zum Vorde Sive Vording, & Emmelkamp, 2009).

In ACT, *experiential avoidance* (EA) is seen as the opposite of acceptance. EA can be defined as the attempt to escape or avoid private events such as emotions, memories, or thoughts, even when doing so causes psychological harm (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Multiple studies have shown that EA is a primary mechanism in explaining emotional, psychological, and social problems (Biglan, Hayes, & Pistorello, 2008; Hayes et al., 2006). Although the use of EA can regulate behavior effectively in certain situations in the short term, in the long term, avoidance strategies generate an inflexible and narrow range of possible behaviors. This psychological and behavioral inflexibility prevents a person from performing valued life activities, thereby disabling one from leading a meaningful life (Hayes et al., 2006). The ACT model of human functioning describes six processes that together compose *psychological flexibility*, the ability to act effectively in accordance with personal values in the presence of negative private experiences. In the latest update of the ACT model (Hayes et al., 2011), the six core processes are paired together in three different response styles, the first being an “open response style.” *Acceptance* and *cognitive defusion* (letting go of entanglement with negative and unwanted thoughts and experiences by viewing them from a distance in a nonjudgmental way) are both key

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This article was published Online First August 5, 2013.

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processes in creating an openness to direct personal experience. Being open and accepting toward direct personal experience promotes flexibility, thereby enabling a person to (re)evaluate and focus on where one wants to go in life. The processes in ACT related to this evaluation and the performance of valued and meaningful life activities are *values* and *committed action*. These two processes are together defined as an “engaged response style.” Finally, a “centered response style” consists of the processes *present moment* and *self-as-context*, helping a person in consciously centering in the here-and-now. This grounded awareness in the present moment is a necessary premise to be open and flexible to experience and undertake valued daily life activities (Hayes et al., 2011).

The ACT model enables investigation of the mediating or working mechanisms of the individual treatment processes or response styles. This can help to specify what therapies or specific treatment processes work best for whom. The development of process-specific questionnaires is therefore necessary. Various measures are already available to assess processes from the framework of ACT. For example, the most frequently used measure of psychological inflexibility is the Acceptance and Action Questionnaire (AAQ; Bond & Bunce, 2003; Bond et al., 2011; Hayes et al., 2004). Both the AAQ-I (16 items; Hayes et al., 2004) and the AAQ-II (Bond et al., 2011; Fledderus, Martine, Oude Voshaar, ten Klooster, & Bohlmeijer, 2012) are available to measure different aspects of psychological inflexibility, such as avoidance of negative private events and the need for emotional or cognitive control (Hayes et al., 2004). Another example of available process measures is the Five Facet Mindfulness Questionnaire (FFMQ) to assess the centered response style, in particular the process of mindfulness (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). In the FFMQ, mindfulness is defined as a state of being attentive to and aware of experiences occurring in the present moment in a nonjudgmental and accepting way (Baer, 2003; Baer et al., 2006). Five different facets of mindfulness are assessed with the FFMQ, such as the ability to describe inner experiences and the ability to relate to these inner experiences in a nonjudgmental way. Unfortunately, with regard to the measurement of the engaged response style, there is a lack of process-specific questionnaires that are easy to administer and suitable for scientific research in both clinical and nonclinical populations. This study therefore aims to develop and evaluate the psychometric properties of a new measure of an engaged response style, or the process of “engaged living,” the Engaged Living Scale (ELS).

From the perspective of ACT, values can be seen as an intrinsic motivating framework for leading a meaningful life. Values are not goals or ends in themselves but rather freely chosen, ongoing, and dynamic patterns of activity, or “paths to be taken.” These verbally constructed paths to be taken cannot be found, completed, or achieved, but are individually defined, reevaluated, and elaborated in the course of life (Hayes et al., 2011). The process of committed action helps people to translate values into smaller goals and steps to take in the short term. As the daily practice of values can induce a renewed struggle with emotions and experiences that prompted avoidance strategies in the past, commitment is necessary to keep on the valued path despite barriers one will encounter (Hayes et al., 2006). With regard to the measurement of engaged living, a few measures have been created. For example, the Bull’s Eye Values Survey (BEVS; Lundgren, Luoma, Dahl, Strosahl, & Melin, 2012)

is an idiographic measure that stems from clinical practice. The BEVS measures (a) values attainment and (b) the extent to which obstacles or barriers prevent one from values attainment by use of dartboards with seven rings. For four life domains (e.g., work/education), a person describes personal values in terms of the qualities or expectations in that specific domain. Hereafter one marks how close one is living to these values on the dartboard. In the second part of the questionnaire, obstacles are defined and written down that stand between the current and valued life. Thereafter it is estimated to what extent the obstacles(s) prevent one from living one’s life in a way that is in keeping with personal values. A first validation study of the BEVS in a small sample of South African adults suffering from epilepsy and a sample of Swedish university students indicated that the questionnaire is reliable and correlates moderately with theoretically related variables (Lundgren et al., 2012). However, due to its idiographic and clinical nature, the questionnaire focuses on the description and evaluation of the specific content of individual values. This focus on content makes the questionnaire very time-consuming to fill in, disabling fast (online) data collection in larger groups for use in scientific research.

In addition to the BEVS, the Valued Living Questionnaire (VLQ; Wilson, Sandoz, Kitchens, & Roberts, 2010) and the Chronic Pain Values Inventory (CPVI; McCracken & Yang, 2006) are available. Both questionnaires consist of two parts in which one rates (a) the “importance” of predefined life domains (such as work, education, and family and leisure time) and (b) the “consistency” (VLQ) or “success” (CPVI) with which one has lived in accordance with values in these life domains. The CPVI has been developed and validated specifically for chronic patients and has therefore limited generalizability. The VLQ, however, was developed as a general measure, validated in two undergraduate student populations (Wilson et al., 2010). Originally used as a qualitative measurement tool for clinical practice, the measure is quantified by creating a composite “valued living score.” This overall score is taken as the average of the 10 domain-specific products of Importance  $\times$  Consistency. Although these product scores can be compared between people, the use of the product scores in the VLQ is problematic as it is not possible to determine or compare the underlying scales. In other words, a similar composite score for two individuals can reflect very different profiles on the individual domains and scales of the VLQ. This also seems to be a problem for the CPVI, as an overall “discrepancy” score is calculated by subtracting individual scores on importance from “success.” A second problem is the fact that the authors of the VLQ propose that individuals are not expected to relate similarly to different life domains, which is also reflected in the low intertotal correlations found for the different domains. Therefore, one could argue about the possible lack of an underlying latent construct in the VLQ.

