

The future-oriented repetitive thought (FoRT) scale: A measure of repetitive thinking about the future



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ABSTRACT

Background and objectives: Repetitive thinking about the future has been suggested as one way in which individuals may become hopeless about the future. We report on a new scale assessing future-oriented repetitive thinking, termed the *Future-Oriented Repetitive Thought* (FoRT) Scale.

Methods: In Study 1, an exploratory factor analysis was conducted with data from 1071 individuals who completed the scale. Study 2 describes a confirmatory factor analysis with a revised version of the scale on a sample of 612 individuals, a subsample of whom ($N=99$) also completed measures of repetitive thought (rumination, worry), hopelessness-related cognitions, and symptoms of depression and generalized anxiety disorder in order to examine evidence for the measure's convergent, discriminant, and concurrent validity. Study 3 examined the scale's concurrent validity in distinguishing between individuals with and without a history of suicidal ideation and attempts.

Results: A three-factor solution emerged in Study 1, and this solution was confirmed in Study 2. In addition, the FoRT scale demonstrated moderate associations with other measures of repetitive thought (rumination, worry), with hopelessness-related cognitions, and with symptoms of depression and generalized anxiety. Finally, the FoRT scale distinguished between individuals with and without a history of suicidal ideation and attempts.

Limitations: Cross-sectional data limit conclusions that can be drawn about directionality.

Conclusions: These findings suggest that the newly developed FoRT scale is a reliable and valid measure of future-oriented repetitive thought.

1. Introduction

Hopelessness is one of the best-established cognitive correlates and predictors of depressive symptoms and suicidal thoughts and behavior (Abramson et al., 1998; Beck et al., 1989; Brown et al., 2000; Joiner and Rudd, 1996). Early definitions of hopelessness conceptualized it as a tendency to expect that negative future outcomes would inevitably occur and that positive future outcomes would inevitably fail to occur (Abramson et al., 1989). Previous studies suggest that hopelessness may arise through repetitive thought, and indeed, previous research suggests a relation between repetitive thought in the form of rumination – i.e., between the tendency to think repetitively about the causes and consequences of one's negative mood – and hopelessness-related cognitions (Nolen-Hoeksema et al., 2008; Smith et al., 2006). However, other research has suggested that hopelessness arises through repeti-

tive thinking that involves considering whether given positive and negative outcomes will happen in one's future (Andersen et al., 1992; Andersen and Limpert, 2001). Understanding how a future-oriented repetitive thinking style leads to hopelessness may provide information about appropriate cognitive targets for intervention. There is no current measure, of which we are aware, that examines the degree to which individuals repeatedly consider the occurrence of positive and negative future outcomes. Moreover, other components of repetitive future-oriented processing (i.e., beyond the anticipation of outcome occurrence) may be relevant to wellbeing and psychopathology, but have not been emphasized or well-measured in existing approaches to future-oriented cognition. The present study thus sought to address these limitations in measurement through the development of a new measure to assess future-oriented repetitive thought.

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1.1. Future expectancies in depression

Drawing upon the hopelessness theory (Abramson et al., 1989), Andersen (1990) conceptualized hopelessness in the form of depressive predictive certainty – the point at which people become 100% certain that positive outcomes will not occur and that negative outcomes will occur in their futures. In a study of college undergraduates, Andersen and Lyon (1987) found that dysphoric mood increased at the point that individuals were 100% certain – but not when they were 25%, 50%, or 75% certain – about the occurrence of a negative outcome. Depressive predictive certainty has been found to be associated with depressive symptoms – both concurrently and over time (Andersen, 1990; Andersen and Schwartz, 1992; Jacobson et al., 1999; Miranda and Mennin, 2007) – and also with suicidal ideation (Krajniak et al., 2013; Sargalska et al., 2011). Andersen and colleagues further suggested that depressive predictive certainty reflects biased future-event schemas that develop through mental rehearsal in thinking about the future (Andersen et al., 1992; Andersen and Limpert, 2001). For instance, Andersen and Limpert (2001) found that individuals with major depression displayed greater automaticity in making future-event predictions, were less likely to predict that positive events would occur, and exhibited greater rumination about the future in response to a recent event, than did individuals without major depression. Thus, repetitive thinking about the future may lead individuals to make their future-event anticipations with automaticity (Andersen et al., 1992; Andersen and Limpert, 2001).

1.2. Future-oriented versus mood- and past-oriented repetitive thought

No research of which we are aware has examined the role of future-oriented repetitive thinking in depression. However, one type of repetitive thinking consistently linked with depression is rumination. Rumination – characterized by persistently dwelling on a negative mood and on the causes, meanings, and consequences of that mood – is implicated in the onset, maintenance, and duration of depression (Nolen-Hoeksema et al., 2008). Although this conceptualization suggests that rumination is past- and mood-oriented, there is evidence that rumination may impact negative future expectancies (Lavender and Watkins, 2004; Krajniak et al., 2013; Smith et al., 2006). One study found that rumination was associated with suicidal ideation over time through increased hopelessness (Smith et al., 2006). Another study of college students found that rumination and certainty about pessimistic future expectancies mediated the relation between lifetime suicide attempt history and future suicidal ideation (Krajniak et al., 2013). Thus, repetitive thought about current or past states may promote hopelessness by increasing certainty about whether negative future events will occur or positive future events will not occur.

If future-oriented repetitive thinking is implicated in depression and hopelessness, however, it may operate differently than rumination about a dysphoric mood. Whereas mental rehearsal in considering whether positive or negative outcomes will happen in one's future has not been a focus of previous research, parallels can be drawn with other forms of future-oriented repetitive thinking. For instance, considerable research has examined the role of worry – repetitive thinking about the likelihood of future negative events – in the development of Generalized Anxiety Disorder (GAD; Borkovec et al., 1991, 2004; Fresco et al., 2003), and past research suggests that worry is associated with both GAD symptoms and depressive symptoms (Starcevic, 1995; Olatunji et al., 2013).

It is somewhat unclear whether past-oriented rumination and worry are actually distinct processes or instead capture an overall repetitive thought construct (Fresco et al., 2002; McEvoy et al., 2010). However, in part because GAD and other anxiety disorders involve hypervigilance to threat, worry has been most robustly distinguished from rumination by its emphasis on the future, as opposed to the past

(see Watkins, 2008). Like future-oriented cognition in depression, worry involves repetitive and often uncontrollable thinking about the future. As “outputs” of processing, both types of thinking appear to produce high expectations that negative events will occur in the future, but a primary characteristic that distinguishes anxious from depressive future-oriented cognition is that it does not involve predicting few positive events to occur (Miranda et al., 2008; Miranda and Mennin, 2007). These patterns partially reflect affective disruptions in the two disorders (e.g., shared high negative affect, but blunted positive emotion only in depression; Watson et al., 1988). In addition, Miranda et al. (2008) showed that different patterns of thinking about the future (i.e., hopelessness and intolerance of uncertainty) are differentially associated with depressive versus GAD symptoms over time. Thus, if repetitive thinking about the occurrence of positive and negative future outcomes is implicated in depression, it is not necessarily redundant with either past-oriented rumination or worry.

We conceptualize future-oriented repetitive thought as a broader construct emphasizing repetitive thinking about future events, and incorporating a range of adaptive and maladaptive future-oriented cognitive processes. Beyond depression and GAD, future-oriented cognition is implicated in other psychopathology, including biased threat estimation in obsessive-compulsive disorder (Salkovskis et al., 2000) and post-traumatic stress disorder (Foa et al., 1989), perseveration on specific themes (e.g., anticipated social rejection in social phobia; Morrison and Heimberg, 2013), and blunted ability to predict future pleasure in schizophrenia (Gard et al., 2007). Understanding future-oriented repetitive thought in a more multi-faceted and comprehensive way may improve our understanding of multiple disorders.

