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Empirical article

Self-Concept Focus: A Tendency to Perceive Autobiographical Events as Central to Identity

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Self-concept Focus is a 15-item measure of the disposition to make autobiographical memories central to one's self-concept and thus to rehearse them more frequently. In studies with 400 MTurk workers and 299 undergraduates, Self-concept Focus had high reliability ($\alpha \sim .83$), good test-retest stability ($r = .66$) that did not decline between 7 and 54 days, good psychometric properties in a bifactor measurement model, and results that replicated across studies. A factor analysis of nine measures relevant to self-concept resulted in two factors. Self-concept Focus, Reflection, Reappraisal and Private Self-Consciousness all loaded on one factor, suggesting an underlying dimension of elaborative rehearsal of memories and emotion regulation. Self-concept Focus also correlated with PTSD symptoms for a single very negative event and thus with opportunities to modify such memory-based symptoms. Given its association with elaborative rehearsal and emotion regulation, Self-concept Focus has potential applied relevance in clinical, forensic and consumer contexts.

General Audience Summary

People differ in the degree to which they make events in their lives central to their self-concept and identity. Some focus on how events are related to their self-concept, whereas others do not. Self-concept Focus measures this individual difference. It is a 15-item scale in which people rate each three successive items on a different event. Two studies with relatively large samples drawn from different populations demonstrated that the scale had high reliability, demonstrated good test-retest stability over five weeks, and correlated in reasonable and replicable ways with a range of relevant measures, including other measures of self-concept and identity.

Elaborative rehearsal caused by reflecting on memories might provide one way to integrate the research area of self-concept and identity with more memory-based approaches to applied issues. Self-concept Focus correlates with measures of reflecting on the importance of events to one's life. Thus, when life is positive, this reflection can add richness. However, the increased elaborative rehearsal in the absence of reexperiencing events might increase confidence without necessarily increasing accuracy in applied situations including when people are consumers, voters, and eyewitnesses.

When negative events, dysphoria, or traumatic symptoms unrelated to events occur, higher levels of Self-concept Focus could help increase and maintain negative affect but also provide opportunities to modify such memory-based symptoms. Self-concept Focus correlated with clinical symptoms of a single very negative event suggesting that it can be used in helping to understand clinical disorders.

Keywords: Autobiographical memory, Self-concept, Cognition, Individual differences

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Considerable evidence suggests that people vary in the degree to which they make individual events central to their identity. Self-concept Focus is a new instrument created to provide an individual difference test of variability that in past has been measured only on individual events. Self-concept Focus does not take long to administer and is intended to generalize over people who have a variety of life histories. To describing how Self-concept Focus developed from a test of individual memories, its psychometric properties are investigated, the results are replicated in a sample drawn from a different population, and Self-concept Focus is located in a theoretical context of existing standardized tests that measure related concepts about the self.

There are individual differences in other processes involved in autobiographical memory, which suggest that Self-concept Focus might also be an individual difference. These include the tendency to have few or many involuntary autobiographical memories (Berntsen, Rubin, & Salgado, 2015), the degree to which scenes are recalled in autobiographical memories (Rubin, 2020 online), how well people think they remember personal events (Berntsen, Hoyle, & Rubin, 2019) and many commonly used ratings of autobiographical memories including reliving, belief, emotions, narrative, and visual imagery (Rubin, Schrauf, & Greenberg, 2004). Thus, there is considerable stability in measures of autobiographical memory that contribute to the construction, evaluation, and use of autobiographical memories (Rubin, 2006). Such stable individual differences in these measures are consistent with the chronic nature of clinical disorders including posttraumatic stress disorder, anxiety disorders and worry that have aspects of past and potential future negative autobiographical memories as symptoms (e.g., Rubin, Boals, & Berntsen, 2008; Rubin, Dennis, & Beckham, 2011). These individual differences are also consistent with rumination that occurs in depression initiated by voluntary and involuntary autobiographical memories of negative past events (Del Palacio-Gonzalez et al., 2017).

The Motivation for Basing Self-concept Focus on Ratings of Autobiographical Memories

In order to build on the extensive literature on the Centrality of Event Scale (Berntsen & Rubin, 2006; Berntsen & Rubin, 2007) and on the well-developed theories and extensive empirical results of autobiographical memory recall, the recalls of specific autobiographical memories were rated in the current research instead of rating memory in general (e.g., Berntsen et al., 2015; Berntsen et al., 2019). Even with ratings of specific memories, there are effects of focusing on the broader life significance of events, as Self-concept Focus ratings do, versus of focusing on concrete details internal to each event (Boucher & Scoboria, 2015).

The Role of Self-concept in Autobiographical Memory

The self is a key concept throughout psychology (Leary & Tangney, 2012). In the hyphenated self-terms Allport (1955) used to narrow the self to manageable scientific topics, the self often does no more than limit the concept attached to it by the hyphen to the same person (e.g., self-concept, self-control, self-deception, self-reference). For autobiographical memory, the self even includes a person at an earlier or future place and time where they may not really be themselves (Rubin, 2019). Moreover, for the term self-concept, the needed details of the self are particular to the theory describing the self-concept (e.g., Campbell, Assanand, & Di Paula, 2003; Hoyle, 2006).