In sum, all three available questionnaires focus on the content of domain-specific values within individuals. Although very useful in clinical practice, this focus makes filling in the questionnaires time-consuming or troubles the comparison of scores between different individuals. As questionnaires that focus on the *process* of engaged living are lacking in this area, it is presently not possible to test the extent to which improvement in this response style serves to mediate improvements in mental health and behavioral effectiveness.

We therefore developed the ELS as a process measure of engaged living. In the present article, we reflect on the development of the ELS and assess the psychometric properties of the ELS test scores. After reporting the steps taken to generate an initial item pool, two studies are described. In the first study, we assess the psychometric properties of the ELS in a nonclinical adult sample ( $n = 439$ ). Specifically, we performed item analysis and exploratory factor analysis (EFA) on the initial 26-item pool of the ELS and investigated internal consistency and construct validity of the remaining 16 items by assessing relationships with other theoretically related constructs. In the second study, we cross-validated the 16-item ELS in a sample of chronic pain patients ( $n = 238$ ). In this sample, we further examined its underlying structure by performing three different confirmatory factor analyses (CFAs), among which a bifactor model (Reise, Moore, & Haviland, 2010; Reise, Morizot, & Hays, 2007). Furthermore, internal consistency, construct validity, and incremental validity beyond acceptance and mindfulness as relevant and related aspects from the framework of ACT were evaluated.

To assess construct validity, in both studies the relationship of the ELS with theoretically related variables was assessed. These variables are process variables from the framework of ACT that measure constructs theoretically related to engaged living, as well as important outcomes variables in mental health (Study 1) and chronic pain (Study 2). In general, we expected that the ELS would show positive moderate correlations with acceptance and mindfulness as related constructs from the framework of ACT (Hayes et al., 2011). Furthermore, based on ACT theory and outcomes of previous studies on acceptance (AAQ-II) and mindfulness (FFMQ) (e.g., Baer et al., 2006, 2008; Bohlmeijer, ten Klooster, Fledderus, Veehof, & Baer, 2011; Fledderus et al., 2012; Hayes et al., 2006), we expected moderate to high positive correlations between test scores on the ELS and positive outcomes of mental health (i.e., psychological well-being and positive mental health) and moderate to high negative correlations with anxiety and depression. With regard to the relationship between the ELS and personality, we based our hypotheses on previous studies in the area of personality and ACT (Bond et al., 2011; Costa & McCrae, 1992). First, we hypothesized that people high in neuroticism would be less likely to engage in life, perhaps because they are more vulnerable to psychological distress. We also expected that extraversion would be related to engaged living, as higher levels of extraversion are associated with assertiveness, enthusiasm, and engagement with the external world. For both personality constructs, we expected moderate to high correlations with the ELS. Finally, following Bond et al. (2011), we expected no relationship of the ELS with the personality facet of openness to experience, as people interested in intellectual and cultural pursuits need not be high in engagement in life. Furthermore, based on previous studies on ACT in the area of chronic pain (e.g., McCracken & Eccleston, 2005; Trompetter, Bohlmeijer, Baalen, et al., 2013; Vowles & McCracken, 2008; Wicksell, Lekander, Sorjonen, & Olsson, 2010), nonsignificant to small negative correlations were anticipated with pain intensity, and small to moderate correlations were expected with physical health (positive), pain disability (negative), and pain interference in daily life (negative). As pain interference in daily life is a more psychologically defined variable than the

other measures related to pain disability, we expected the highest correlations between the ELS and pain interference.

### Item Generation

In this section, we describe the steps taken to form an initial item pool for assessing an engaged response style from the framework of ACT. Prior to item generation, different facets of engaged living were identified on the basis of key literature regarding the framework of ACT (Hayes et al., 2011) and valued living from the perspective of ACT (Wilson & Murrell, 2004; Wilson et al., 2010). The preliminary facets that were formulated were values (awareness and knowledge of personal values as an intrinsic, dynamic, and ongoing motivating framework for choosing direction in life), committed action (undertaking actions and performing behaviors that are congruent with chosen values, even when barriers or obstacles are encountered), and evaluation (the evaluation of the outcome or fulfillment of living in accordance with values and performing committed actions). Both the facets values and committed action are central processes from the ACT framework that belong to the engaged response style (Hayes et al., 2011). The evaluation facet was developed to be able to operationalize the dynamic, ongoing act of valued living that is central to the definition of an engaged response style.

On the basis of these facets, a preliminary item pool of 31 items was created by a team of three scientists with ample experience in ACT. The item pool existed of theoretically derived items ( $n = 15$ ) and items derived from or based on items from theoretically related questionnaires on meaning in life and authenticity. These questionnaires were the Life Regard Index (Battista & Almond, 1973;  $n = 7$ ), the Meaningful Life Measure (Morgan & Farsides, 2009;  $n = 5$ ), and the Authenticity Inventory-3 (Kernis & Goldman, 2006;  $n = 4$ ). Items from the Life Regard Index and the Meaningful Life Measure were used primarily to formulate items for the facets values and evaluation, and items from the Authenticity Inventory-3 for the facet committed action. A 5-point Likert scale answering categories, ranging from 1 (*completely disagree*) to 5 (*completely agree*), was used.

The item pool was tested in a pilot study in which 108 undergraduate students were asked to fill in the questionnaire. Participants in the pilot study were mostly female (75.9%) and were on average 22.48 years old ( $SD = 4.56$ , range = 18–52 years). In addition, two researchers/clinical psychologists with ample experience in working with ACT, who did not select items for the preliminary item pool, reflected on all items.

On the basis of both the descriptive statistics and the content of each item, the item pool was evaluated again by all five members of the research team with a specific focus on item overlap and transparency of item wordings. In total, seven items were omitted from the initial item pool. Two of these items were omitted because item wordings were too difficult and replaced by newly developed items. The other five items showed extremely skewed responses (kurtosis  $> 2$ , 88% of scores *agree* or *totally agree*;  $n = 1$ ), low item-total correlations ( $r = < .35$ ), and overlap with other questions ( $r > .70$ ;  $n = 1$ ). On the basis of the final evaluation, the item wordings were made more transparent and comprehensible for four of the 26 remaining items. Finally, it was decided to reframe five items to assure all items were framed in the same (positive) direction.



The final item pool consisted of 13 rationally derived items, six items based on items from the Life Regard Index, four items based on items from the Meaningful Life Measure, and three items based on items from the Authenticity Inventory-3. The final item pool of 26 items was used in Study 1.