The key feature of future-oriented repetitive thought is that it refers to a more general process of repetitive thinking about the future – its emphasis is on the mental rehearsal process, and is not focused specifically on uncertainty or thinking negative events will occur (the distinguishing feature of worry and its measurement), nor on thinking positive events will not occur. Rather, it captures both healthy and maladaptive patterns of the kind of rehearsal that is hypothesized to produce a variety of resulting views of the future, depending on cognitive content, individual differences, vulnerabilities in cognition and affect, and other factors during rehearsal. Everybody thinks about the future, and in different ways. The question regarding future-oriented repetitive thought is whether the frequency and perseveration in an individual's thinking about the future plays a role in adaptive versus maladaptive outcomes.

Existing constructs of repetitive thought in the clinical literature focus primarily on negative valence, content, and outcomes, whether rumination, or worry about the future. However, it should be noted that there have been recent efforts to measure content-independent repetitive negative thought in measures such as the 15-item Perseverative Thinking Questionnaire (PTQ), which measures the tendency to experience repetitive negative thoughts, the unproductiveness of such thoughts, and the degree to which they capture a person's mental capacity, although this measure is not specifically past, present, or future-oriented (Ehring et al., 2011).

Yet whether or not repetitive cognition is maladaptive depends on internal and external contextual factors (Watkins, 2008). For example, worry can be adaptive when it promotes active problem solving in anticipation of actual upcoming challenges (Tallis and Eysenck, 1994), and even fantasizing about positive future events has been found to be associated with decreased depressive symptoms concurrently but increased depressive symptoms over time (Oettingen et al., in press). In a related vein, research using measures such as the Imaginal Process Inventory (IPI; Singer and Antrobus, 1966) – which measures daydreaming and mind wandering – has suggested that repetitive thinking in the form of daydreaming can be adaptive and constructive (Singer, 2009). If mental rehearsal gives rise to certain views of the future with distinct consequences for behavior, it is important to capture both negative and positive aspects of future-oriented repetitive thought.

1.3. The present research

We sought to develop and evaluate the psychometric properties of a scale designed to measure future-oriented repetitive thinking along multiple facets. In Study 1, an exploratory factor analysis was conducted on 22 items generated for a newly developed Future-Oriented Repetitive Thought (FoRT) scale that was administered to a diverse sample of college undergraduates. In Study 2, the construct validity of a modified 16-item version of the scale was examined in a separate diverse sample of undergraduate students. The factors extracted from Study 1 were subjected to a confirmatory analysis. Further, the convergent, discriminant, and concurrent validity of the scale was examined via the relation with established measures of rumination, worry, hopelessness, future-event expectations, and symptoms of depression and generalized anxiety. Study 3 investigated the scale's ability to distinguish between college students with and without a history of recent suicidal ideation and a lifetime suicide attempt history.

We sought to develop a measure with several novel contributions to the literature. First, unlike measures of worry and most measures of past-oriented rumination, we considered both positive and negative aspects of future-oriented thought processes. This reflects findings that both positive and negative *products* of future-oriented cognition (i.e., predictions of the future) are important in psychopathology (e.g., Miranda et al., 2008). Second, we focused specifically on the frequency or repetitiveness of various ways of thinking about the future, rather than the outputs of future-oriented cognition. This stands in contrast to measures designed to tap attitudes or beliefs about the future, including inventories of hopelessness and pessimism (e.g., Beck and Steer, 1988), estimates of future event likelihood (e.g., Miranda and Mennin, 2007), anticipation of catastrophic consequences (e.g., Vasey and Borkovec, 1992), and behavioral prediction tasks. Thus, whereas measures exist to tap the content of people's expectancies and predictions, we sought to fill a gap in measurement of how much people *engage* in repetitive thought (which we expect, in turn, affects the content of predictions).

Finally, there are many ways to think about the future, and they do not all center on predicting what will occur. It would be useful to have an overall index of future-oriented repetitive thought, but also of specific forms of that thinking. A novel aim of our studies was to

develop a measure tapping other “routes” of future-oriented thought (e.g., thinking about goals; daydreaming about future events) in addition to processes focused on event prediction. We reasoned that future-oriented repetitive thought as a broad construct would be associated with mental health and wellbeing, but that different aspects of repetitive thinking would relate differently to symptom types, thereby improving on existing measurement of repetitive thought.

2. Methods: Study 1

2.1. Participants

Undergraduate students ($N=1071$; 72% female), ages 18–34 ($M=19.0$, $SD=2.2$), were recruited from the New York City metropolitan area either as part of a research requirement in their introductory psychology course at a public, northeastern university, via flyers, or via Craigslist advertisements. Racial/ethnic distribution of the sample was as follows: 35% Asian, 28% White, 17% Hispanic/Latino/a, 9% Black, 5% Biracial, and 7% of other races/ethnicities.

2.2. Measures

2.2.1. Future-Oriented Repetitive Thought

The Future-Oriented Repetitive Thought (FoRT) scale was developed to assess the degree to which individuals repeatedly think about the likelihood of positive and negative events occurring in their futures. Twenty-two items were generated to capture several aspects of future-oriented repetitive thinking, including 1) the tendency to consider whether negative future outcomes would occur or whether positive future outcomes would not occur (e.g., “I think about the possibility of losing people or things that are important to me”); 2) the tendency to indulge in a positive future (e.g., “I daydream about the things that I want happening to me in the future”); and 3) the tendency to consider future goals (e.g., “I think about how to accomplish my future goals”). Initially, 17 items were generated based on face validity to capture these constructs, and an exploratory factor analysis was conducted in a separate sample of 201 undergraduates that completed the measure. Four items that did not load onto a factor were eliminated, and additional items were reworded or added so that there were an approximately equal number of items assessing the tendency to

Table 1
Item loadings from exploratory factor analysis, Overall and by Gender (Study 1).

	Rotated Factor Loadings		
	Overall	Female	Male
<i>Factor 1: Pessimistic repetitive future thinking (PT)</i>			
I think about the possibility of good things not happening in the future (FoRT1)	.53	.50	.47
I spend time thinking about bad things that could happen (FoRT2)	.79	.77	.69
When something bad happens, I can't stop myself from thinking about whether it will happen again (FoRT5)	.64	.65	.75
When I do not get something that I want, I think about whether I will ever get the things that I want in life (FoRT7)	.48	.49	.52
I think about the worst possible things that could happen (FoRT11)	.78	.79	.70
I think about the possibility of losing people or things that are important to me (FoRT16)	.59	.58	.58
When I think about something bad happening, I have a hard time thinking about anything else (FoRT18)	.63	.66	.59
I play out scenes in my head over and over again about bad things that could happen (FoRT20)	.70	.67	.75
<i>Factor 2: Repetitive thinking about future goals (FG)</i>			
I think about how to accomplish my future goals (FoRT6)	.75	.73	.76
I imagine the steps I need to take to get things that I want in life (FoRT10)	.87	.86	.87
I make specific plans for how to get things that I want in life (FoRT15)	.68	.68	.76
I think about the ways in which my life will be good in the future (FoRT22)	.48	.43	.59
<i>Factor 3: Positive indulging about the future (PI)</i>			
When I am looking forward to something, I can't stop myself from thinking about what it will be like (FoRT9)	.40	.41	.52
When I picture good things happening in my future, it is as if they were actually happening to me now (FoRT13)	.63	.66	.46
I daydream about the things that I want happening to me in the future (FoRT14)	.59	.57	.71
When I picture something good happening to me, I get so caught up in the moment that I don't pay attention to other things (FoRT21)	.63	.66	.60

consider the occurrence of negative future outcomes (e.g., *I spend time thinking about bad things that could happen*) versus the non-occurrence of positive future outcomes (e.g., *I think about the possibility of good things not happening in the future*). Participants were instructed to “Please read the following statements, and, for each one, consider how often, in general, you think about the future in these ways, and indicate whether you do so *almost never, sometimes, often, or almost always*.” Frequency was rated on a 4-point Likert-type scale: (0) *never*; (1) *sometimes*; (2) *often*; or (3) *almost always*. Instructions noted, “...that these questions are concerned with the frequency with which you think about the future in these ways rather than whether you tend to hold these as attitudes or beliefs about the future.”