Given the resulting breadth of the usage of the term self-concept, only the literature most relevant to Self-concept Focus can be noted here to point the interested reader to a broader context. In addition to measures of self-concept based on participants rating their recalls of autobiographical memories, the two most relevant areas are narrative identity, which is a key component of personality (e.g., Adler, Lodi-Smith, Philippe, & Houle, 2016; Hallford & Mellor, 2017; McAdams & Pals, 2006), and narrative and narrative coherence (e.g., Habermas & Bluck, 2000; McLean, Pasupathi, Greenhoot, & Fivush, 2017; Reese et al., 2011).

The 15 items of Self-concept Focus all measure the degree to which events are related to self-concept. The items also all require, or directly measure, elaborative rehearsal of the kind that leads to increased organization and long-term memory retrieval under a range of conditions in memory tasks (e.g., Craik & Lockhart, 1972; Geiselman & Bjork, 1980; Nairne, 1986) through both increased availability and accessibility (Tulving & Pearlstone, 1966). Elaborative rehearsal has been considered separately in the cognitive literature for individual to-be-remembered items and in the Self-concept Focus test for individual autobiographical memories. For use in understanding the self-concept more broadly, it should be expanded to include the tendency to pay attention to and rehearsal of aspects of the self that are more abstract than individual to-be-remembered items. These including roles, goals, attributes, and values, and the how they are influenced by the current context in which the self-concept is being used.

Support for Self-concept Focus from Research on the Centrality of Event Scale

Self-concept Focus uses items from the Centrality of Event Scale (CES, Berntsen & Rubin, 2006; Berntsen & Rubin, 2007; Gehrt, Berntsen, Hoyle, & Rubin, 2018), an instrument developed to examine the extent to which a single traumatic or stressful event is perceived as central to an individual's identity and life story. Three CES items were each paired with five emotionally neutral events using 15 of the original 20 CES items. Nonetheless, the CES and Self-concept Focus have different functions. The CES examines the extent to which a single event is perceived as central to an individual's identity and life story. In contrast, Self-concept Focus was constructed to provide an estimate of how individuals would react to events in general rather than the one, usually negative, event. Thus, although CES and Self-concept Focus share items, neither can function as a replacement for the other. To motivate why items from the CES, which is a test based on one specific event, should be converted into a test for events in general, findings from the CES are briefly reviewed.

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The CES correlated with emotional states and disorders in a meta-analysis as follows: grief, .54; PTSD symptom severity, .51; shame, .38; depression, .28; anxiety, .27; and dissociation, .25 (Gehrt et al., 2018). The CES correlated with measures of autobiographical memories for negative events as follows: vividness, .40; emotional intensity, .38; and physical reactions indicating emotional arousal, .30. Because the correlations reported in the meta-analysis were based on between 1260 and 37,626 participants, the standard errors were small, ranging from .004 to .024, which allows for discrimination among the various measures. The CES is related to many disorders and properties of autobiographical memory, with correlations that vary widely among them. Thus, it offers the potential for being developed into an individual differences probe to study the differential effects of self-concept focus.

Research applying the CES to different kinds of events has shown consistent effects that separate out valence and other factors while still demonstrating moderate correlations. Positive events produce higher scores on the CES than negative events (Berntsen, Rubin, & Siegler, 2011; Rasmussen & Berntsen, 2013; Zaragoza Scherman, Salgado, Shao, & Berntsen, 2015a; Zaragoza Scherman, Salgado, Shao, & Berntsen, 2015b), with scores on the CES of very negative events reaching those of very positive events only in participants who are in the clinical range of posttraumatic stress symptoms (Berntsen et al., 2011). Future imagined events produce higher scores on the CES than past events, and the CES scores increase the further the events are into the future or past (Berntsen & Bohn, 2010; Özbek, Bohn, & Berntsen, 2017). A recent paper including a set of three studies, each containing ten or eleven different events, replicated the findings on the effects of valence, future versus past, and distance from the present (Rubin, Berntsen, Deffler, & Brodar, 2019a). It also showed consistent correlations of about .30 among such events suggesting that an individual differences disposition to recall and rate events as central to one's identity and life story exists in addition to, and seemingly independent of, the effects of the event. Moreover, the CES rated on single negative events correlates with chronic clinical disorders, personality traits, and properties of autobiographical memories related to emotional-reaction symptoms, which suggests the possibility that the CES may have an individual differences component when averaged over many events. Consistent with these data, Boykin and Teng (2019) suggested using the CES to increase the reliability of diagnosis and effectiveness of treatment in situations where there is not one specific index trauma. Based on cross-lagged studies, Boals et al. (in press) suggest therapies to reduce event centrality in order to reduce PTSD symptom severity. Thus, by using items of the CES, Self-concept Focus can integrate research on the centrality of single negative events with a general tendency to make all events central.

Study 1. An Initial Examination of Self-concept Focus

Methods

Materials. Commonly used standardized tests were used to locate Self-concept Focus in a theoretical context of self-concept and reactions to negative events. The tests were the Emotion Regulation Questionnaire reappraisal and repression scales (ERQ, Gross & John, 2003), the Rumination and Reflection Questionnaire rumination and reflection scales (RRQ, Joireman, Parrott, & Hammersla, 2002; Trapnell & Campbell, 1999), Self Concept Clarity (SCC, Campbell et al., 1996), and the Revised Self-Consciousness Scale private, public, and social anxiety scales (SCSR, Scheier & Carver, 1985). Because the initials used to refer to these instruments are similar to each other and may be unfamiliar to many readers (e.g., the ERQ, RRQ, SCC, SCSR, and the SCF), longer descriptive names are used throughout the paper after their introduction here.