## Study 1

### Method

**Participants and procedure.** The participant sample ( $n = 439$ ) consisted of 386 parents and grandparents of undergraduate students and 53 undergraduate students. Mean age of the participants was 57.43 years ( $SD = 16.80$ ), 58.3% was female, and 65.1% was married. Educational level varied from 18.7% lower educated ( $< 12$  years of education), 45.7% intermediate educated ( $< 16$  years of education), and 35.6% highly educated participants ( $> 16$  years of education). Individuals were invited through (grand)sons, (grand)daughters, or undergraduate professors to complete an online battery of questionnaires. Ordering of the questionnaires in the online measurement battery was the same for all participants.

**Measures.** The battery of questionnaires included the 26-item ELS and the following questionnaires.

The AAQ-II (Bond et al., 2011) is a 10-item questionnaire measuring psychological inflexibility; participants are rated a 7-point Likert scale (1 = *never true*, 7 = *always true*). A total score, ranging from 10 to 70, was computed by summing the scores on the individual items. Higher scores indicated higher levels of psychological flexibility. The Dutch AAQ-II (Jacobs, Kleen, Groot, & A-tjak, 2008; Fledderus et al., 2012) showed good internal consistency in the present study ( $\alpha = .88$ ).

The Short-Form 12 Health Survey (SF-12; Ware, Kosinski, & Keller, 1996) is a shortened version of the Short-Form 36 (SF-36) Health Survey measuring health-related quality of life. The SF-12 measures physical and mental health. The Physical Component Score (PCS) considers limitations and problems due to physical impairment and general feelings of physical health. The Mental Component Score (MCS) considers limitations and problems due to mental impairment and general feelings of mental health. Higher scores indicate higher levels of physical and mental health. The Dutch SF-12 as based on the Dutch SF-36 (Aaronson et al., 1998) showed good internal consistency in the present study ( $\alpha = .88$ ).

The NEO Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992) measures five different dimensions of personality. In this study, we used the dimensions Neuroticism, Extraversion, and Openness to Experience. All three dimensions were measured each with 12 items on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). A total score for each dimension, ranging from 12 to 60, was computed by summing the scores on each of the 12 individual items. Higher scores indicated more Neuroticism, Extraversion, and Openness to Experience. All three subscales of the NEO-FFI (Hoekstra, Ormel, & de Fruyt, 1996) showed good internal consistency in the present study (Neuroticism,  $\alpha = .86$ ; Extraversion,  $\alpha = .78$ ; Openness to Experience,  $\alpha = .76$ ).

The Psychological Well-Being Scales (PWB Scales; Ryff, 1989; Ryff & Keyes, 1995) were developed to measure psychological well-being. The questionnaire is composed of six different dimensions of psychological well-being, including (a) a positive attitude

toward the self (self-acceptance), (b) having quality relationships with others (positive relationships with other), (c) a sense of continued growth and development as a person (personal growth), (d) a sense of self-determination (autonomy), (e) a sense of mastery and control in managing one's life and the world (environmental mastery) and (f) the feeling or belief that one's life has meaning and purpose (purpose in life). The original version of the questionnaire (Ryff, 1989) consists of 120 items; in this study, the medium form of 54 items was used. All six dimensions consist of nine items that are scored on a 6-point Likert scale (1 = *completely disagree*, 6 = *completely agree*). Higher scores on a scale represent higher psychological well-being on that specific domain. The different subscales of the PWB Scales showed good internal consistency in the present study (self-acceptance,  $\alpha = .80$ ; positive relations,  $\alpha = .79$ ; personal growth,  $\alpha = .83$ ; autonomy,  $\alpha = .79$ ; environmental mastery,  $\alpha = .80$ ; purpose in life,  $\alpha = .75$ ).

### Results

**Item analysis, factor structure, and internal consistencies.** Item analysis and an EFA were performed using the program IBM SPSS Statistics 20 (IBM Corp., Armonk, NY). Frequency distributions, intercorrelations between items, and item-total statistics were computed and analyzed. Distribution of the item scores was assessed by visual inspection and by assessing skewness and kurtosis statistics. Skewness did not exceed 1 for any of the items. As kurtosis was higher than 1 for some items, five items were omitted from the item pool due to extreme responses in both study samples. The exclusion of these items was based on both study samples as the descriptive statistics of all items varied considerably between both study groups. Overall, the variance in scores was higher for the chronic pain sample. Therefore, we decided to exclude items with  $> 60\%$  agree in the nonclinical sample and  $> 45\%$  agree in the chronic pain sample used in Study 2. The 21 remaining items were subjected to an exploratory maximum likelihood factor analysis with direct oblimin rotation (Fabrigar, Wegener, MacCallum, & Strahan, 1999). On the basis of this EFA, two factors were identified. Although the pattern matrix produced three factors with eigenvalues  $> 1$ , the scree plot indicated two factors. This indication was supported by a low eigenvalue (1.038) and small additional explained variance of the third factor (2.7%). Further evaluation of item content revealed that two of three items in the third factor originated from the Meaningful Life Measure. The factor seemed to reflect a general evaluation of life and was very similar in item content to the second factor. On the basis of these statistical and theoretical considerations, we concluded that the third factor did not contribute sufficiently beyond the first two factors. The three items forming the third factor were therefore removed from further analysis. Finally, for each of the two remaining factors, one item was removed due to low factor loadings ( $< .35$ ).

The resulting two-factor solution consisted of 16 items that explained 43.64% of the variance in scores (the explained variances reported for both the total scale, and subscales were obtained prior to rotation). Table 1 presents the descriptive statistics (means and standard deviations), pattern coefficients, and structure coefficients for the remaining items. The first factor consisted of 10 items and was labeled *Valued Living* (eigenvalue = 5.91; 36.95% explained variance). The factor is composed of items measuring the recognition

Table 1

*Descriptive Data, Pattern Coefficients, Structure Coefficients, and Cronbach's Alpha for the Two-Factor Solution From Exploratory Factor Analysis in a Nonclinical Sample*

