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

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\textbf{ABSTRACT}

\textbf{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 \textit{Future-Oriented Repetitive Thought} (FoRT) Scale.

\textbf{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.

\textbf{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), 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.

\textbf{Limitations:} Cross-sectional data limit conclusions that can be drawn about directionality.

\textbf{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 repetitive thinking that involves considering whether given positive and negative outcomes will happen in one's future (Andersen et al., 1992; Andersen and Limper, 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 well-being 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.
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; Sargalsa 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 (Foas 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 perseverance 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 unproductive-ness 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.