Emotion regulation reappraisal and *suppression* are the two scales of the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003). The 6-item reappraisal scale assesses the degree to which people construe potentially emotion-producing situations in ways that modify their emotional impact (e.g., I control my emotions by changing the way I think about the situation I'm in). The 4-item suppression scale assesses the degree to which people modulate or inhibit an ongoing emotionally expressive behavior (e.g., I control my emotions by not expressing them). Both scales show good evidence of inter-item reliability as well as construct and criterion-related validity (Gross & John, 2003). Reappraisal, unlike suppression, requires rehearsal of the memory.

Rumination and *Reflection* are the two scales of the Rumination and Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999). The 12-item rumination scale assesses the tendency to engage in recurrent thinking or ruminating about threats, losses, or injustices involving oneself (e.g., I tend to 'ruminate' or dwell over things that happen to me for a really long time afterward and I spend a great deal of time thinking back over my embarrassing or disappointing moments). The 12-item reflection scale assesses the tendency to reflect on oneself out of intrinsic interest or the enjoyment of abstract or philosophical musings (e.g., I love exploring my 'inner' self and My attitudes and feelings about things fascinate me). Both scales show high inter-item reliability and good convergent and discriminant validity (Joireman et al., 2002; Trapnell & Campbell, 1999). Both scales increase rehearsal, but reflection is elaborative or active processing whereas rumination is maintenance or passive, processing, which does not lead to increased organization and long-term memory retrieval under a range of conditions (e.g., Craik & Lockhart, 1972; Geiselman & Bjork, 1980; Nairne, 1986).

Private, Public, and *Social Anxiety Self-consciousness* are the three scales of the Self-Consciousness Scale Revised (SCSR; Scheier & Carver, 1985). It consists of 22 items rated on a 0 to 3 scale of *not* at all like me, a little like me, somewhat like me, and a lot like me. The nine items of the Private Self-consciousness Scale assess the tendency to think about and attend to the hidden aspects of the self, aspects that are personal in nature including privately held beliefs, aspirations, values, and feelings (e.g., I'm always trying to figure myself out.). The seven items of the Public Self-consciousness Scale assess the tendency to think about matters of public display, qualities of the self from which impressions are formed in other people including overt behavior, mannerisms, stylistic quirks, and expressive qualities (e.g., I care a lot about how I present myself to others.). The six items of the Social Anxiety Self-consciousness Scale assess a sense of

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apprehensiveness over being evaluated by other people (e.g., It takes me time to get over my shyness in new situations.). Private Self-consciousness requires active processing leading to increased organization of the autobiographical memory.

Self-concept Clarity (SCC, Campbell et al., 1996) assesses the extent to which beliefs about the self are clearly and confidently defined, internally consistent, and stable. The 12 items are rated on a 1 strongly disagree to 5 strongly agree scale (e.g., I seldom experience conflict between the different aspects of my personality and in general, I have a clear sense of who I am and what I am). The test has a single factor and good test-retest reliability.

Self-concept Focus (SCF). An individual differences test was developed to assess the disposition of people to make events central to their lives. Ideally, the test would generalize over people with different life histories and would not take long to administer. Two kinds of decisions had to be made: the items and the events to use. Items from the original 20 items of the CES were used with each item appearing at most once to encourage participants to read and think about each item. Because all items of the CES correlate substantially with each other, six events were each paired with three different items from the CES without considering how well each item correlated with the CES as a whole. To arrive at the required 18 items while trying to keep the variety of the original 20-item CES, I eliminated two items that seemed most redundant conceptually with an item that would remain and did not seem as clear as that items. This led to the removal of items 9 and 11 from in Berntsen and Rubin (2006). Six event cues were developed based on ones that had worked earlier for the CES (Rubin, 2014; Rubin et al., 2018).

Two versions of these 6 events and 18 items were piloted, with the order of events and items shuffled from one version to the other. Based on the contribution of individual events to the overall Cronbach's alpha, one event was eliminated (Please think of an event you remember that involved a relationship with a family member). This action required the elimination of three additional items. Items 4, 5, and 8 in Berntsen and Rubin (2006) were eliminated. The choice of these items was again based on finding items whose meanings were close to other existing items and did not seem as clear as those other items. The resulting test is shown in Table 1. The final form of Self-concept Focus contains 15 items. They follow the order of items in the original 20-item CES, with each three consecutive items rated with respect to a cue that refers to a different event. The items all measure the degree to which events are related to self-concept and require, or directly measure, elaborative rehearsal.

Participants. TurkPrime (Litman, Robinson, & Abberbock, 2016) was used to select 400 MTurk workers (Buhrmester, Kwang, & Gosling, 2011). There were 202 males and 198 females, with an average age of 33.82 years (range 21–50). A large number of participants were chosen to meet our objective of obtaining reliable data on the psychometric properties of Self-concept Focus and its relation to other instruments.

Procedure. The study was administered on the Qualtrics survey platform. Each participant was first asked to fill in a consent form and answer demographic questions. The instruments were completed in the following order: Self-concept Focus, rumination, reflection, private, public, and social anxiety self-consciousness, emotion regulation reappraisal and suppression, self-concept clarity. In order to be included in the study, the participants had to be native English speakers, pass three attention checks, accept the informed consent, spend more than five minutes on answering the survey, and not be younger than 18 or older than 50. Each MTurk worker was paid US $2.

Table 1
Self-concept Focus

Please think of an event you remember that involved school.
1. This event has become a reference point for the way I understand new experiences.
2. I automatically see connections and similarities between this event and experiences in my present life.
3. I feel that this event has become part of my identity.