Item	M (SD)	Pattern coefficients		Structure coefficients	
		VL	LF	VL	LF
		$\alpha = .86$		$\alpha = .86$	
1. I have values that give my life more meaning.	4.01 (.70)	<b>.72</b>	.11	<b>.69</b>	-.49
2. I know what motivates me in life.	3.94 (.65)	<b>.72</b>	.12	<b>.65</b>	-.36
3. I believe that I've found important values to live according to.	4.15 (.69)	<b>.64</b>	.04	<b>.65</b>	-.35
4. I know exactly what I want to do with my life.	3.82 (.74)	<b>.63</b>	-.08	<b>.63</b>	-.47
5. I make choices based on my values, even if it is stressful.	3.80 (.72)	<b>.59</b>	-.02	<b>.63</b>	-.47
6. I know how I want to live my life.	4.02 (.68)	<b>.57</b>	-.10	<b>.62</b>	-.38
7. I know what I want to do with my life.	3.94 (.79)	<b>.56</b>	-.11	<b>.60</b>	-.40
8. I believe that my values are really reflected in my behaviour.	3.78 (.72)	<b>.54</b>	-.07	<b>.58</b>	-.41
9. I believe that how I behave fits in with my personal wants and desires.	3.91 (.60)	<b>.44</b>	-.18	<b>.55</b>	-.46
10. My emotions don't hold me back from doing what's important to me.	3.79 (.75)	<b>.39</b>	-.21	<b>.53</b>	-.46
11. I live the way I always intended to live.	3.39 (.92)	-.01	<b>-.80</b>	.50	<b>-.79</b>
12. I am satisfied with how I live my life.	3.90 (.75)	-.04	<b>-.79</b>	.57	<b>-.79</b>
13. Nothing can stop me from doing something that's important to me.	3.36 (.97)	.10	<b>-.72</b>	.47	<b>-.77</b>
14. I believe that I am living life to the full right now.	3.47 (.94)	-.05	<b>-.69</b>	.55	<b>-.69</b>
15. I make time for the things that I consider important.	3.75 (.76)	.06	<b>-.58</b>	.40	<b>-.66</b>
16. I feel that I am living a full life.	3.77 (.88)	.19	<b>-.58</b>	.43	<b>-.61</b>

*Note.* Pattern coefficients (representing the unique relationship between a factor and the item, controlling for the other factor) and structure coefficients (simple correlations between the factor and the item, not adjusted for the correlation between the factors) in bold are included in the factors Valued Living and Life Fulfillment. VL = Valued Living; LF = Life Fulfillment.

and knowledge of personal values and undertaking behavioral actions congruent with these values. The second factor consisted of six items and was labeled *Life Fulfillment* (eigenvalue = 1.07; 6.69% explained variance). The factor is composed of items regarding the evaluation and sense of fulfillment in life as a consequence of recognizing and living in accordance with personal values. The intercorrelation between both factors was moderately high ( $r = -.64$ ). Calculation of Cronbach's alpha for the test scores of both subscales and the total scale of the ELS revealed good to excellent internal consistencies, ranging from .86 (both Valued Living and Life Fulfillment) to .90 (total scale).

Finally, the root-mean-square error of approximation (RMSEA), the standardized root-mean-square residual (SRMR), and the comparative fit index (CFI) were calculated for the resulting 16-item two-factor solution (Gignac, 2009). For the RMSEA and SRMR, values  $\leq .08$  and  $\leq .05$ , respectively, were considered indicative of acceptable and good model fit. CFI values  $\geq .90$  were considered acceptable, whereas values  $\geq .95$  were considered good (Bandalos & Finney, 2010; Browne & Cudeck, 1993; Hu & Bentler, 1999). All model fit indices indicated acceptable to good model fit in the present sample (RMSEA = .066, SRMR = .039, CFI = .936), justifying further exploration of model fit and dimensionality of the ELS by use of the CFA in Study 2.

**Descriptive statistics and construct validity.** To assess construct validity, Pearson's correlations coefficients were calculated between the summed ELS total and subscale scores and test scores for acceptance (AAQ-II); physical and mental health (SF-12); the personality domains Neuroticism, Extraversion, and Openness to Experience (NEO-FFI); and the six facets of psychological well-being (PWB). Correlations between .50 and 1.00 were considered strong, correlations between .30 and .50 were considered moderate, correlations between .10 and .30 as small, and correlations  $< .10$  as weak (Cohen, 1988). Means and standard deviations for all

measures and correlations with the ELS test scores can be found in Table 2. In line with expectation, moderate (to high) correlations were found for both subscale and the total scale scores with the AAQ-II test scores. Positive moderate to high correlations were

Table 2  
*Descriptive Statistics and Pearson's Correlation Coefficients for the ELS and Measures Considered Related Theoretically in a Nonclinical Sample*

Measure	M (SD)	Valued Living	Life Fulfillment	Total scale
ELS				
Total scale	60.80 (7.83)	.92*	.89*	—
Valued Living	39.14 (4.66)	—	.62*	.92*
Life Fulfillment	21.62 (4.03)	.62*	—	.89
AAQ-II	40.27 (6.47)	.43*	.49*	.51*
SF-12				
Physical health	16.25 (3.09)	.15*	.25*	.22*
Mental health	17.34 (2.60)	.39*	.50*	.49*
NEO-FFI				
Neuroticism	27.30 (7.30)	-.47*	-.51*	-.55*
Extraversion	21.22 (5.99)	.45*	.47*	.51*
Openness	37.90 (6.79)	.14*	.01	.09
PWB				
Self-acceptance	40.03 (5.84)	.51*	.60*	.61*
Positive relations	41.82 (5.76)	.45*	.47*	.51*
Personal growth	38.33 (6.87)	.38*	.25*	.35*
Autonomy	39.51 (5.92)	.40*	.31*	.40*
Environmental mastery	41.47 (5.48)	.55*	.61*	.64*
Purpose in life	39.68 (5.82)	.54*	.47*	.56*

*Note.*  $N = 439$ . ELS = Engaged Living Scale; AAQ-II = Acceptance and Action Questionnaire-II; SF-12 = 12-item Short Form Health Survey; NEO-FFI = NEO Five Factor Inventory; PWB = Psychological Well-Being Scales. Dashes indicate it is not possible to display correlations for a factor with itself.

\*  $p < .01$ .

found with the SF-12 MCS and all six subscales of the PWB Scales. Furthermore, a moderate (Valued Living) to high (Life Fulfillment) correlation was found with the Neuroticism dimension of personality. In addition, similar positive correlations were found for the Extraversion dimension of personality, whereas (contrary to our hypothesis) no correlations were observed with the personality dimension Openness to Experience. Finally, as expected, small negative correlations were found between the ELS subscales and the SF-12 PCS.

## Discussion

The aim of this first study was to examine the psychometric properties of the ELS test scores in a nonclinical sample. An exploratory maximum likelihood factor analysis with direct oblimin rotation revealed a two-factor solution with 16 items, measuring Valued Living and Life Fulfillment. Furthermore, Pearson's correlation coefficients were in line with expectations, in general showing moderate to high correlations in the hypothesized direction for both the total ELS and the factors Valued Living and Life Fulfillment with measures of mental health, psychological well-being, Neuroticism, Extraversion, and acceptance. Small correlations existed for both subscales with physical health. Overall, these results provided preliminary evidence for the factor structure, internal consistency, and construct validity of the ELS test scores in a nonclinical sample.