2.3. Procedure

Participants completed the measure in groups of 2–6 in a classroom setting as part of a larger battery of measures. Participants received either credit in their introductory psychology course or monetary compensation (\$25) for taking part in the study.

3. Results: Study 1

An exploratory factor analysis with an oblique rotation using maximum likelihood estimation (via SPSS, version 22) yielded a four-factor solution, each with an initial eigenvalue above 1.0 and items that loaded above .40. The factor analysis was repeated separately for females and males after eliminating 5 items that did not initially load onto any factor, and this generated a 3-factor solution that included items loading above .40. The initial eigenvalues for the 3 factors accounted for 54% of the initial variance in the matrix. The first factor accounted for 26% of the variance and consisted of 8 items ($\alpha=.85$). The second factor accounted for 20% of the variance and contained 4 items ($\alpha=.82$). The third factor accounted for 8% of the variance and contained 4 items ($\alpha=.70$). Based on examination of item content, the three scales identified in the analysis were labeled: pessimistic repetitive future thinking (FoRT-PT), repetitive thinking about future goals (FoRT-FG), and positive indulging about the future (FoRT-PI). Internal consistency reliability for a scale containing these 16 items was .78. See Table 1 for details on items and factor loadings.

4. Discussion: Study 1

Findings from Study 1 provided evidence of three types of future-oriented repetitive thinking: a tendency to think about whether negative outcomes will occur or positive outcomes will not occur, repetitively thinking about future goals and/or ways to accomplish those goals, and fantasizing about positive outcomes as if they were actually occurring. Each scale, along with the overall measure, had good internal consistency reliability, and item loadings were similar among women and men.

5. Methods: Study 2

A confirmatory factor analysis was conducted to replicate the three-factor solution from Study 1 with a new sample of participants. Further, the FoRT scale's convergent, discriminant, and concurrent validity were tested by examining correlations with established measures of repetitive thought – namely rumination and worry – along with measures of future-oriented cognition – i.e., depressive predictive certainty and hopelessness – and with symptoms of depression and generalized anxiety. First, we hypothesized that the FoRT scale involving pessimistic repetitive future thinking (FoRT-PT) would be positively correlated with rumination (i.e., a self- and mood-focused repetitive thinking style) and worry (i.e., a future-oriented repetitive thinking style), but that it would not be so strongly correlated to these measures that they would be measuring the same construct (i.e.,

correlations would not exceed .80). Second, we predicted that FoRT-PT would be more strongly correlated with the brooding form of rumination – considered more maladaptive (Treyner et al., 2003) – than with the reflective form of rumination. In contrast, we expected that repetitive thinking about future goals (FoRT-FG) would be more strongly correlated with reflection than with brooding but had no prediction about its association with worry. We predicted that positive indulging (FoRT-PI) would be more strongly associated with brooding than with reflection, given previous research suggesting that positive indulging may be maladaptive over time (Oettingen et al., 2016). Finally, we predicted that pessimistic repetitive future thinking would be positively correlated with measures of hopelessness, depressive predictive certainty, and with symptoms of depression and generalized anxiety, whereas goal-oriented repetitive thinking would be negatively correlated with hopelessness, depressive predictive certainty, and symptoms of depression.

5.1. Participants

A separate group of college undergraduate students ($N=612$; 70% female), ages 18–34 ($M=20.3$, $SD=3.3$), from the same public north-eastern university participated in the present study as part of an online screening that was part of a research requirement in their introductory psychology class. The racial/ethnic distribution of this sample was 33% White, 29% Asian, 21% Hispanic/Latino/a, 10% Black, and 4% of other races/ethnicities, with 3% declining to report their race/ethnicity. A subsample of participants ($N=99$; 79% female), ages 18–34 ($M=20.3$, $SD=3.3$), was recruited to take part in a second session within approximately 1 month after the screening, as a convenience sample of individuals who signed up to take part in the study during the same semester in which they took the screen. Racial/ethnic distribution of the subsample was representative of the original sample: 33% White, 24% Asian, 20% Hispanic/Latino/a, 7% Black, and 9% of other races/ethnicities.

5.2. Measures

5.2.1. Future-Oriented Repetitive Thought

The same 22-item scale used in Study 1 was used in this study. However, analyses only examined the revised version of the FoRT scale consisting of 16 items.

5.2.2. Response Style

The Response Styles Questionnaire (RSQ; Nolen-Hoeksema and Morrow, 1991) was used to assess self-focused rumination and distraction in response to a negative mood. The RSQ contains the Ruminative Responses Scale (RRS), which consists of two subscales: brooding (i.e., passive dwelling on a negative mood), consisting of 5 items; and reflection (i.e., actively trying to understand the reasons for one's negative mood), consisting of 5 items (Treyner et al., 2003). The RSQ also contains an 11-item scale measuring distraction (i.e., a redirection of focus toward positive thoughts and behaviors). Each item is rated on a 4-point Likert-type scale ranging from 1 (almost never) to 4 (almost always). The RSQ has demonstrated good reliability and validity (Nolen-Hoeksema and Morrow, 1991; Treyner et al., 2003). The internal consistency reliability for the present sample was good for brooding ($\alpha=.71$), reflection ($\alpha=.79$), and distraction ($\alpha=.76$).

5.2.3. Worry

The Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990) is a 16-item self-report measure that assesses the frequency and intensity of worry (e.g., *My worries overwhelm me; I don't tend to worry; Many situations make me worry*). Items are rated on a 5-point Likert-type scale ranging from 1 (not at all typical) to 5 (very typical). The PSWQ has been found to have good internal consistency and test-retest reliability, and it also distinguishes individuals with GAD from other

anxiety disorders (Brown et al., 1992). The internal consistency reliability was good ($\alpha=.72$) in the present sample.

5.2.4. Depressive symptoms

The Center for Epidemiological Studies Depression Scale (CES-D Scale; Radloff, 1977) is a 20-item self-report measure designed to assess depressive symptoms in the general population. Participants indicate how frequently they have experienced a range of depressive symptoms in the past week on a scale ranging from 0 (rarely or none of the time) to 3 (most or all of the time). The CES-D has shown high internal consistency reliability and construct validity across demographic variables (Orme et al., 1986; Radloff, 1977). The CES-D demonstrated good internal consistency reliability in the present sample ($\alpha=.90$).

5.2.5. Anxiety symptoms

The Generalized Anxiety Disorder Questionnaire-IV (GAD-Q-IV; Newman et al., 2002) is a nine-item self-report questionnaire used to screen for symptoms of Generalized Anxiety Disorder, consistent with the 4th Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA, 1994). Items assess cognitive (e.g., worry) and physical symptoms (e.g., restlessness, fatigue, muscle tension) of anxiety experienced in the previous six months. The questionnaire has demonstrated good convergent and discriminant validity, and good internal consistency and test-retest reliability (Newman et al., 2002). The internal consistency reliability was good ($\alpha=.81$) in the present sample.

