

The transitional impact scale: Assessing the material and psychological impact of life transitions

Connie Svob · Norman R. Brown · John R. Reddon ·
Tugba Uzer · Peter J. Lee

Published online: 13 August 2013
© Psychonomic Society, Inc. 2013

Abstract The Transitional Impact Scale (TIS) advances the measurement of event cognition into the real world. The TIS was created to provide a measure of change for important life transitions, including an index of their transitional properties and magnitude. Pilot work prior to Study 1 led to the creation of a 95-item version (TIS-95). A principal components analysis of TIS-95 ($n = 215$) resulted in two dimensions that we rotated to a Varimax criterion and interpreted as (1) material change (e.g., “This event changed where I live”) and (2) psychological change (e.g., “This event changed the way I think about things”). TIS-95 was reduced to 25 items. In Study 2, the structure of TIS-25 was replicated ($n = 531$) using the same method. The best 12 items were retained. TIS-12 was evaluated in two random split-half samples ($n = 557$ and $n = 553$). These samples produced essentially identical results, as assessed through factor comparison. The cumulative scales formed from items constituting each factor demonstrated good internal consistency (Cronbach’s alpha ranged from .79 to .86).

Keywords Event cognition · Change judgment · Memory organization · Episodic memory

Turning points (Hareven & Masoka, 1988), *self-defining memories* (Singer & Salovey, 1993), *life-script events* (Thomsen & Berntsen, 2008), *momentous events* (Pillemer, 1998, 2001), *landmark events* (Shum, 1998), *personal reference points* (Brown, 1990; Friedman, 1993), *life transitions*, and *transitional events*—these terms all refer to a special class

of events: events that cause or signal major life changes. Experience with such events is universal, and scientific interest in them is widespread. Indeed, life transitions and transitional events are studied by researchers in many areas of psychology and in various allied disciplines, including clinical psychology and psychiatry (Cordova, Cunningham, Carlson, & Andrykowski, 2001; Johnson & Thompson, 2008; Rutter, 1996; Wheaton, 1990), health psychology (Hobson & Delunas, 2001; Holmes & Rahe, 1967; Lundberg, Theorell, & Lind, 1975; Tennant, 2002), life-span psychology (Galambos & Krahn, 2008; Gluck & Bluck, 2007; Habermas, 2007; Habermas & Bluck, 2000; Hareven & Masoka, 1988; Perrig-Chiello & Perren, 2005), personality psychology (Blagov & Singer, 2004; McAdams, 2001; Singer & Salovey, 1993; Thorne, McLean, & Lawrence, 2004; Wilson & Ross, 2001), and cognitive psychology (Belli, 1998; Berntsen & Rubin, 2004; Brown & Lee, 2010; Brown et al., 2009; Conway, 2005; Conway & Pleydell-Pearce, 2000; Pillemer, 1998, 2001; Pillemer, Goldsmith, Panter, & White, 1988; Shum, 1998; Skowronski et al., 2007; Thomsen & Berntsen, 2008). Some events may have great impact on our lives, from illness as a stressor to stress-related growth. For example, biological stressors (e.g., infections) as well as environmental stressors interact with the vulnerability of the organism to determine the impact of the stress/trauma (Yalom, 1983). Furthermore, with the DSM-5 (American Psychiatric Association, 2013) schizophrenia spectrum disorders, transitional or transformative events are contributory factors (Kingdon & Turkington, 2005). It is important to understand transitions as a manifestation of stress and trauma, and to consider that stresses and extreme stresses (i.e., traumas) often culminate in transitional events. It is therefore prudent when dealing with problems of human adaptation and adjustment to examine subjective appraisals of transitions. It is also important to note that events may exert varying types and degrees of impact. Normative events (e.g., graduation, marriage) are generally positive, whereas unexpected events and forced transitions (e.g., an

C. Svob (✉) · N. R. Brown · J. R. Reddon · T. Uzer · P. J. Lee
Department of Psychology, University of Alberta, Edmonton,
Alberta, Canada
e-mail: svob@ualberta.ca

J. R. Reddon
Department of Forensic Psychiatry, Alberta Hospital Edmonton,
Edmonton, Alberta, Canada

oncologist stating the test results were not good) tend to be negative. Measuring the form and degree of event impact is an important part of understanding the longer-term cognitive, emotional, and social consequences of transitional events, and increasing the potential to improve psychological treatments and outcomes.