Please think of an event you remember that involved sports, entertainment, or hobbies.
4. This event has become a reference point for the way I understand myself and the world.
5. I believe that people who haven't experienced this type of event think differently than I do.
6. I feel that this event has become a central part of my life story.

Please think of an event you remember that involved work.
7. This event has colored the way I think and feel about other experiences.
8. This event has become a reference point for the way I look upon my future.
9. If I were to weave a carpet of my life, this event would be in the middle with threads going out to many other experiences.

Please think of an event you remember that involved a relationship with someone you know well but who is not a family member.
10. My life story can be divided into two main chapters: one is before and one is after this event happened.
11. This event permanently changed my life.
12. I often think about the effects this event will have on my future.

Please think of an event you remember that involved a phone call, mail, email, text or other message you received.
13. This event was a turning point in my life.
14. If this event had not happened to me, I would be a different person today.
15. When I reflect upon my future, I often think back to this event.

Note: The instructions are "You will be asked to think of six events that happened to you and answer three questions about each of them in an honest and sincere way by choosing a number from 1 to 5 where 1 is totally disagree and 5 is totally agree." The 15 items are from the CES, which is copyrighted and for which the authors gave permission 'to use the scales for research purposes' (Berntsen & Rubin, 2006, p. 229). Permission is also given to use the event cues for research purposes. Thus, Self-concept Focus is freely available for research purposes.

Results

Basic measures. The correlation between Self-concept Focus and the other measures will be considered in more detail in the General Discussion once correlations are also reported in Study 2. Table 2 includes the means, standard deviations, and reliabilities for all tests and their correlation with Self-concept Focus. Age and gender correlated with Self-concept Focus .03 and −.03, with male coded 0 and female 1. The correlations among all measures shown in Table 2 are included in the Supplemental Materials Table 1 (The Open Science Framework DOI 10.17605/OSF.IO/HZYP9 contains all supplemental materials).

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Table 2
Basic statistics and correlations for Study 1

Measure	Mean	*SD*	α	*r* with self-concept focus
Reappraisal Emotion Regulation	30.24	7.24	.91	.17***
Suppression Emotion Regulation	15.46	5.98	.83	.07
Rumination	39.71	12.14	.95	.16**
Reflection	40.65	11.15	.94	.23****
Self-concept Clarity	43.69	11.87	.94	−.12
Private Self-consciousness	15.19	5.43	.82	.22****
Public Self-consciousness	11.84	4.97	.84	.11*
Social Anxiety Self-consciousness	10.44	5.33	.88	−.00
Self-concept Focus	3.01	.98	.80	–

Note: $N = 400$. α is Cronbach's alpha.
* $p < .05$.
** $p < .01$.
*** $p < .001$.
**** $p < .0001$.

Internal structure of Self-concept Focus. Although the reliability and correlations of Self-concept Focus with other measures support its use as a single individual differences scale, correlations from the same event were expected to be more highly correlated than are those from different events. This pattern was observed. There are 105 correlations among the items of Self-concept Focus (15 × 14/2). Of these, 15 are within memory correlations (5 memories × 3 correlations among the 3 items in each memory). Their mean was .71 (median .71, range of .58 to .81). The remaining 90 correlations had a lower non-overlapping distribution of correlations (mean .26, median .25, range of .04 to .51). The mean correlation of .25 between events is consistent with the correlation of .22 between positive and negative events in the meta-analysis (Gehrt et al., 2018), and the .30 correlation between positive and negative, future and past, and other events in general (Rubin et al., 2019a; Rubin, Deffler, & Umanath, 2019b). The responses of each participant to the Self-concept Focus items are provided in computer readable form in Supplemental Materials Table 2.

Each participant recalled an event to each of the five event category cues without added restrictions. This choice was an attempt to come as close as possible in the test taking situation to a more natural situation in order to obtain a sample of memories unique to each participant's own life and dispositions. Thus, it is difficult to assign any particular description or theoretical interpretation to the participant-selected events beyond measuring their effect.

A bifactor measurement model was estimated using confirmatory factor analysis to generate statistical estimates of the importance of the five events and of the fifteen items (ref. Chen, Hayes, Carver, Laurenceau, & Zhang, 2012; Reise, 2012; Rodriguez, Reise, & Haviland, 2016a; Rodriguez, Reise, & Haviland, 2016b). The bifactor model assumes each of the 15 items of Self-concept Focus is influenced by a general factor that influences all 15 items, and a group factor corresponding to the event to which it refers. The general factor corresponds to the underlying concept of Self-concept Focus, which is a disposition to make events central to one's identity and life story.

Table 3
Standardized maximum likelihood estimates of loadings for the Study 1 and 2 bifactor models

	Study 1		Study 2	
Items	g	Group	g	Group
Items 1 school	.675	.537	.650	.556
Items 2 school	.547	.654	.498	.648
Items 3 school	.579	.581	.508	.529
Items 4 leisure	.691	.596	.590	.550
Items 5 leisure	.478	.517	.482	.579
Items 6 leisure	.601	.557	.495	.795
Items 7 work	.569	.543	.496	.631
Items 8 work	.630	.629	.425	.735
Items 9 work	.587	.483	.309	.574
Items 10 relationship	.357	.813	.332	.748
Items 11 relationship	.355	.791	.311	.871
Items 12 relationship	.470	.685	.383	.694
Items 13 message	.332	.838	.281	.881
Items 14 message	.271	.858	.329	.871
Items 15 message	.421	.750	.274	.793

Note: Study 1, $N = 400$; Study 2, $N = 299$.