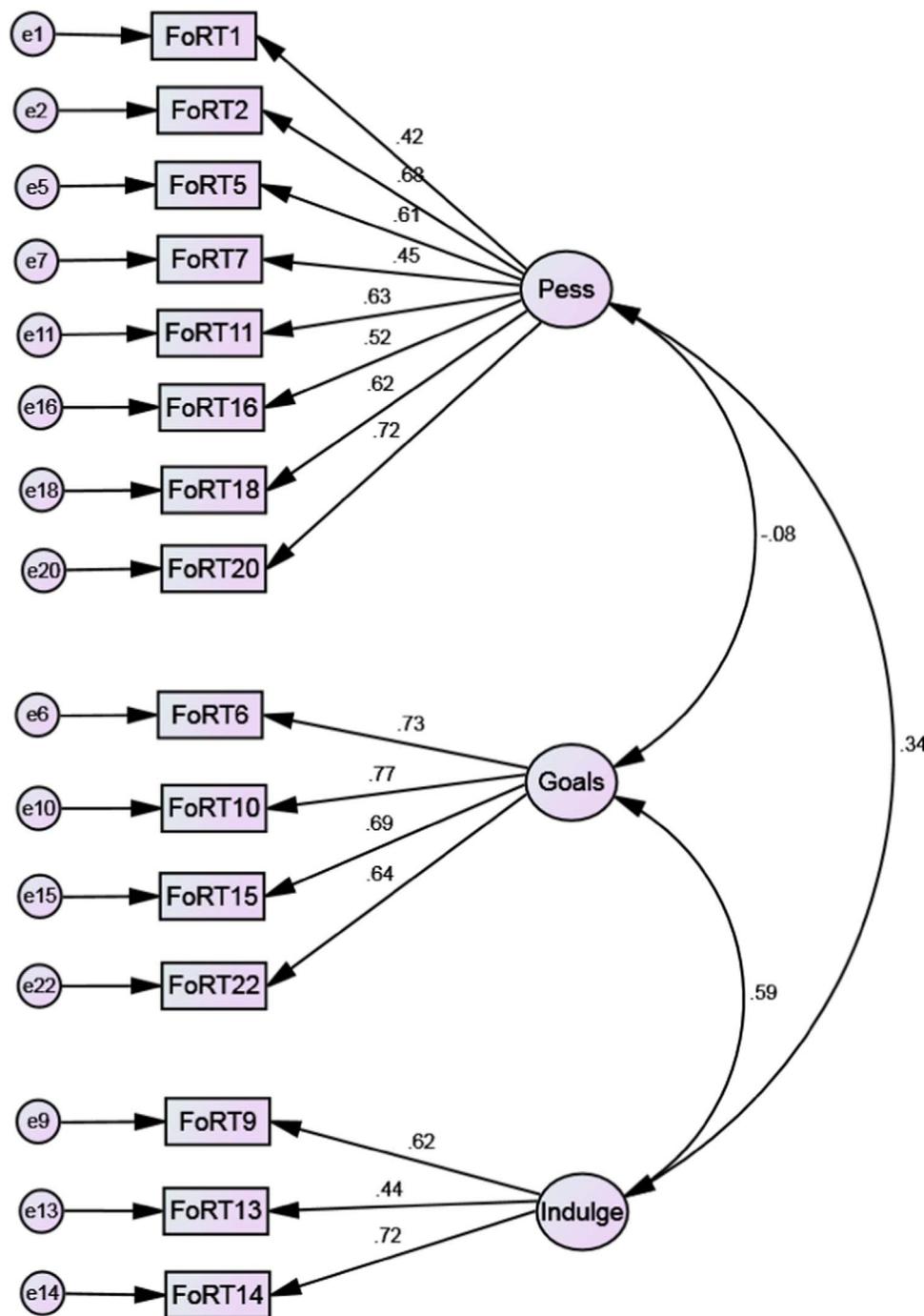


Fig. 1. Standardized estimates in confirmatory factor analysis of the modified FoRT Scale (15 Items). Figure was drawn using AMOS, version 22.

5.2.6. Hopelessness

The Beck Hopelessness Scale (BHS; Beck and Steer, 1988; Beck et al., 1974) is a 20-item self-report measure used to assess general negative expectations about the future. The BHS has shown good concurrent, discriminant, and predictive validity (see Beck and Steer, 1988; Beck et al., 1974). The internal consistency reliability was strong in the present sample ($\alpha=.88$).

5.2.7. Depressive predictive certainty

The Future Events Questionnaire (FEQ; Miranda and Mennin, 2007) is 34-item measure that assesses whether individuals expect positive and negative events to happen in their futures and how certain they are in their future-event anticipations. Specifically, the scale assesses *depressive predictive certainty* – i.e. the degree to which people are certain that negative events will occur in their futures and that positive events will not occur in their futures. The questionnaire consists of 17 positive and 17 negative future event items, arranged in random order. Participants respond ‘yes’ or ‘no’ to the likelihood of each event occurring at some time in their future, and indicate their level of certainty for each item on a Likert-type scale ranging from 0 (*not at all certain*) to 5 (*as certain as one can be*). Thus, two types of depressive predictive certainty were examined: certainty about negative events occurring (i.e., ‘yes’ to probability of negative events occurring with a ‘5’ certainty rating), and certainty that positive events would not occur (i.e., ‘no’ to probability of positive events occurring with a ‘5’ certainty rating). The FEQ has demonstrated adequate internal consistency reliability for both yes/no responses ($\alpha=.66$) and ratings of certainty ($\alpha=.87$) in previous research (Miranda and Mennin, 2007) and also did so in the present sample ($\alpha=.59$ and $.91$, respectively).

5.3. Procedure

Participants completed a battery of the self-report questionnaires at two separate time points, separated by about one month. Participants completed the first group of measures online, and these included the FoRT, PSWQ, GAD-Q-IV, and CES-D. The following measures were administered at the second time point and were completed by the subsample of participants: FoRT, RSQ, BHS, and FEQ.

6. Results: Study 2

6.1. Confirmatory factor analysis

A confirmatory factor analysis was conducted, via Mplus (version 7.31), using the 16-item version of the FoRT scale, in order to examine the fit of the three-factor model. One item was ultimately removed because its loading (onto the positive indulging factor) was below .40, and thus, 15 items were used in the final model. Model fit was reasonably good, $\chi^2(87)=321.29$, $p<.001$, Comparative Fit Index (CFI)=.904 ($>.90/.95$ indicates good fit), Standardized Root Mean Square Residual (SRMR)=.052 ($<.08$ indicates good fit), and Root Mean Square Error of Approximation (RMSEA)=.066, 90% CI=.059–.074 ($<.08$ indicates adequate fit, $<.06$ indicates good fit) (Hu and Bentler, 1999). For final factor loadings, see Fig. 1.² The modified 15-item version of the FoRT scale maintained good internal consistency reliability overall ($\alpha=.76$), for FoRT-PT ($\alpha=.80$), and for FoRT-FG ($\alpha=.80$), but only modest for FoRT-PI ($\alpha=.61$) but had modest test-retest reliability (FoRT-PT: $r=.53$; FoRT-FG: $r=.56$; FoRT-PI: $r=.51$; overall: $r=.47$) in the sample.

² Note that items loaded similarly (.40 or above) when analyses were conducted by gender, with the exception of item 7, whose loading on the FoRT-PT factor was .35 among men, versus .49 for women.

6.2. Convergent and discriminant validity

As expected, the FoRT scale was significantly and positively correlated with other measures of repetitive thought – namely brooding, reflection, and worry (see Table 2). The FoRT total score was more strongly correlated with brooding and worry than it was with reflection, $Z_{diff}=2.14$ and 3.33 , respectively, $p<.05$ (Lee and Preacher, 2013).

Further correlation analyses between subscales of the FoRT and other measures of repetitive thought were conducted to examine the convergent validity of the scale. The FoRT-PT subscale was significantly and positively correlated with brooding, reflection, and worry, but not with distraction, and the correlations with brooding and worry were stronger than that with reflection, $Z_{diff}=2.87$ and 4.28 , respectively. The FoRT-FG subscale was significantly and positively correlated with reflection and distraction, but it was not significantly correlated with brooding or worry. The FoRT-PI subscale was significantly and positively correlated with worry and distraction, but not with brooding or reflection (Note: there was a trend towards a positive correlation with brooding, $r=.19$, $p=.06$). Correlations are shown in Table 2.

6.3. Concurrent validity

We also examined the scales’ concurrent validity by calculating correlations between the FoRT total score and subscales and measures of future-oriented thinking, depressive symptoms, and GAD symptoms. The FoRT total score was significantly and positively associated with measures of future-oriented cognition – i.e., depressive predictive certainty and hopelessness – and with measures of depressive symptoms and generalized anxiety symptoms. The FoRT-PT subscale was significantly and equally positively correlated with depressive predictive certainty in both an absence of positive outcomes and the presence of negative outcomes, and with hopelessness, along with symptoms of depression and generalized anxiety. The FoRT-FG subscale was significantly and negatively correlated with depressive predictive certainty involving an absence of positive outcomes but not with certainty about the presence of negative outcomes. It was also negatively associated with hopelessness, but not with symptoms of depression or GAD. The FoRT-PI subscale was negatively correlated with depressive predictive certainty involving an expected absence of positive outcomes and with hopelessness, but not with certainty about negative outcomes, nor with symptoms of depression or anxiety (see Table 2).