As the listing above suggests, there has been much transition-focused research, and it has not been limited to health or clinical psychology. However, integrating research across these various orientations and methodologies remains a challenging task. One reason for this is the absence of a general method for identifying transitions and characterizing them in an objective and standardized manner. The present study was undertaken, in part, to remedy this situation. We sought to create a scale that provides an overall measure of event impact across a variety of personal and public events, including an index of a given event's transitional properties. In addition, we were motivated to investigate the notion that transitions can impact lives in two quite different ways: They can change the way that people live (i.e., they can produce material change), or they can change how people feel or what they believe (i.e., they can produce psychological change). Thus, we endeavored to construct a scale that would index the global impact of a given transition and that would also provide information about the nature of the changes wrought by it.

In general, transition-related research has focused primarily on psychological change and has either ignored material change or treated it as an afterthought (Clausen, 1995). Nonetheless, at the outset of this study, we had conducted two lines of research that suggested (a) that it is necessary to assess both psychological change and material change and (b) that these two types of change are at least partially independent. One line of research was concerned with understanding the relation between historical events and autobiographical memory (Brown, Hansen, Lee, Vanderveen, & Conrad, 2012; Brown & Lee, 2010; Brown et al., 2009; Brown & Svob, 2012; Zebian & Brown, 2013). This research has demonstrated that historically significant public events (e.g., wars, natural disasters) sometimes organize autobiographical memory by acting as temporal landmarks and providing the thematic content that defines the lifetime periods they spawn. This happens only when external events bring about a fundamental change in the fabric of daily life—in what people do, where they do it, and with whom. Brown and colleagues also found that historically defined autobiographical periods do not form in the wake of public events, even very important ones, if the events do not alter a prevailing way of life in an enduring manner. Importantly, this is true even for public events that have had a clear psychological impact on an affected population (e.g., the attacks of 9/11 or the end of Communism in the Soviet Union). For the present purposes, these findings make two important points. First, they are consistent with the notion that important public events can produce two types of changes, material and psychological;

second, they suggest that psychological change can occur in the absence of material change. The degree of event impact needed to produce distinctive lifetime periods in memory, however, remains to be assessed.

The relative independence of material and psychological change has been further demonstrated by a recent study that investigated the intergenerational transmission of historical events (Svob & Brown, 2012). In this study, young adults recalled the ten most important events from a parent's life and rated the degrees to which each recalled event produced material and psychological change. Here, events were differentiated by varying degrees of change. Events that received high ratings of material change also tended to receive high ratings of psychological change. Conversely, events that received high ratings of psychological change did not necessarily receive high ratings of material change. Although these findings suggest that two forms of change need to be considered in transition-related research, this distinction remains to be demonstrated for events recalled from one's own life.

In principle, we can begin to investigate the relative independence and impact of material and psychological change by establishing a valid transitionality scale and applying it to a variety of theoretically interesting situations. In this article, we introduce such a scale, the *Transitional Impact Scale (TIS)*, which was designed to be brief, psychometrically sound, and applicable to a wide range of personal and public events. The TIS has the ability to identify those aspects of a person's life that have changed following a transitional event and those that have not. It provides an index of the relative magnitudes of these different sorts of change, yields subscale scores, and presents a global measure of transitional impact for a given event. It is also free from gender bias. In constructing the TIS, we have assumed, for the reasons presented above, that transitional events produce material change, psychological change, or both.

The TIS was constructed sequentially. Pilot work prior to Study 1 (not reported here) led to the creation of a 95-item version of the TIS (TIS-95). In Study 1, we administered the TIS-95 to a sample of 215 undergraduate students by asking about their transition into University. The TIS-95 was reduced to 25 items (TIS-25) for subsequent evaluation. In Study 2, we performed a random split-thirds procedure on a sample of 1,715 undergraduate students by asking about a variety of major life transitions. With the first subsample, the TIS-25 was reduced to 12 items (TIS-12), and the two dimensions of change were evaluated for replicability across the remaining two subsamples.

Study 1

Method

Participants The 215 participants (98 males, 117 females) were undergraduates enrolled in introductory psychology

courses at the University of Alberta. The mean age of the participants was 19.4 years ($SD = 2.12$, range 17–36 years). We imposed no restrictive criteria for participation, and there was no attrition due to missing data, because the computer administration of the questionnaire did not permit omissions.

Materials The TIS-95 is a self-report instrument that measures various aspects of change implicated in transitional events. It employs a 5-point rating scale, ranging from 1 (*completely disagree*) to 5 (*completely agree*). The 95 items were based on verbal protocols concerning transitions obtained in a previous exploratory study (not reported here). The items were written on the basis of the a priori assumption of two relatively independent dimensions of transitional impact: material and psychological. Material items reflected changes in the external composition of one's daily life (e.g., people, locations, objects, and activities). Psychological items were based on various psychological constructs (e.g., thoughts, attitudes, emotions, and identity). The items were reviewed for content, edited for clarity and redundancy, and balanced to ensure that they were relatively equally distributed between the two dimensions.