The group factors, which do not covary in the model, correspond to commonality between items referring to a specific event that is not attributable to the general factor. The fit of the model is evaluated using standard fit indices—the comparative fit index (CFI; values (.95 expected for models consistent with the data), the root mean square error of approximation (RMSEA; desired value (.08), and the standardized root mean square residual (SRMR; desired value (.06). The model provided a good account of the data, χ^2 ($N = 400$, df = 75) = 181.69, $p < .001$, CFI = .97, RMSEA = .06, SRMR = .05. The standardized maximum likelihood estimates of the loadings for the model are shown in the first two columns in Table 3.

The relative contribution of the general and group factors to variance in item responses can be evaluated by generating and interpreting values that index the proportion of common variance attributable to the factors (Rodriguez et al., 2016a; Rodriguez et al., 2016b). A general value, omega (ω) is comparable to

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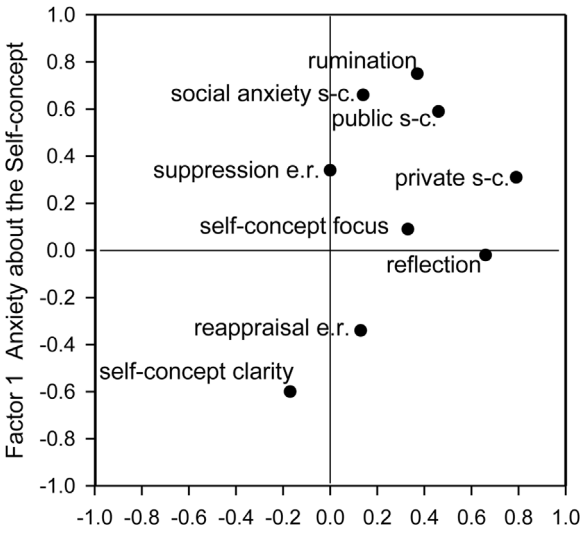

Figure 1. A factor analysis of all scales from Study 1. Abbreviation: s-c., self-consciousness; e.r., emotion regulation.

coefficient alpha, indexing the proportion of variance in scale scores attributable to all sources of commonality. The observed value was .95. Two related values separate the influence of the general and group factors. Omega hierarchical (ωh) indexes the proportion of variance in the total scale score attributable to the general factor. Omega hierarchical subscale (ωhs) indexes the proportion of variance attributable to the corresponding group factor after variance attributable to the general factor is accounted for. The value of ωh was .70, indicating that about 70% of the variance in Self-concept Focus scale scores can be attributed to a general factor that transcends specific events. Values of ωhs fell into two groups. Values were .43, .40, and .40 for school-, leisure-, and work-related events, respectively, suggesting relatively little commonality after the general factor is accounted for. Values were .71, and .78 for relationship- and message-related events, respectively, suggesting these events were relatively strong sources of commonality independent of the general factor.

Relation of Self-concept Focus to other scales. Study 1 included nine tests that measure concepts related to self-concept and self-focus, which was sufficient for a factor analysis that placed Self-concept Focus into the context of established standardized tests. SAS proc factor was used with a promax rotation and SMC priors (9.4 TS Level 1M1, SAS Institute Inc., Cary, NC, USA). The first five eigenvalues were 2.19, 1.16, .33, .13, and .03. There were two eigenvalues greater than 1.00 and a clear inflection point between the second and third eigenvalues with no interpretable third factor, so two factors were retained (Hoyle & Duvall, 2004). They are displayed in Figure 1. Factor 1, displayed on the vertical axis, can be interpreted as Anxiety about the Self-concept. It loads highest on five tests: rumination, public and social anxiety self-consciousness, emotion regulation suppression, and self-concept clarity at the negative end of the axis. Most autobiographical memories are positive (see Rubin, 2014 for a review). Thus, probably the memories rated on the nominally neutral cues for Self-concept Focus are also positive. This could have affected the correlations of Self-concept Focus with the other scales, many of which measured negative aspects of behavior and especially the loadings of items on Factor 1.

Factor 2, displayed on the horizontal axis, can be interpreted as Reflections on the Self-concept. It loads highest on the remaining four tests: reflection, private self-consciousness, Self-concept Focus, and emotion regulation reappraisal. All these scales involve active, elaborative rehearsal.

It is also noteworthy that scales from the three instruments that have more than one scale each have scales that load most highly on different factors in ways that are consistent with theoretical divisions within those instruments. None of these tests was included in the meta-analysis of the CES reviewed earlier (Gehrt et al., 2018). This leaves the integration of these two sets of measures as a future direction.

Discussion

Self-concept Focus had high reliability as an individual differences measure. The correlations among the items was consistent with the existing literature. A bifactor model divided the total variance accounted for into the relative contribution of a general factor corresponding to the underlying concept of Self-concept Focus and group factors corresponding to commonality between items referring to a specific event that is not attributable to the general factor. The model provided a good account of the data. Given that this is the first test of both the idea and the particular formulation of an individual differences test of Self-concept Focus, the results will be discussed after a replication in Study 2.