7. Discussion: Study 2

Consistent with Study 1, a confirmatory factor analysis provided support for the three-factor solution from Study 1. Correlation analyses provided support for the convergent validity of the scale and the three subscales, as future-oriented repetitive thought was positively and moderately correlated with other measures of repetitive thought – namely rumination and worry – but correlations were not too high that the scale was measuring the same construct, thus also providing evidence of discriminant validity. The FoRT scale was also related to measures of future-oriented cognitions (i.e., depressive predictive certainty and hopelessness), and to depressive and generalized anxiety symptoms, thus providing evidence of convergent validity.

Importantly, the subscales differed in their relations with both future expectancies and anxiety and depressive symptoms, supporting the notion that different “tracks” of future-oriented repetitive thought may have different consequences. Notably, results also indicated that certain tracks of repetitive thinking (i.e., focusing on goals and positive indulging) are associated with event expectancies (in the form of predictive certainty and hopelessness) but not with symptoms, underscoring the need for a measure like the FoRT to sensitively distinguish these constructs in psychopathology research.

Table 2Descriptive statistics and Pearson correlations of symptom measures with the FoRT overall total and each subscale ($N = 99$).

	FoRT Total	FoRT-PT	FoRT-FG	FoRT-PI	M (SD)
Depressive Symptoms (CES-D)	.33**	.46**	-.05	-.06	17.6 (10.3)
GAD Symptoms (GAD-Q-IV)	.51**	.58**	.02	.09	6.3 (3.4)
Worry (PSWQ)	.64**	.66**	.09	.22*	53.3 (13.4)
Hopelessness (BHS)	.25**	.60**	-.42**	-.24*	5.0 (4.6)
Brooding (RRS)	.51**	.51**	.09	.19	11.4 (3.3)
Reflection (RRS)	.29**	.22**	.20**	.12	10.4 (3.8)
Distraction (RSQ)	.09	-.16	.30**	.31**	28.3 (5.5)
Depressive Predictive Certainty (FEQ)	.25**	.41**	-.13	-.11	1.7 (3.1)
Certainty-AP	.12	.36**	-.23*	-.24*	.4 (1.4)
Certainty-N	.28**	.36**	-.04	.01	1.3 (2.1)
<i>M (SD)</i>	23.7 (6.7)	10.1 (5.4)	8.1 (2.6)	5.5 (2.1)	

Note. FoRT = Future-Oriented Repetitive Thought (measured at time 2); PT=Pessimistic repetitive future thinking subscale; FG=Repetitive thinking about future goals subscale; PI=Positive indulging about the future subscale; Certainty-AP = Certainty about an Absence of Positive Future Events; Certainty-N = Certainty about the Occurrence of Negative Future Events.

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

The findings from Studies 1 and 2 provide evidence for the internal consistency reliability and convergent, discriminant, and concurrent validity of the revised version of the FoRT scale. However, test-retest reliability was modest, suggesting that future-oriented repetitive thinking might be state-dependent. Study 3 sought to further demonstrate the scale's concurrent validity by assessing its ability to differentiate between individuals with and without a history of suicidal thoughts and behaviors. More specifically, group differences were examined between lifetime suicide attempt history, as well as lifetime and recent history of suicidal ideation.

8. Methods: Study 3

8.1. Participants

A separate group of college students ($N = 197$; 72% female), ages 18–30, ($M = 19.4$, $SD = 2.3$) from the same northeastern public university participated in the present study. They were recruited from an Introductory Psychology course and received credit toward their course's research participation requirement. Participants were pre-selected based on either high or low scores on a depression inventory, administered online, as part of a separate study (Marroquín et al., 2013). The racial/ethnic composition of the sample was: White (34%), Asian (28%), Hispanic/Latino/a (18%), Black (8%), and Other (12%).

8.2. Measures

8.2.1. Future-Oriented Repetitive Thought

The FoRT scale was administered, and scale scores were computed using the 15-item solution found in Study 2. Average scores were computed for the analyses, rather than sums, to enable comparison across subscales. The 15-item FoRT scale maintained adequate internal consistency reliability, overall, ($\alpha = .75$) and for both FoRT-PT ($\alpha = .86$) and FoRT-FG ($\alpha = .84$), but was modest for FoRT-PI: $\alpha = .57$.

8.2.2. Suicidal ideation and attempts

Participants were asked about lifetime suicidal ideation (i.e., "Have you ever, in your whole life, talked or thought about wanting to die?") and lifetime suicide attempts (i.e., "Have you ever, in your whole life, attempted to kill yourself?"). Participants were also asked about recent suicidal ideation (i.e., "Have you talked or thought about wanting to die within the past 12 months?") and recent suicide attempts (i.e., "Have you attempted to kill yourself within the past 12 months?"). All three questions had a binary (yes/no) response format.

8.3. Procedure

Eligible participants who signed up for the current study completed a web-based survey via SurveyMonkey in a research lab. A pre-screen was implemented to select participants who scored high (above 14) or low (below 5) on the CES-D. Participants also completed the FoRT scale as part of the screening. Participants who signed up for the web-based survey completed measures inquiring about their history of suicidal ideation and attempts (as described above), along with the FoRT and other measures not related to the present study.

9. Results: Study 3

9.1. History of suicidal ideation and attempts

Approximately 60% ($n = 119$) of the sample reported having thought about suicide at some point in their lives, whereas 28% ($n = 55$) reported having thought about suicide in the previous 12 months. Ten percent ($n = 20$) reported having made a lifetime suicide attempt, and 2% ($n = 4$) reported having made an attempt within the previous 12 months.

There was a trend towards a higher overall average FoRT score among individuals with a lifetime suicide attempt history ($M = 1.70$, $SD = .42$) compared to individuals without a suicide attempt history ($M = 1.52$, $SD = .41$), $t(195) = 1.81$, $p = .07$, $d = .43$. In addition, a Multivariate Analysis of Variance (MANOVA) indicated that there were statistically significant differences across the three subscales, $F(3, 193) = 9.54$, $p < .01$; Wilk's $\Lambda = .87$. Individuals with a suicide attempt history reported higher levels of *pessimistic repetitive future thinking* (FoRT-PT; $M = 1.87$, $SD = .53$), $t(195) = 4.63$, $p < .01$, compared to individuals without a suicide attempt history ($M = 1.19$, $SD = .63$), $d = 1.17$. However, individuals with a suicide attempt history reported lower levels of *repetitive thinking about future goals* (FoRT-FG; $M = 1.48$; $SD = .64$), $t(195) = 2.68$, $p < .01$, and *positive indulging about the future* (FoRT-PI; $M = 1.55$; $SD = .80$), $t(195) = 2.13$, $p < .05$, compared to individuals without a lifetime history of suicide attempts ($M = 1.92$, $SD = .70$; and $M = 1.88$, $SD = .63$, respectively), $d = .66$ and $.46$, respectively. No analyses were conducted with recent suicide attempts, given the small number of individuals ($n = 4$) with a recent attempt. Group differences are shown in Fig. 2a.