## Study 2

In the second study, we further investigated the factor structure of the ELS. Three different CFAs to assess the dimensionality of the ELS were performed in a sample of chronic pain patients. In addition to internal consistency, both construct validity and incremental validity of the ELS above and beyond measures of acceptance in chronic pain and mindfulness were assessed.

## Method

**Participants.** Baseline data from a randomized controlled trial ( $N = 238$ ) on the effectiveness of an online ACT- and mindfulness-based self-help program on pain interference in daily life were used. In February 2012, participants were recruited through advertisements in Dutch newspapers and through online patient platforms. The target group of the intervention was described as people experiencing chronic pain that interfered with their daily living and with performing important and valued life activities. Inclusion criteria were an age of 18 years or older and experiencing chronic pain on a daily basis (at least 3 days per week) for at least 6 months. People with severe psychological distress were excluded from the study and advised to seek help from their general practitioner (total score  $>$ ) 1  $SD$  [total score  $>$  24] above the mean score on the Hospital Anxiety Depression Scale [HADS]; Zigmond & Snaith, 1983) compared with chronic pain patients admitted to receive intramural multidisciplinary pain treatment in a local rehabilitation centre, as severe psychological distress would require more intensive treatment. Another exclusion criterion was a low score on psychological inflexibility ( $>$  2  $SD$ s above the average score on the Psychological Inflexibility in Pain Scale [PIPS]; Wicksell et al., 2010, compared with chronic pain

patients admitted to receive intramural multidisciplinary pain treatment in a local rehabilitation center), as this was the expected mediating mechanism of treatment. Finally, prior to randomization, people were excluded on the basis of self-ratings of (a) having no Internet and/or e-mail address, (b) having reading problems due to insufficient Dutch language skills or illiteracy, and (c) anticipating a lack of time to participate (approximately 30 min per day).

**Procedure.** A total of 334 people responded to the advertisements and received an information letter explaining the study and an informed consent form. The consent form was signed and returned by 281 people who received an invitation to fill in an online screening questionnaire. Twelve people did not fill in the screening questionnaire. Furthermore, 25 people were excluded from further participation on the basis of the exclusion criteria. Six participants did not fill in the remaining baseline questionnaire and were therefore excluded from random assignment to one of the intervention groups. Ordering of the questionnaires included in both the screening and the remaining baseline questionnaire battery was the same for all participants. In total, 238 participants were included in the study and randomly assigned either to the ACT intervention ( $n = 82$ ), a minimal intervention control condition based on expressive writing (Pennebaker, 1997) ( $n = 79$ ), or to a waiting list condition ( $n = 77$ ). More detailed information about the study can be found in Trompetter, Bohlmeijer, Baalen, et al. (2013) and Trompetter, Bohlmeijer, Veehof, & Schreurs (2013).

**Measures.** The battery of questionnaires included the 16-item ELS and the following questionnaires.

The Multidimensional Pain Inventory (MPI) was developed to assess various aspects of chronic pain and disability (Kerns, Turk, & Rudy, 1985). The subscale Pain Interference (MPI Interference) measures the degree to which pain interferes in daily life activities such as work, household work, and social activities. The scale consists of nine items. All items can be answered on a 7-point Likert scale, ranging from 0 (*no change/interference*) to 6 (*much change/interference*). Total scores range from 0 to 54, with higher scores indicating more pain interference. The test Dutch version of the MPI (Lousberg et al., 1999) showed good internal consistency in the present study ( $\alpha = .86$ ).

The PIPS (Wicksell et al., 2010; Wicksell, Renöfält, Olsson, Bond, & Melin, 2008) is a 12-item instrument measuring *psychological inflexibility*. The scale consists of two subscales measuring *avoidance* (eight items) and *cognitive fusion* (four items). Higher scores indicate more psychological inflexibility. All items have to be scored on a 7-point Likert-type scale ranging from 1 (*never true*) to 7 (*always true*). Total scores range from 8 to 56 (avoidance) and from 4 to 28 (cognitive fusion). In the present study, the Dutch version of the PIPS (Trompetter, Bohlmeijer, Veehof, & Schreurs, 2013) showed good internal consistency (avoidance,  $\alpha = .90$ ; cognitive fusion,  $\alpha = .63$ ; total scale  $\alpha = .87$ ).

The FFMQ-Short Form (FFMQ-SF) is a 24-item questionnaire measuring five facets of mindfulness, based on the original 39-item version of the FFMQ: observing (four items), describing (five items), acting with awareness (five items), nonjudging (five items), and nonreactivity (five items) (Baer et al., 2006; Bohlmeijer et al., 2011). All items are scored on a 5-point Likert-type scale ranging from 1 (*never or rarely true*) to 5 (*very often or always true*). Facet scores range from 5 to 25 (except for the observe facet, which ranges from 5 to 20). Higher scores indicate more mindfulness.

The Dutch FFMQ (Bohlmeijer et al., 2011; Veehof, Ten Klooster, Taal, Westerhof, & Bohlmeijer, 2011) showed adequate to good internal consistency in the present study for four facets:  $\alpha = .71$  (observing),  $\alpha = .83$  (describing),  $\alpha = .81$  (acting with awareness),  $\alpha = .64$  (nonjudgmental), and marginal internal consistency for the facet score nonreactive ( $\alpha = .58$ ).

The Mental Health Continuum-Short Form (MHC-SF) is a 14-item questionnaire that measures three dimensions of positive mental health (Keyes, 2002): emotional well-being (three items), defined in terms of positive feelings and satisfaction with life; psychological well-being (six items), defined in terms of positive functioning in individual life (self-realization); social well-being (six items), defined in terms of positive functioning in community life (being of social value). Participants are asked to rate the frequency of feelings they had experienced in the past month. Items are scored on a 6-point scale ranging from 1 (*never*) to 6 (*every day*). Higher scores indicate better positive mental health. The test Dutch MHC-SF (Lamers, Glas, Westerhof, & Bohlmeijer, 2012; Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011) had good internal consistency in this study:  $\alpha = .85$  (emotional well-being),  $\alpha = .73$  (psychological well-being), and  $\alpha = .82$  (social well-being).

Pain intensity was measured with an 11-point numeric rating scale (NRS), ranging from 0 (*no pain*) to 10 (*pain as bad as you can imagine*). The format of this rating is recommended in the last IMMPACT recommendations on core outcome measures in chronic pain research (Dworkin et al., 2005).