Nine tests that measured concepts related to self-concept and self-focus allowed for a factor analysis placing Self-concept Focus into the context of established standardized tests. The factor analysis is a first attempt to relate Self-concept Focus to other tests of self-concept and, like all factor analyses, depends on the set of measures included in it. Replication is therefore needed. However, as a first attempt, performed without any knowledge about the correlations of the set of measures used, it does provide an intriguing division of the scales included. There were two factors. Rumination, Public and Social Anxiety Self-consciousness, Emotion regulation suppression, and Self-concept Clarity loaded most highly on Factor 1, Anxiety about the Self-concept. Reflection, Private Self-consciousness, Self-concept Focus, and Emotion Regulation Reappraisal loaded most highly on Factor 2, Reflections on the Self-concept. The Factor 2 measures all involve reflection on the self-concept and all require active elaborative rehearsal of memories. This novel finding suggests a memory-based mechanism for the underlying correlational structure of self-concept measures.

Study 2. A Replication in a Different Population

Study 2 added Self-concept Focus to the PCL-5, CES, Emotion Regulation Questionnaire, and Rumination and Reflection Questionnaire in a section of a general screen that was used to select participants for a study of PTSD and depression. The Self-concept Focus was administered again after a delay to measure test - retest reliability.

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Methods

Materials. In addition to some of the instruments used in Study 1, the *PCL-5* and 7-item *CES* for the event that was currently bothering each participant the most were included.

The *PCL-5* (The Posttraumatic Stress Disorder Checklist for DSM-5; Weathers et al., 2013a; Weathers et al., 2013b) has 20 items that match the 20 PTSD symptoms described by the DSM-5 (American Psychiatric Association, 2013). Each item is rated on a 0–4 scale of *not at all*, *a little bit*, *moderately*, *quite a bit*, and *extremely*. Items assess repeated, disturbing, and unwanted memories of the stressful experience; avoiding memories, thoughts, or feelings related to the stressful experience; loss of interest in activities that you used to enjoy; and having difficulty concentrating.

The *Centrality of Event Scale* (CES; Berntsen & Rubin, 2006; Berntsen & Rubin, 2007) measures the extent to which the most stressful or traumatic event in a participant's life forms a central component of personal identity, a turning point in the life story, and a reference point for everyday inferences. The seven-item version was used (e.g., I feel that this event has become part of my identity, This event has become a reference point for the way I understand myself and the world, and This event was a turning point in my life).

Participants. Two hundred and ninety-nine Duke undergraduates, completed the two-session study.

Procedure. The study was administered on the Qualtrics survey platform. Each participant was first asked to fill in a consent form and answer demographic questions. Session 1 was part of a general screening test given to all undergraduates who are in the general subject pool. It included Self-concept Focus and all other measures. Session 2 included Self-concept Focus. Both sessions included measures from other investigators. The time between Sessions 1 and 2 was between 7 and 54 days (mean 21.80, median 22).

Results

Although combining each individual's ratings on each of the 15 items of Self-concept Focus from both sessions should increase the reliability of the results, it would not provide a replication using a normal administration of Self-concept Focus. Therefore, Session 1 was used for the analyses of Self-concept Focus. Unlike the MTurk workers in Study 1, who had no missing data, the undergraduates failed to complete 24 items, 18 of which were caused by skipping the event 'that involved work,' possibly because they had never been employed. Given the limited amount of missing data, these items were replaced by the item means. The responses of each participant to the Self-concept Focus items are provided in computer readable form in Supplemental Materials Table 4.

Self-concept Focus correlated .24 with the CES, though both have αs above .83. The PCL-5 correlated more highly with the CES than with Self-concept Focus ($r = .44$ and .17, respectively). These observations support the claim that Self-concept Focus and CES cannot substitute for each other.

Basic measures. Table 4 includes the means, standard deviations, and reliabilities measured by α for all tests and the correlation of the mean of Self-concept Focus from Session 1 with other tests. The range of ages was too small for age to be meaningfully examined. The correlation of Self-concept Focus with gender was $r = .00$ and .01 for Session 1 and Session 2, with male coded 0 and female 1. This study replicated the negligible −.03 correlation of Study 1. The results from the reappraisal and suppression emotions regulation scales and the rumination and reflection scales followed the same general patterns as in Study 1. The correlations of Self-concept Focus with the CES and PCL-5 were reasonable compared to earlier work with the CES. Correlations among all measures shown in Table 4 are included in Supplemental Materials Table 1.

Internal structure of Self-concept Focus. For Session 1, the mean of the 15 within memory correlations (5 memories x 3 items per memory) was .68 (median .68 range of .51 to .86). The remaining 90 correlations had a lower non-overlapping distribution of correlations (mean .18, median .19, range of −.00 to .37). This pattern provides a close replication of the results of Study 1. The value of ω was .93, again indicating strong influence of the factors on total scale scores. The value of ωh was .60, which is lower than the .70 value for Study 1. It indicates that about 60% of the commonality between item responses could be attributed to a single factor common to all items. As in Study 1, values of ωhs fell into the same two groups and, consistent with the lower value of ωh, were consistently higher. Values were .44, .52, and .58 for school-, leisure-, and work-related events, respectively. Values were .74, and .83 for relationship- and message-related events, respectively. The specific events were more prominent sources of commonality in the student data, though the general factor still accounts for more than half of the shared variance.

The correlation between Self-concept Focus from Sessions 1 and 2 was .66 ($p < .0001$); the geometric mean of its reliability measured by α was .85, which would yield a correlation corrected for attenuation of .78. To examine the stability over time in more detail, the participants were divided into five as near to equal size groups as possible based on time between Session 1 and the individual group. The *n*s, and minimum and maximum times between sessions for these groups were 61, 7 to 12 days; 58, 13 to 19 days; 62, 20 to 23 days; 61, 24 to 27 days; and 57, 28 to 54 days. The reliabilities computed as the geometric mean of the reliabilities of the participants in each group in Session 2 and their reliabilities in Session 1, as measured by αs, are provided as an approximate upper limit for the correlations in Figure 2. There is no indication of a drop in the test-retest correlations over the range of times measured.