There was a statistically significant difference in overall FoRT score between individuals with and without a lifetime history of suicidal ideation, $t(195) = 2.39$, $p < .05$, such that individuals who reported having ever thought or talked about suicide ($M = 1.60$, $SD = .41$) had higher FoRT scores, on average, than did individuals who did not ($M = 1.46$, $SD = .41$), $d = .34$. Group differences were also examined across the three FoRT subscales via a MANOVA, $F(3, 193) = 11.67$, p

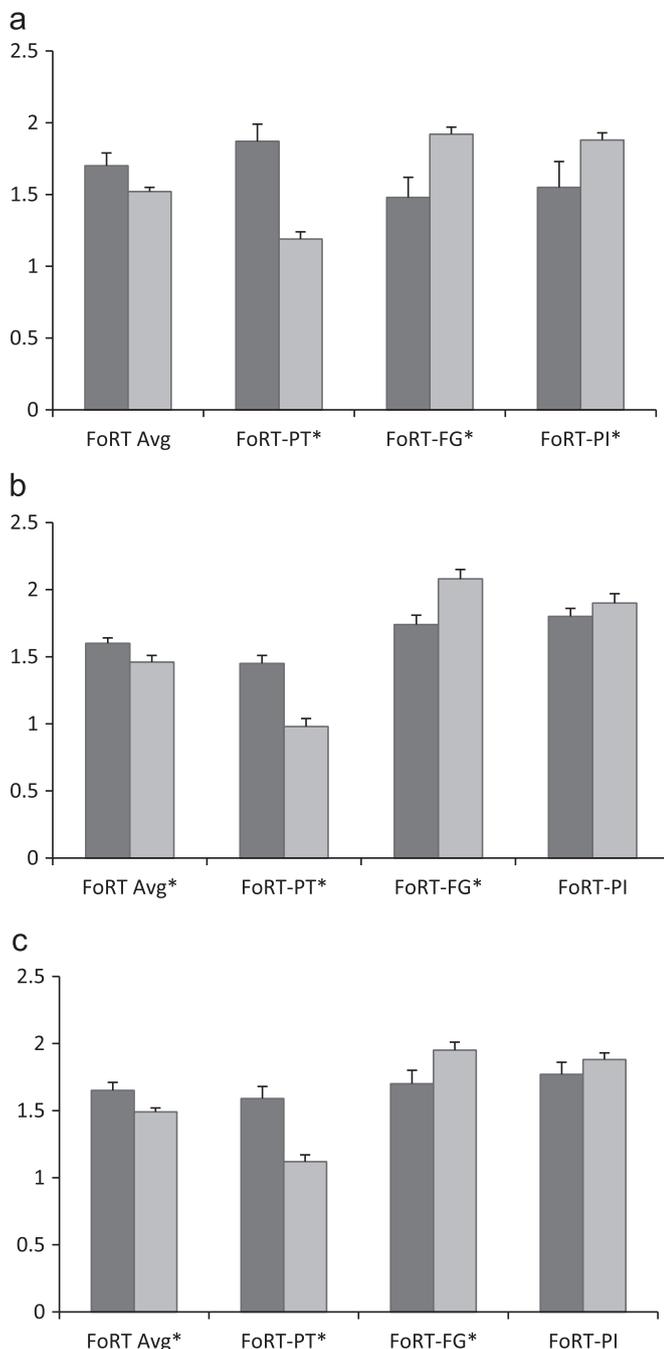


Fig. 2. Average future-oriented repetitive thought (overall and subscales) by lifetime suicide attempt history (a), lifetime suicidal ideation (b), and recent suicidal ideation (c). Darker bars represent individuals with a lifetime suicide attempt (a), lifetime suicidal ideation (b), or recent suicidal ideation (c), respectively. Lighter bars represent individuals with no lifetime suicide attempt history (a), no lifetime suicidal ideation (b), or no recent suicidal ideation (c), respectively. Scores on the y-axis represent averages (range = 0–3), rather than sums, to enable comparison across subscales. * $p < .05$.

< .01; Wilk's $\Lambda = .85$. Individuals who had ever talked about or thought about suicide reported higher levels of FoRT-PT ($M = 1.45$, $SD = .63$), $t(195) = 5.32$, $p < .01$, compared to individuals without lifetime suicidal ideation ($M = .98$, $SD = .57$), $d = .78$. However, individuals with a lifetime history of suicidal ideation reported lower levels of FoRT-FG ($M = 1.74$, $SD = .71$), $t(195) = 3.37$, $p < .01$, than did individuals without a history of suicidal ideation ($M = 2.08$, $SD = .66$), $d = .50$. *Positive indulging about the future* (FoRT-PI) did not distinguish between individuals with and without lifetime suicidal ideation, $t(195) = 1.02$, $p = .31$. Group differ-

ences are shown in Fig. 2b.

Regarding recent suicidal ideation (i.e., in the previous 12 months), individuals who thought about suicide in the previous 12 months reported higher average overall FoRT ($M = 1.65$, $SD = .45$) than individuals who did not ($M = 1.49$, $SD = .39$), $t(194) = 2.44$, $p < .05$, $d = .38$. Furthermore, differences emerged across the FoRT subscales, $F(3,192) = 8.60$, $p < .01$; Wilk's $\Lambda = .88$. There were significant differences in FoRT-PT, $t(194) = 4.80$, $p < .01$, such that individuals who had talked or thought about suicide in the previous 12 months reported higher levels of FoRT-PT ($M = 1.60$, $SD = .65$), compared to individuals without recent suicidal ideation ($M = 1.11$, $SD = .63$), $d = .77$. However, they reported lower levels of FoRT-FG ($M = 1.69$, $SD = .71$), $t(194) = 2.22$, $p < .05$, than did individuals without recent ideation ($M = 1.94$, $SD = .69$), $d = .36$. There was no statistically significant difference in FoRT-PI, $t(194) = 1.03$, $p = .30$. Group differences are shown in Fig. 2c.³

10. Discussion: Study 3

The FoRT scale distinguished between individuals who had thought about suicide at least once – either in their lifetime or in the previous 12 months – compared to individuals who had never thought about suicide. More specifically, FoRT-PT was higher among individuals with a history of suicidal ideation or attempts, compared to individuals without a history. Despite a large effect size, this finding should be interpreted with caution, given that only 20 individuals reported a suicide attempt. Whereas both of the positively valenced scales (i.e., FoRT-FG and FoRT-PI) distinguished between individuals with and without a lifetime suicide attempt history (with medium effect sizes), only goal-oriented repetitive thinking distinguished between individuals with and without lifetime or recent history of suicidal ideation (with small-to-medium effect sizes). Positive indulging about the future did not distinguish ideators from non-ideators (lifetime or recent). These findings provide further evidence of concurrent validity of the scale, as apart from its associations with symptoms of depression and GAD (found in Study 2), it was also associated with suicidal ideation and attempt history. The larger effect sizes for differences in FoRT-PT suggest that this scale may be the most clinically useful in distinguishing individuals at risk for suicidal ideation or attempts.

11. General discussion

Future-oriented cognition has long been implicated in the development of symptoms of depression, anxiety, and suicidal thoughts and behavior. In particular, hopelessness is one of the best-studied cognitive predictors of both depression and suicidal behavior (Abramson et al., 1998; Brown et al., 2000). However, the processes that generate hopeless evaluations of the future are not well understood. This study sought to address this gap in knowledge through the development of a new measure of the tendency to repetitively think about whether given positive or negative events will happen in one's future – i.e., future-oriented repetitive thinking – and to examine the psychometric properties of this measure.

The FoRT scale demonstrated good internal consistency reliability, along with convergent validity, in that it was correlated with other forms of self-focused and future-oriented repetitive thought – specifically, with brooding and reflective forms of rumination and with worry. The strength of the correlations indicated a stronger association with maladaptive forms of repetitive thought (i.e., brooding, worry) than with a more adaptive form of rumination (i.e., reflection). At the same

³ Analyses were also conducted with score on the Beck Depression Inventory-II (Beck et al., 1996), administered as part of the online study, as a covariate. After adjusting for depressive symptoms, only the FoRT-PT subscale distinguished between individuals with and without a history of a lifetime suicide attempt, $F(1,194) = 5.03$, $p < .05$, and suicidal ideation, $F(1,194) = 6.45$, $p < .05$, and no subscales distinguished individuals with and without recent suicidal ideation.

time, the FoRT scale showed good discriminant validity in also capturing forms of repetitive thought that are distinct from self-focused rumination and from worry, given that correlations with other forms of repetitive thought were not so high (i.e., above .80) that they measured the same construct. Test-retest reliability, however, was modest, which may reflect the variability between time points during which individuals completed the FoRT scale or may suggest that the degree to which individuals engage in future-oriented repetitive thought may vary by state variables, such as changes in mood or stress. It should be noted that previous studies of other forms of repetitive thought, such as rumination, have also found higher, but still modest test-retest reliability (e.g., .62 for brooding, .60 for reflection), though over longer periods (e.g., one year) (Trenor et al., 2003), suggesting some state variability in other forms of repetitive thinking.