Procedure All participants provided written informed consent and received partial course credit for their participation. Participants were run individually on an in-lab computer. The study was divided into two phases. In Phase 1, participants were presented with several statements regarding the transitional event of starting university (an event we could be sure that all participants had experienced). Participants were asked to read each statement and (using the mouse) to rate the degree to which each was true of their experience regarding their enrollment at the University of Alberta. They were informed that the scale spanned from 1 to 5, with 1 indicating *complete disagreement* with a given statement and 5 indicating *complete agreement*. If their experience fell somewhere in between complete agreement and disagreement, they were asked to indicate so by choosing an intermediate value that most nearly reflected their experience. The item order was randomized across participants. In addition to completing the TIS-95, participants provided demographic information.

In Phase 2, participants were presented with a list of ten transitional events (*immigrating to Canada, moving from one city to another, sustaining a serious injury, being diagnosed with a serious health problem, getting a car, parents' divorce, break-up of a serious romantic relationship, death of a close family member, being a victim of a criminal assault, religious conversion, and starting high school*) and were asked to indicate any that they had experienced within the past 5 years. Ratings of importance on a 5-point scale were collected for each reported experienced event (with 1 indicating that the event was *not important at all*, and 5 indicating that it was *very important*). The Phase 2 data were treated as norms for the

selection of materials for Study 2. The prevalence of the events in an undergraduate population, as well as high importance ratings, would suggest that the events were representative of the experiences of young adults and would be of adequate significance to qualify as transitional events. Moreover, rather than focus on one transitional event (i.e., *starting university*), we planned to expand the range of events in Study 2, while controlling the number of events sampled.

Results and discussion

We found no significant differences between the gender subsamples: (males: sex = 1, $n = 98$, and age range = 17–36 years, mean = 19.08, $SD = 2.19$; females: sex = 2, $n = 117$, and age range = 17–27 years, mean = 19.58, $SD = 2.05$), $t(213) = 1.73$, $p = .086$. The Pearson correlation matrix of the 95 items of the TIS-95 with 215 participants was subjected to an eigenvalue decomposition. Principal component loadings were obtained by rescaling the eigenvectors by the square roots of the associated eigenvalues (Jackson, 1991). Application of the scree test (Cattell & Vogelmann, 1977) resulted in the retention of two dimensions. The decision in favor of retaining two dimensions was corroborated by constructing, with Reddon's (1997) software, 99 % two-sided confidence intervals based on Girshick's (1939) variance estimates for the eigenvalues. The intervals for the first two eigenvalues did not overlap with any of the other intervals and were therefore judged to be distinct from each other and also from the isotropic subspace (i.e., scree).

Two factors were rotated to a Varimax criterion and accounted for 36.6 % of the total variance (Factor I, 16.4 %; Factor II, 20.2 %). To identify the groups of items associated with each factor, we selected items with factor loadings greater than .40 and a minimum difference of .20 between the loadings on the two factors. Upon examination of the items that loaded on each factor, we observed a clear delineation between the factors in terms of items that expressed material and psychological changes. Thus, we were able to label the two factors according to our predictions: (1) material change and (2) psychological change. With the loading saliency criterion employed, 25 items constituted the two dimensions, with 12 items loading on material change, and 13 on psychological change. Overall, the subscale scores (formed by adding up the item responses for the items loading saliently on each factor) had good internal consistency. The internal consistency reliability scores for Cronbach's coefficient alpha were .76 for material change and .86 for psychological change.

Principal components rather than common factor analysis was chosen as the method of analysis because item factor analysis generally uses a large number of items (95 in Study 1), in which case the two methods are comparable. In order to maintain consistency, principal components analysis was used

throughout. Because principal components analysis is obtained from an eigenvalue decomposition of a gramian matrix (i.e., a sum of squares and cross products matrix), it produces no negative eigenvalues, and the squared multiple correlation between the variates and each of the factor scores is unity, which is not the case in common factor analysis. In other words, principal components analysis was chosen over common factor analysis because in item factor analysis, the two methods produce similar results, but in addition, principal components analysis is algebraically determinate.

Varimax orthogonal rotation was chosen to rotate the principal component loadings to a simple structure. An orthogonal rotation was chosen because we felt that the resulting factors would be relatively independent, and would therefore be captured very well by an orthogonal rotation. Additionally, the use of an orthogonal rotation simplifies the interpretation, because the structure and pattern coefficients are identical and are correlation coefficients, whereas in the oblique case pattern coefficients (i.e., regression coefficients) on the primary axes would be required for interpretation. Another point in favor of using Varimax as a simple-structure criterion is the overall simplicity and elegance of orthogonality.