The HADS measures presence and severity of anxiety and depressive symptoms (Zigmond & Snaith, 1983). Both the subscales Depression and Anxiety consist of seven items. For each item, answering categories are scored on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*very often*). A summed score can be achieved ranging from 0 to 21 for both subscales separately. In the present study, the Dutch version of the HADS (Spinhoven et al., 1997) showed good internal consistency (Depression,  $\alpha = .80$ ; Anxiety,  $\alpha = .73$ ; total scale  $\alpha = .83$ ).

The Pain Disability Index (PDI) is an instrument developed to assess the degree to which chronic pain disables a person to perform daily activities (Pollard, 1984). Seven items regarding various activities are rated by the participants on a 0- to 10-point scale ranging from 1 (*no disability*) to 10 (*total disability*). In the present study, the PDI showed good internal consistency ( $\alpha = .81$ ).

## Results

**CFA.** To further examine the dimensionality of the ELS, three CFA models were tested and compared in the chronic pain sample using LISREL 8.70 (Scientific Software International, Lincolnwood, IL). First, a strict unidimensional model in which all 16 items loaded on a single factor was fitted to the data. Next, based on the EFA results in Study 1, a correlated two-factor model was fitted in which six items loaded on the Life Fulfillment factor and 10 items on the Valued Living factor. Finally, to evaluate the plausibility of scoring the ELS as a total scale as well as two subscales, a bifactor model was fitted in which each item loaded on a single general factor and on one specific (Valued Living or Life Fulfillment) group factor (Chen, Hayes, Carver, Laurenceau, & Zhang, 2012; Chen, West, & Sousa, 2006; Reise et al., 2010,

2007). Superior fit of the bifactor model would suggest that using total ELS scores may be a tenable addition to the use of subscale scores only.

Robust maximum likelihood estimation with Satorra-Bentler (SB) scaled statistics (Jöreskog, Sörbom, Du Toit, & Du Toit, 2001) was used to account for the ordinal, nonnormal nature of the item scores of the ELS. Several restrictions were applied to the models. In all three models, the variance of the factors was fixed to one, and error terms were not allowed to correlate. In the two-factor model, items were constrained to load on one factor only, and the two factors were free to correlate with each other. In the bifactor model, each item was constrained to load only on the general factor and its specific group factor, and the group factors were not allowed to correlate with each other or with the general factor. Model fit was assessed by the overall model SB chi-square statistic ( $SB\chi^2$ ), where smaller values indicate better fit, the RMSEA, SRMR, nonnormed fit index (NNFI), and the CFI. For the RMSEA and SRMR, values  $\leq .08$  and  $\leq .05$ , respectively, were considered indicative of acceptable and good model fit. For both the NNFI and CFI, values  $\geq .90$  were considered acceptable, whereas values  $\geq .95$  were considered good (Bandalos & Finney, 2010; Browne & Cudeck, 1993; Hu & Bentler, 1999).

Table 3 displays the fit indices for the different factor models. The single-factor model yielded a poor fit to the data, suggesting that the ELS is not strictly unidimensional. Although the NNFI and CFI slightly exceeded the criteria for acceptable model fit, the RMSEA and SRMR did not approach acceptable thresholds. The correlated two-factor model showed a better fit to the data, with the RMSEA and SRMR approaching acceptable fit and the NNFI and CFI meeting the criteria for good fit. The intercorrelation between the two factors was moderate ( $r = .56$ ), suggesting that both measure related but somewhat distinct aspects of engaged living. The bifactor model, however, demonstrated the best fit. The SRMR, NNFI, and CFI met the criteria for good fit, whereas RMSEA was acceptable and approached the threshold for good fit. Inspection of the factor loadings for the general factor in the bifactor model revealed high factor loadings for all items (.49–.92), which were generally only slightly lower than those for the single-factor model. This suggests that the loadings for the single-factor model were not substantially distorted by multidimensionality. Also, the item loadings for the general factor in the bifactor model were generally higher than those for either of the group factors, and group factor loadings were substantially lower than those in the two-factor model, indicating that the variance in item responses is mostly accounted for by a single underlying factor.

Table 3  
Model Fit Indices for Three Models Tested in Confirmatory Factor Analysis in a Chronic Pain Sample

Model	SB- $\chi^2$	df	RMSEA	SRMR	NNFI	CFI
Single factor	551.43	104	.186	.128	.905	.921
Correlated two factor	270.83	103	.082	.096	.953	.971
Bifactor	181.23	88	.067	.057	.969	.984

Note.  $N = 238$ . SB- $\chi^2$  = Satorra-Bentler-scaled chi-square; RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual; NNFI = nonnormed fit index; CFI = comparative fit index.



However, after partialing out the general factor, five out of six items from the Life Fulfillment factor and seven out of 10 items from the Valued Living factor remained substantially high ( $> .40$ ). On the basis of these findings together, we concluded that the ELS can best be scored using both total scale scores as well as two subscale scores.

**Descriptive statistics and internal consistencies.** Mean age of the participant sample ( $N = 238$ ) was 52.78 years ( $SD = 12.37$ ), 76.1% was female, and 74.4% was married. Educational level varied from 20.2% lower educated and 35.7% intermediate educated to 43.1% highly educated participants. Of the participants, 82.7% self-reported that a diagnosis was given for their pain complaints. Furthermore, 39.9% was working part time or full time. Scores on the ELS and all other measures can be found in Table 4. The chronic pain sample showed significantly lower scores on the total scale of the ELS ( $M = 50.90$ ,  $SD = 9.81$ ) compared with the nonclinical sample ( $M = 60.77$ ,  $7.83$ ),  $t(676) = 8.670$ ,  $p < .001$ , Cohen's  $d = 1.11$ , as expected. Internal consistency for both subscale and total scale ELS test scores were comparable to the internal consistencies reported in Study 1 (Valued Living,  $\alpha = .89$ , Life Fulfillment,  $\alpha = .87$ , total score ELS,  $\alpha = .91$ ).

**Construct validity.** To assess construct validity, Pearson's correlations coefficients were calculated between both the ELS

total scale and subscales and avoidance and cognitive fusion (PIPS); facets of mindfulness (FFMQ); anxiety and depression (HADS); emotional, psychological, and social well-being (MHC-SF); pain disability (PDI); and pain intensity (NRS). Correlations of these variables' test scores with the ELS scores can be found in Table 4. In line with expectation, the ELS correlated moderately with scores on the PIPS-Avoidance subscale as a measure of acceptance. With regard to mindfulness, overall small to moderate correlations were found (except for the nonjudging facet, for which no correlations existed with the ELS scores). Overall moderate to high correlations were found for the ELS with (positive) mental health as measured with the HADS and MHC-SF. As expected with regard to the pain-related outcomes, no correlations were found with pain intensity, whereas small to moderate correlations were found with the PDI and MPI Interference.