Factor analyses of the FoRT scale revealed 3 factors. One of these – *pessimistic repetitive future thinking (FoRT-PT)* was associated with other types of maladaptive repetitive thought (i.e., brooding and worry), maladaptive future-oriented cognitions (i.e., depressive predictive certainty and hopelessness), and psychological symptoms (i.e., depressive symptoms, generalized anxiety symptoms, and suicidal ideation and attempt history).

In contrast, *repetitive thinking about future goals (FoRT-FG)* was had small to medium sized correlations with more adaptive (i.e., reflection, distraction) but not maladaptive (i.e., brooding, worry) thought processes, and was more specifically and negatively associated with maladaptive future-oriented cognition (i.e., medium-to-large correlation with hopelessness, small correlation with certainty when anticipating an absence of positive future outcomes) and with history of suicide attempts and (both lifetime and recent) suicidal ideation, but not with symptoms of depression and generalized anxiety. One possibility is that repetitive thinking about future goals, though perhaps not directly related to symptoms of depression and generalized anxiety, nor to other forms of maladaptive repetitive thinking, may be indirectly protective against symptoms. Specifically, it may protect against suicidal thought and behavior by reducing hopelessness-related cognitions. This possibility remains speculative and should be examined in future research using a prospective design.

Finally, *positive indulging about the future (FoRT-PI)* was associated with both adaptive and maladaptive cognitive processes and future-oriented cognitions. For instance, it had a small positive association with worry (though not brooding or reflection) but was also positively correlated with distraction. It was negatively associated with certainty when anticipating an absence of positive future outcomes and with hopelessness. It should be noted that many of these correlations were small (in the .2 range), and so conclusions regarding the adaptive versus maladaptive nature of positive indulging should remain speculative. Finally, though it was not associated with depression, generalized anxiety symptoms, or suicidal ideation, it was lower among individuals with a lifetime suicide attempt history than among those without a suicide attempt history. It is possible that the adaptive versus maladaptive nature of positive indulging depends on other factors. For instance, previous research suggests that indulging in positive fantasies about the future without considering how one might overcome obstacles that may arise is associated with less goal commitment and lower attainment of desired outcomes (Oettingen and Mayer, 2002). In addition, positive indulging about the future has been found to be concurrently associated with lower depressive symptoms, but with increases in depressive symptoms over time (Oettingen et al., 2016).

11.1. Strengths and limitations

Strengths of these studies include analysis of three separate racially and ethnically diverse samples, comparison of the FoRT scale with measures of both self-focused and future-oriented repetitive thinking, and examination of three separate symptom-related outcomes.

However, some limitations should be noted. The samples were non-clinical samples of primarily female college students, limiting the generalizability of the findings, although we note that depression, suicidal ideation, and suicide attempts are of particular interest in college-aged populations (ACHA, 2014; SAMHSA, 2009), and depression and ruminative cognition are elevated in women relative to men (Kessler et al., 2003; Nolen-Hoeksema et al., 2008). Importantly, Study 3 included a substantial number of participants with elevated depressive symptoms, and almost two-thirds of the sample reported a lifetime history of suicidal ideation. Finally, these studies were cross-sectional. Future research should examine these relationships prospectively.

11.2. Conclusion

This study provides evidence for future-oriented repetitive thinking as a construct that is related to, but distinct from, other forms of ruminative and repetitive thinking (i.e., brooding, reflection, and worry) and related to psychological symptoms (i.e., depression, anxiety, and suicidal ideation and attempts) known to be associated with future-oriented thought. Overall, the Future-Oriented Repetitive Thought (FoRT) scale appears to be a reliable and valid measure that captures both maladaptive and adaptive forms of future-oriented repetitive thought and that is associated with symptoms of depression, generalized anxiety disorder, and suicidal thoughts and behavior. It provides indices of overall future-oriented repetitive thought, as well as three subtypes, and allows measurement of processes of future-oriented thought to complement existing measures of the output of such thought (e.g., attitudes, beliefs, and predictions about the future). It is hoped that the FoRT measure will enable examination of future-oriented repetitive thought as an important process through which hopelessness, pessimism, and similar cognitions might be acquired and maintained over time.

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References

- Abramson, L.Y., Metalsky, G.I., Alloy, L.B., 1989. Hopelessness depression: a theory-based subtype of depression. *Psychol. Rev.* 96, 358–372.
- Abramson, L.Y., Alloy, L.B., Hogan, M.E., Whitehouse, W.G., Cornette, M., Akhavan, S., Chiara, A., 1998. Suicidality and cognitive vulnerability to depression among college students: a prospective study. *J. Adolesc.* 21, 473–487.
- American College Health Association, 2014. American College Health Association–National College Health Assessment II: Reference Group Executive Summary Spring 2014. American College Health Association, Hanover, MD.
- American Psychiatric Association, 1994. *Diagnostic and Statistical Manual of Mental Disorders* 4th ed.. Author, Washington, DC.
- Andersen, S., Lyon, J.E., 1987. Anticipating undesired outcomes: the role of outcome certainty in the onset of depressive affect. *J. Exp. Soc. Psychol.* 23, 428–443.
- Andersen, S.M., 1990. The inevitability of future suffering: the role of depressive predictive certainty in depression. *Soc. Cogn.* 8, 203–228.
- Andersen, S.M., Schwartz, A.H., 1992. Intolerance of ambiguity and depression: a cognitive vulnerability factor linked to hopelessness. *Soc. Cogn.* 10, 271–298.
- Andersen, S.M., Limpert, C., 2001. Future-event schemas: automaticity and rumination in major depression. *Cogn. Ther. Res.* 25, 311–333.
- Andersen, S.M., Spielman, L.A., Bargh, J.A., 1992. Future-event schemas and certainty about the future: automaticity in depressives' future-event predictions. *J. Personal. Soc. Psychol.* 63, 711–723.
- Beck, A.T., Steer, R.A., 1988. *Manual for the Beck Hopelessness Scale*. The Psychological Corporation, San Antonio, TX.
- Beck, A.T., Weissman, A., Lester, D., Trexler, L., 1974. The measurement of pessimism: the hopelessness scale. *J. Consult. Clin. Psychol.* 42, 861–865.