Discussion

Study 2 replicated, in a large sample of undergraduates, the results from the Study 1 sample of MTurk workers. Given the similarity in the results in the two studies, a more detailed discussion follows in the General Discussion where the replication allows for more confidence.

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Table 4
Basic statistics and correlations for Study 2

Measure	Session	Mean	*SD*	α	*r* with Session 1 Self-concept Focus
Reappraisal Emotion Regulation	1	28.53	5.81	.85	.14*
Suppression Emotion Regulation	1	14.76	4.76	.77	.04
Rumination	1	44.10	7.86	.87	.21***
Reflection	1	40.96	8.97	.92	.27****
CES	1	3.12	1.12	.93	.24****
PCL-5	1	1.21	0.75	.93	.17**
Session 1 Self-concept Focus	1	3.30	.68	.84	
Session 2 Self-concept Focus	2	3.24	.72	.86	.66****

Note: $N = 299$. The CES is the Centrality of Event Scale, the PCL-5 is the Posttraumatic Check List. α is Cronbach's alpha.
* $p < .05$.
** $p < .01$
*** $p < .001$.
**** $p < .0001$.

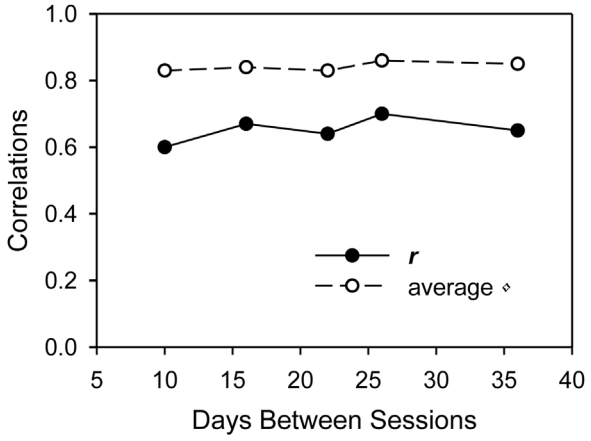

Figure 2. The correlation between Self-concept Focus from the two sessions of Study 2 compared with the average geometric mean of the reliabilities of the two sessions measured by α plotted as a function of the time between the sessions. The *n*s are 61, 58, 62, 61, and 57, at the five delays.

General Discussion

Self-concept Focus was created to provide a short individual difference test that would generalize over people who had a variety of life histories. It contains 15 items from the CES, which follow the order of items in the original 20-item CES (Berntsen & Rubin, 2006). Each three consecutive items are rated with respect to a cue that refers to a different category of everyday events. In addition to Self-concept Focus, commonly used standardized tests were used to locate Self-concept Focus in a theoretical context of how self-concept functions in various contexts including reactions to negative events. These tests included the Emotion Regulation Reappraisal and Suppression, Rumination, Reflection, Self-concept Clarity, and the Private, Public, and Social Anxiety Self-consciousness Scales, the Posttraumatic Stress Disorder Checklist, and the seven-item Centrality of Event Scale. The latter two were administered with respect to the event that was bothering the participants the most.

Results from the CES tested with negative events (Berntsen & Rubin, 2006; Gehrt et al., 2018) and studies comparing the CES with different kinds of events (Berntsen et al., 2011; Rubin et al., 2019a; Rubin et al., 2019b) supported the development of Self-concept Focus. In contrast to the CES, Self-concept Focus does not measure the effects of one event, but averages over five events intended to sample life experiences. It is therefore a much poorer predictor than the CES for the effects of a single event. However, as indicated by its correlations with other scales of self-concept, it does measure the tendency of people to make events central to their identity.

Studies 1 and 2 tested 400 Mturk workers and 299 undergraduates, respectively. Self-concept Focus had high reliabilities in both samples ($\alpha = .80$ and .86, respectively). In Study 2, which included two administrations of Self-concept Focus with a varied time between them, the test-retest correlation was .66, which was stable for lags from 7 to 54 days.

In both studies, the correlations among the 15 memories that were within the same events had a higher and non-overlapping distribution than the 90 correlations that were among different events. This difference was examined using a bifactor factor analysis. The model provided a good account of the data, with ωs, a measure of variance accounted for, of .95 and .93 in Studies 1 and 2, respectively. The general factor corresponding to the underlying concept of Self-concept Focus, ωh, was .70 and .60 in Studies 1 and 2, respectively. The group factors, ωhs, indexing variance attributable to the group factors that was not attributable to the general factor were .40, .40, .43, .71, and .78 in Study 1 and 44, .52, and .58, .74, and .83 in Study 2. Thus, the specific events accounted for more commonality in Study 2, though the general factor still accounted for more than half of the shared variance in both studies. Interpreting the minor differences in this pattern of a general replication of results, beyond attributing it to differences in the samples, is difficult.