**Incremental validity.** To assess incremental validity of the ELS above and beyond the PIPS and FFMQ as measures of related ACT processes, hierarchical regression analyses were performed with the MPI Interference, MHC-SF (total score), and HADS (total score) as dependent variables. In the first step, the PIPS and FFMQ total scores were entered when correlating significantly to the dependent variable. The total score for the ELS was entered in Step 2. The change in variance from the second step accounted as a test for incremental validity ( $p < .05$ ). With regard to MPI Interference, the ELS explained 1.6% additional variance beyond the PIPS scores,  $\Delta F(1, 235) = 5.98$ ,  $p = .015$ , adjusted  $R^2$  Step 2 = .351, whereas 15.3% additional variance could be explained beyond the PIPS and FFMQ test scores in the MHC-SF,  $\Delta F(1, 234) = 55.61$ ,  $p < .001$ , adjusted  $R^2$  Step 2 = .355. Finally, an additional 3.7% of variance in the HADS could be explained by the ELS beyond both the PIPS and FFMQ,  $\Delta F(1, 234) = 14.26$ ,  $p < .001$ , adjusted  $R^2$  Step 2 = .393.

Table 4

*Descriptive Statistics and Pearson's Correlation Coefficients for the ELS and Measures Considered Related Theoretically in a Chronic Pain Sample*

Measure	<i>M (SD)</i>	Valued Living	Life Fulfillment	Total scale
<b>ELS</b>				
Total scale	50.90 (9.81)	.92**	—	—
Valued Living	35.42 (6.40)	—	.55**	—
Life Fulfillment	15.49 (6.69)	—	—	.84**
<b>PIPS</b>				
Total scale	54.86 (11.54)	-.25**	-.36**	-.33**
Avoidance	33.06 (9.62)	-.33**	-.43**	-.42**
Cognitive Fusion	21.80 (3.96)	.00	.08	.06
<b>FFMQ</b>				
Observing	15.28 (2.91)	.31**	.11	.26**
Describing	17.62 (3.95)	.34**	.11	.28**
Acting with awareness	17.00 (3.75)	.34**	.20*	.32**
Nonjudging	16.11 (3.37)	.11	.10	.12
Nonreacting	15.66 (2.88)	.31**	.17*	.28**
MPI Interference	32.57 (9.81)	-.17*	-.43**	-.32**
<b>MHC-SF</b>				
Emotional well-being	11.95 (3.11)	.52**	.54**	.60**
Psychological well-being	23.55 (5.96)	.50**	.44**	.53**
Social well-being	16.11 (4.86)	.37**	.31**	.39**
<b>HADS</b>				
Anxiety	7.20 (3.25)	-.25**	-.28**	-.30**
Depression	6.25 (3.42)	-.40**	-.42**	-.46**
PDI	36.17 (12.64)	-.11	-.36**	-.26**
Pain Intensity	6.20 (1.65)	.12	.03	.09

*Note.*  $N = 238$ ; ELS = Engaged Living Scale; PIPS = Psychological Inflexibility in Pain Scale; FFMQ = Five Facet Mindfulness Questionnaire; MPI Interference = Multidimensional Pain Inventory–Interference subscale; MHC-SF = Mental Health Continuum–Short Form; HADS = Hospital Anxiety Depression Scale; PDI = Pain Disability Index. Dashes indicate it is not possible to display correlations for a factor with itself.

\*  $p < .05$ . \*\*  $p < .01$ .

## Discussion

The aim of this second study was to further investigate the psychometric properties of the ELS test scores in a sample of chronic pain patients. CFAs confirmed the suggested two-factor model from Study 1, although a bifactor model showed the best fit to the data. Internal consistency of the ELS total scale and subscales was good. Pearson correlation coefficients were in line with expectations, in general showing moderate to high correlations in the hypothesized direction of the ELS with measures of acceptance, mindfulness, and (positive) mental health. Furthermore, as hypothesized, no correlations were found with pain intensity, and small to moderate correlations were found between the ELS and pain disability and pain interference, respectively. Finally, assessment of incremental validity showed that the ELS was able to explain additional information in important outcome variables beyond related measures of acceptance (PIPS) and mindfulness (FFMQ).

## General Discussion

In the present set of studies, we reflected on the development and psychometric properties of the ELS, a new measure of an engaged response style from the framework of ACT. Psychometric properties of the ELS test scores were examined in both a non-clinical and clinical sample consisting of chronic pain patients. The



ELS was developed as no process-specific measures of the engaged response style were available. Availability of easy-to-administer, process-specific questionnaires is necessary to further examine mediating mechanisms of treatment and the contribution of specific treatment processes to outcome. Overall, the outcomes of both studies suggest that the ELS factor structure is best represented by a bifactor model, comprising two subscales (Valued Living and Life Fulfillment) and a general underlying factor. In both samples, the ELS showed good internal consistency and construct validity by consistent patterns of relationships with theoretically related constructs, such as psychological well-being, anxiety and depression, pain interference in daily life, personality, acceptance, and mindfulness. The ELS scores also have incremental validity in explaining pain interference in daily life, positive mental health, and psychological distress beyond acceptance and mindfulness. Overall, these outcomes suggest that the ELS is a valid and reliable measure of an engaged response style from the framework of ACT. On the basis of the superior fit of the bifactor model to the correlated two-factor and unidimensional model, we suggest that the ELS can be best used in clinical practice and research by scoring both the total scale and the individual subscales (Chen et al., 2006).

Some important theoretical, clinical, and research implications result from our findings. First, the resulting factor solution fits very well with theoretical foundations of ACT. Although separated during the steps of item generation, in the resulting exploratory and confirmatory factor solution, both ACT processes, values and committed action, are assembled into one factor. This corroborates the recent theoretical notion that both knowing and living in accordance with values are highly interlinked aspects of an overall, generic engaged response style (Hayes et al., 2011). Our findings also suggest that valued living and life fulfillment are related, but distinct aspects of a generic engaged response style. Compared with the subscale Valued Living, the items in the subscale Life Fulfillment reflect more of an outcome or evaluation of knowing and living in accordance with values. Although Life Fulfillment is not as directly related to a specific process from the framework of ACT as Valued Living is, the definition and operationalization of the subscale is consistent with ACT theory. Namely, the pragmatic and ongoing evaluation of personal values and subsequently formulated goals is inherent to the dynamic act of valued living that elaborates the course of life (Hayes et al., 2011; Wilson & Murrell, 2004).