- Beck, A.T., Brown, G., Steer, R.A., 1989. The prediction of eventual suicide by clinical ratings of hopelessness. *J. Consult. Clin. Psychol.* 57, 309–310.
- Beck, A.T., Steer, R.A., Brown, G.K., 1996. *Manual for the Beck Depression Inventory-II*. Psychological Corporation, San Antonio, TX.
- Borkovec, T.D., Shadick, R.N., Hopkins, M., 1991. The nature of normal and pathological worry. In: Rapee, R.M., Barlow, D.H. (Eds.), *Chronic Anxiety: Generalized Anxiety Disorder and Mixed Anxiety-Depression*. Guilford Press, New York, 29–51.
- Borkovec, T.D., Alcaine, O., Behar, E., 2004. Avoidance theory of worry and generalized anxiety disorder. In: Heimberg, R.G., Turk, C.L., Mennin, D.S. (Eds.), *Generalized Anxiety Disorder: Advances in Research and Practice*. Guilford Press, New York, 320–350.
- Brown, G.K., Beck, A.T., Steer, R.A., Grisham, J.R., 2000. Risk factors for suicide in psychiatric outpatients: a 20-year prospective study. *J. Consult. Clin. Psychol.* 68, 371–377.
- Brown, T.A., Antony, M.M., Barlow, D.H., 1992. Psychometric properties of the Penn State Worry Questionnaire in a clinical anxiety disorders sample. *Behav. Res. Ther.* 30, 33–37.
- Ehring, T., Zetsche, U., Weidacker, K., Wahl, K., Schonfeld, S., Ehlers, A., 2011. The Perseverative Thinking Questionnaire (PTQ): validation of a content-independent measure of repetitive negative thinking. *J. Behav. Ther. Exp. Psychiatry* 42, 225–232.
- Foa, E.B., Steketee, G., Rothbaum, B.O., 1989. Behavioral/cognitive conceptualizations of post-traumatic stress disorder. *Behav. Ther.* 20, 155–176.
- Fresco, D.M., Frankel, A.N., Mennin, D.S., Turk, C.L., Heimberg, R.G., 2002. Distinct and overlapping features of rumination and worry: the relationship of cognitive production to negative affective states. *Cogn. Ther. Res.* 26, 179–188.
- Fresco, D.M., Mennin, D.S., Heimberg, R.G., Turk, C.L., 2003. Using the Penn State Worry Questionnaire to identify individuals with generalized anxiety disorder: a receiver operating characteristic analysis. *J. Behav. Ther. Exp. Psychiatry* 34, 283–291.
- Gard, D.E., Kring, A.M., Germans Gard, M., Horan, W.P., Green, M.F., 2007. Anhedonia in schizophrenia: distinctions between anticipatory and consummatory pleasure. *Schizophr. Res.* 93, 253–260.
- Hu, L.-T., Bentler, P.M., 1999. Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Struct. Equ. Model.* 6, 1–55.
- Jacobson, J.A., Weary, G., Edwards, J.A., 1999. Certainty-related beliefs and depressive symptomatology: concurrent and longitudinal relationships. *Soc. Cogn.* 17, 19–45.
- Joiner, T.E., Rudd, M.D., 1996. Disentangling the interrelations between hopelessness, loneliness, and suicidal ideation. *Suicide Life-Threat. Behav.* 26, 19–26.
- Kessler, R.C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K.R., Wang, P.S., 2003. The epidemiology of Major Depressive Disorder: results from the National Comorbidity Survey Replication (NCS-R). *J. Am. Med. Assoc.* 289, 3095–3105.
- Krajniak, M., Miranda, R., Wheeler, A., 2013. Rumination and pessimistic certainty as mediators of the relation between lifetime suicide attempt history and future suicidal ideation. *Arch. Suicide Res.* 17, 196–211.
- Lavender, A., Watkins, E., 2004. Rumination and future thinking in depression. *Br. J. Clin. Psychol.* 43, 129–142.
- Lee I.A., Preacher K.J., 2013. Calculation for the test of the difference between two dependent correlations with one variable in common [Computer software]. Available from (<http://quantpsy.org>)
- Marroquín, B., Nolen-Hoeksema, S., Miranda, R., 2013. Escaping the future: affective forecasting in escapist fantasy and attempted suicide. *J. Soc. Clin. Psychol.* 32, 446–463.
- McEvoy, P.M., Mahoney, A.E.J., Moulds, M., 2010. Are worry, rumination, and post-event processing one and the same? Development of the Repetitive Thinking Questionnaire. *J. Anxiety Disord.* 24, 509–519.
- Meyer, T.J., Miller, M.L., Metzger, R.L., Borkovec, T.D., 1990. Development and validation of the Penn State Worry Questionnaire. *Behav. Res. Ther.* 28, 487–495.
- Miranda, R., Mennin, D.S., 2007. Depression, generalized anxiety disorder, and certainty in pessimistic predictions about the future. *Cogn. Ther. Res.* 31, 71–82.
- Miranda, R., Fontes, M., Marroquín, B., 2008. Cognitive content-specificity in future expectancies: role of hopelessness and intolerance of uncertainty in depression and GAD symptoms. *Behav. Res. Ther.* 46, 1151–1159.
- Morrison, A.S., Heimberg, R.G., 2013. Social anxiety and social anxiety disorder. *Annu. Rev. Clin. Psychol.* 9, 249–274.
- Newman, M.G., Zuellig, A.R., Kachin, K.E., Constantino, M.J., Przeworski, A., Erickson, T., Cashman-McGrath, L., 2002. Preliminary reliability and validity of the Generalized Anxiety Disorder Questionnaire-IV: a revised self-report diagnostic measure of generalized anxiety disorder. *Behav. Ther.* 33, 215–233.
- Nolen-Hoeksema, S., Morrow, J., 1991. A prospective study of depression and posttraumatic stress symptoms after a natural disaster: the 1989 Loma Prieta earthquake. *J. Personal. Soc. Psychol.* 61, 115–121.
- Nolen-Hoeksema, S., Wisco, B.E., Lyubomirsky, S., 2008. Rethinking rumination. *Perspect. Psychol. Sci.* 3, 400–424.
- Oettingen, G., Mayer, D., 2002. The motivating function of thinking about the future: expectations versus fantasies. *J. Personal. Soc. Psychol.* 83, 1198–1212.
- Oettingen, G., Mayer, D., Portnow, S., 2016. Pleasure now, pain later: positive fantasies about the future predict symptoms of depression. *Psychol. Sci.*, (in press).
- Olatunji, B.O., Naragon-Gainey, K., Wolitzky-Taylor, K.B., 2013. Specificity of rumination in anxiety and depression: a multimodal meta-analysis. *Clin. Psychol.: Sci. Pract.* 20, 225–257.
- Orme, J.G., Reis, J., Herz, E.J., 1986. Factorial and discriminant validity of the Center for Epidemiological Studies Depression (CES-D) scale. *J. Clin. Psychol.* 42, 28–33.
- Radloff, L.S., 1977. The CES-D Scale: a self-report depression scale for research in the general population. *Appl. Psychol. Meas.* 1, 385–401.
- Salkovskis, P.M., Wroe, A.L., Gledhill, A., Morrison, N., Forrester, E., Richards, C., Reynolds, M., Thorpe, S., 2000. Responsibility attitudes and interpretations are characteristic of obsessive-compulsive disorder. *Behav. Res. Ther.* 38, 347–372.
- Sargalsa, J., Miranda, R., Marroquín, B., 2011. Being certain about an absence of the positive: specificity in relation to hopelessness and suicidal ideation. *Int. J. Cogn. Ther.* 4, 104–116.
- Singer, J.L., 2009. Researching imaginative play and adult consciousness: implications for daily and literary creativity. *Psychol. Aesthet. Creat. Arts* 3, 190–199.
- Singer, J.L., Antrobus, J.S., 1966. *Imaginal Processes Inventory*. Center for Research in Cognition and Affect, Graduate Center, City University of New York, New York, NY.
- Smith, J.M., Alloy, L.B., Abramson, L.Y., 2006. Cognitive vulnerability to depression, rumination, hopelessness, and suicidal ideation: multiple pathways to self-injurious thinking. *Suicide Life-Threat. Behav.* 36, 443–454.
- Starcevic, V., 1995. Pathological worry in major depression: a preliminary report. *Behav. Res. Ther.* 33, 55–56.
- Substance Abuse and Mental Health Services Administration (SAMHSA), 2009. (Office of Applied Studies) *The NSDUH Report: Suicidal Thoughts and Behaviors Among Adults*. SAMHSA, Rockville, MD.
- Tallis, F., Eysenck, M.W., 1994. Worry: mechanisms and modulating influences. *Behav. Cogn. Psychother.* 22, 37–56.
- Treynor, W., Gonzalez, R., Nolen-Hoeksema, S., 2003. Rumination reconsidered: a psychometric analysis. *Cogn. Ther. Res.* 27, 247–259.
- Vasey, M.W., Borkovec, T.D., 1992. A catastrophizing assessment of worrisome thoughts. *Cogn. Ther. Res.* 16, 505–520.
- Watkins, E., 2008. Constructive and unconstructive repetitive thought. *Psychol. Bull.* 134, 163–206.
- Watson, D., Clark, L.A., Carey, G., 1988. Positive and negative affectivity and their relation to anxiety and depressive disorders. *J. Abnorm. Psychol.* 97, 346–353.