An exploratory factor analysis was conducted in Study 1 on nine measures related to how self-concept functions in various contexts including reactions to negative events. Rumination, Public and Social Anxiety Self-consciousness, Emotion Regulation Suppression, and Self-concept Clarity loaded most highly on Factor 1, Anxiety about the Self-concept. Reflection, Private Self-consciousness, Self-concept Focus, and Emotion Regulation Reappraisal loaded most highly on Factor 2, Reflections on the Self-concept. The scales from the three instruments that had more than one scale each split their scales between

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the two factors in ways that follow the theoretical divisions within those instruments. The clarity, novelty, and ease of interpretation of the results was unexpected. Factor 2, on which Self-concept Focus loaded, included scales that required elaborative or active processing; Factor 1 did not. This finding suggests memory-based elaborative-rehearsal (e.g., Craik & Lockhart, 1972; Geiselman & Bjork, 1980; Nairne, 1986) as one mechanism for the underlying correlational structure of the self-concept measures examined.

Active, elaborative processing should increase both memory availability and accessibility (Tulving & Pearlstone, 1966). It should also increase opportunities for change in the memories, though not necessarily their accuracy, as the processing typically occurs in the absence of the original event. Thus, Self-concept Focus should predict the confidence, but not necessarily the accuracy, of people when they are consumers, voters, eyewitnesses, and other roles that depend on their memories.

Self-concept Focus, which is measured for memories in general, also correlates .17 and .24 with the CES and PCL-5 for a single very negative event. This and the meta-analysis of the CES reviewed earlier (Gehrt et al., 2018) suggest that higher scores on Self-concept Focus should lead to more clinical symptoms when negative events occur but also a greater chance to modify those symptoms if active rehearsal of the memories can be used to interpret the memories as less toxic.

Limitations and Future Directions

This is the first attempt at developing and evaluating an individual difference measure of the degree to which people make autobiographical events central to their identity irrespective of the content of the event. Although Study 2 replicated many of the findings of Study 1, specific hypotheses were not be made. In addition, the five events in Self-concept Focus were chosen to be widely experienced in western cultures, but not for other cultures. Moreover, there could be cultural variation that would lead to gender differences in how much events are related to the self-concept, and whether the self should be replaced by a larger group in cultures that are more collectivist. In addition, because all measures were rating scales, there is a potential for common method variance.

The Self-concept Focus event cues are for neutral events. The CES, on which Self-concept Focus is based, functions in similar but theoretically different ways with negative and future events. These each bring in an emotional aspect purposely lacking in Self-concept Focus (Berntsen et al., 2011; Rubin, 2014). How these emotional components interact with the general tendency to make events central to the self is an important issue in terms of theory and clinical practice (Berntsen et al., 2011). One way to begin to address this would be by creating data to support a factor analyses that combined measures found important in the CES meta-analysis (Gehrt et al., 2018) and the measures used here and including measures of neutral, negative and future events.

Implications

Self-concept Focus correlates most highly with other measures of reflecting on the importance of events to one's life. When life is positive, this reflection can add richness. However, when negative events, dysphoria, or traumatic symptoms unrelated to events occur, it can help increase and maintain negative affect (for an earlier consistent view see Berntsen & Rubin, 2006; Berntsen & Rubin, 2007). The CES demonstrates these effects for single negative events. Self-concept Focus has the potential to investigate such effects for a sample of neutral events. In this way, it should add to our understanding of self-concept in general through investigating and modifying the potential mechanisms explored with the CES.

Practical Relevance

The vividness and emotional intensity of their memory of events affect the willingness of witnesses to testify and the influence of the witnesses' testimonies. If the individual memory correlations reviewed for the CES extend to individual differences then they should hold for Self-concept Focus. However, the accuracy of the testimony does not always increase with these factors when they are measured on individual events, and larger discrepancies in accuracy might occur with a measure of individual differences rather than a measure of particular events. Similarly, how convincing politicians are to voters may also depend in part by the vividness and emotional intensity of their narratives. As with the witnesses, this general tendency should have less influence on their accuracy.

The relevance of particular brands to the self-concept of individuals and thus to their Self-concept Focus might affect remembering past and planning future purchases, as well as using branded possessions. An interesting dilemma is that how consistent a person's self-concept is over different aspects of life can affect this relation (Linville, 1985).

In terms of clinical relevance, as noted earlier the CES correlated with measures of anxiety, depression, dissociation, grief, PTSD, and shame. Assuming that a general tendency to make events central to one's self-concept underlies part of these correlations, then knowing about such a stable disposition measured on events unrelated to these disorders should provide an indication of who will be affected by a negative event before it occurs. In the opposite temporal sequence, an increase in Self-concept Focus might occur with an increase in self-reflection attempted to understand the onset of any of these disorders. Any such increase would suggest mechanisms involved in the disorder.

Conclusions

Self-concept Focus measures the degree to which people generally tend to make events central to their self-concept. In doing this it invokes processes of elaborative rehearsal. Two studies with relatively large samples drawn from different populations demonstrated that Self-concept Focus could be measured in a 15-item scale. The scale, which has high reliability, demonstrates good test-retest stability over five weeks and correlates with other measures in replicable ways. It correlates with clinical symptoms based on negative memories and correlates with other measures of self-concept that also involve elaborative rehearsal. Because the scale is administered in the absence of reexperiencing original events, it should correlate with the confidence,

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but not necessarily with the accuracy, of people in applied situations including when they are patients, consumers, voters, and eyewitnesses.

Author Contribution

The author produced and is solely responsible all aspects of the paper.

Uncited references

Hoerger, 2013, Rubin, Hoyle, & Leary, 2012, Steiger, 1980 and Wegner & Zanakos, 1994.

Online Supplement

Supplementary material related to this article can be found, in the online version, at https://doi.org/10.1016/j.jarmac.2020.06.001.

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