With regard to measurement of ACT processes, questionnaires are now available to measure each of the three key response styles and psychological (in)flexibility in general. The psychometric properties of test scores on the AAQ-II and PIPS (Bond et al., 2011; Fledderus et al., 2012; Trompetter, Bohlmeijer, Baalen, et al., 2013; Wicksell et al., 2010), FFMQ (Baer et al., 2006; Bohlmeijer et al., 2011), and ELS are examined in different non-clinical and clinical samples. The findings from our studies and previous studies on the incremental validity of the different process measures suggest that these measures are able to contribute individually to the explanation of variance of important outcomes (Fledderus et al., 2012; McCracken & Zhao-O'Brien, 2010; Trompetter, Bohlmeijer, Baalen, et al., 2013). This also corroborates the theoretical notion that all three response styles are related, but distinct aspects from the overall framework of ACT (Hayes et al., 2006, 2011).

A few interrelationships between engaged living and related processes and outcomes deserve further exploration. No correlations were found between engaged living and the nonjudging facet of mindfulness, defined in terms of taking a nonevaluative stance toward thoughts and feelings (Baer et al., 2006). This finding could reflect that, in general, a person may still move toward their values even if they judge their inner experiences as unwelcome. From an ACT perspective, it can be hypothesized that a relationship between the constructs only exists when a person judges his or her inner experiences as highly unwelcome, or is very high in nonjudging. Nevertheless, although the findings with regard to the nonreact facet should be treated with caution due to the low internal consistency of its test scores, all other mindfulness facets correlated with engaged living as expected. This confirms the assumption that mindfulness and engaged living are related in a sense that conscious, present-moment awareness is necessary to be able to contact and reflect on personal values and subsequent goals (Hayes et al., 2011; Wilson & Sandoz, 2008). Looking at the individual relationship of the different subscales of engaged living with mindfulness, correlations with mindfulness facets were similar for the subscale Valued Living and for the total scale. However, the subscale Life Fulfillment only showed small correlations with the facets acting with awareness and nonreacting. Future studies are necessary to further investigate the differential relationships between facets of mindfulness and engaged living.

With regard to the different aspects of psychological well-being as measured with the PWB Scales (Ryff & Keyes, 1995), varying moderate to high correlations were found with engaged living. The highest correlations were found with the aspect environmental mastery (a sense of mastery and control in managing one's life and the world). This suggests that awareness and realization of personal values and feelings of life fulfillment increase feelings of control in managing one's life and surroundings, and/or vice versa. In addition, especially the subscale Life Fulfillment showed the lowest (small to moderate) correlations with the aspects personal growth (a sense of continued growth and development as a person) and autonomy (a sense of self-determination). This confirms findings from previous studies on the relationship between these aspects of psychological well-being and outcomes theoretically related closely to life fulfillment, such as happiness and satisfaction with life (Ryff, 1989; Ryff & Keyes, 1995). In general, the moderate to high correlations that were found between engaged living and psychological well-being suggest a substantial relationship between these concepts. This is possibly due to the fact that both psychological well-being and engaged living (as also ACT in general) reflect a positive approach to mental health (Hayes et al., 2006; Ryff & Singer, 2008). This approach is based on the assumption that mental health is more than the absence of psychological distress. Knowledge on the additional value of positive mental health is growing rapidly (e.g., Keyes, Bohlmeijer, & Fledderus, n.d.; Westerhof & Keyes, 2010), supporting the idea that a focus on concepts such as resilience, flourishing, and psychological flexibility is a useful complement to existing treatment models.

Several limitations and opportunities for future research can be acknowledged. A first limitation of this study is the relatively high age of participants in both samples. As it is possible that engaged living is interpreted and evaluated differently by different age groups, future research should study generalizability of the validity of the ELS to younger age groups. Another limitation is the fixed administration order of the scale (see the Appendix). This makes it

not possible to rule out the possibility of administration order effects when using the ELS in future studies. Furthermore, we suggest item response theory (IRT) (Chang & Reeve, 2005; Embretson & Reise, 2000) to be applied in future studies to further investigate the item characteristics of the ELS. The superior fit of the bifactor model and the comparable factor loadings found for both the general factor in the bifactor model and the unidimensional model suggest that unidimensional IRT analyses can be applied to the total ELS. By use of IRT, future research can assess differential item functioning for different age groups and explore opportunities for shortening the scale by assessment of item difficulties. Shortening the scale will enable faster administration of the ELS in test batteries.

Despite the limitations of the present study, our findings suggest that the ELS is a valid and reliable instrument to measure an engaged response style from the framework of ACT. The ELS can be a useful measure in both clinical and nonclinical populations to further investigate interrelationships between different ACT processes and outcomes and the possible working mechanisms of the engaged response style. As research and evidence for the effectiveness of ACT for a range of psychopathology is growing rapidly, further development of psychometrically sound instruments for adequate and precise measurement of treatment processes is necessary. The availability of the ELS hopefully takes the research on ACT and disentanglement of specific treatment processes a step further in the right direction.

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## Appendix

### Engaged Living Scale\*

The following questions concern ‘value based living.’ Values are the choices that we make about how we want to live our lives. This means that you determine what you believe to be important in your life, what makes it all worthwhile and what motivates you. The question that you ask yourself here is what do I want from life? What do I consider important and what sort of person do I want to be? This questionnaire is about learning to identify these values and to live according to them.

1. I have values that give my life more meaning. (VL)
2. I know what motivates me in life. (VL)
3. I believe that I’ve found important values to live according to. (VL)
4. I know exactly what I want to do with my life. (VL)
5. I make choices based on my values, even if it is stressful. (VL)
6. I know how I want to live my life. (VL)
7. I know what I want to do with my life. (VL)
8. I believe that my values are really reflected in my behaviour. (VL)
9. I believe that how I behave fits in with my personal wants and desires. (VL)
10. My emotions don’t hold me back from doing what’s important to me. (VL)
11. I live the way I always intended to live. (LF)
12. I am satisfied with how I live my life. (LF)
13. Nothing can stop me from doing something that’s important to me. (LF)
14. I believe that I am living life to the full right now. (LF)
15. I make time for the things that I consider important. (LF)
16. I feel that I am living a full life. (LF)

\*This questionnaire was translated from Dutch to English and translated back to Dutch by independent native speakers to ensure reliable translation. All items are scored on a 5-point Likert scale, ranging from ‘completely disagree’ to ‘completely agree.’ No reversed scoring of items is necessary. Sum scores can be calculated for each subscale and for the total scale.

Received November 28, 2012  
 Revision received May 24, 2013  
 Accepted June 3, 2013 ■