The relationship between factors was determined by forming composite scales from the items constituting the factors. This was oblique multiple groups factor analysis with unstandardized items (Gorsuch, 1974). The relationship between these oblique multiple groups factors was estimated from the correlation between the oblique multiple group factor scores (i.e., the correlation between the material and psychological cumulative scale scores).

The transitional life events reported in Phase 2 were fairly evenly distributed across participants: *immigrating to Canada* ($n = 21$), *moving from one city to another* ($n = 24$), *sustaining a serious injury* ($n = 9$), *being diagnosed with a serious health problem* ($n = 15$), *getting a car* ($n = 22$), *parents' divorce* ($n = 13$), *break-up of a serious romantic relationship* ($n = 30$), *death of a close family member* ($n = 24$), *being a victim of a criminal assault* ($n = 14$), *religious conversion* ($n = 12$), and *starting high school* ($n = 31$). The mean importance ratings of the transitional events ranged from 4.04 (*moving from one city to another*) to 4.68 (*getting a new car*) on a 5-point scale.

The results of Study 1 supported our initial prediction that material and psychological characteristics contribute independently to the impact of transitional life events. Content saturation was fostered by the broad range of 95 items derived from the pilot work. Nonetheless, we wanted to increase our sample size and extend the range of events to ensure that the psychometric properties of the TIS were not artifacts of the transitional event of *starting university*. Moreover, we wanted to replicate the factor structure in a new sample and undertake further refinements of the TIS that could be evaluated in the two other samples obtained from a split-thirds design.

Study 2

Method

Participants A total of 1,715 (1,140 females and 575 males) participants took part in this study. All were undergraduates enrolled in introductory psychology courses at the University of Alberta. The mean age of the participants was 19.3 years (range 18–59 years). We imposed no restrictive criteria for participation.

Materials The reduced 25-item version of the TIS derived from Study 1 (i.e., TIS-25) was administered in a Web-based format.

Procedure Again, all participants provided informed consent and received partial course credit for their participation. The study was conducted as a part of a larger online survey to which all eligible introductory psychology students were given access. The participants were unaware of the nature of the survey that they would complete before logging into the online system.

In Phase 1, participants were asked to choose one of the ten transitional events that we had presented in Phase 2 of Study 1, with one exception: *starting high school* was replaced with *starting university*. Participants were asked to choose one event that they had experienced within the last 5 years and that was important in their life. In Phase 2, participants were asked to consider carefully the event that they chose in Phase 1 and to assess the impact of the event as they rated the degree to which the following statements were true of their experience. The TIS was administered as in Study 1, with the order of items randomized across participants.

Results and discussion

To investigate the factor structure of the TIS, we performed a random split-thirds procedure to divide the file into three sections, with 571 participants being included in the first round of analysis (531 remaining after missing selection). The first analysis was conducted on the 25 items from Study 1. The two-dimensional factor structure from Study 1 was replicated (principal components and Varimax rotation). The decision for retaining a two-factor solution was based on the scree test. The eigenvalue plot resembled the one in Study 1. The ascertainment of dimensionality was also corroborated by constructing 99 % confidence intervals for the eigenvalues. The two rotated factors accounted for 43.7 % of the overall variance (21.8 % for material change, 21.9 % for psychological change). Cronbach's alpha for the subscales was high: .89 overall, .87 for material change, and .87 for psychological change.

Using loading saliency criteria from Study 1 and a further review of the item content, we discarded items that were statistically inefficient or seemed redundant and retained items that were of the greatest substantive import. Loading saliency criteria were addressed for the first analysis in terms of the item retention criteria employed in Study 1 (i.e., items with factor loadings greater than .40 and a minimum difference of .20 between the loadings on the two factors). The substantive import aspect involved reviewing items for content saturation (i.e., convergence with the underlying construct) and ambiguity/clarity, as well as generality. This reduction process resulted in a 12-item scale.

Then we analyzed the remaining two-thirds of the respondents in two separate groups of 572 participants (557 and 553, respectively, were retained in each group after missing selection). In these two samples, two factors resulted from applying the scree test and from constructing 99 % confidence intervals for the eigenvalues. After rotation to a Varimax criterion, the two dimensions were interpreted as material and psychological change. In each of these two samples, the material and psychological items were also analyzed separately to assess their unidimensionality. In both samples, the material and psychological items were deemed unidimensional.

The reduced-item TIS-12 scale accounted for an even greater proportion of the overall variance in the two latter groups (55.0 % in Sample 2, with 25.3 % on the Material Change subscale and 29.7 % on the Psychological Change subscale, and 55.0 % in Sample 3, with 25.8 % on the Material Change subscale and 29.2 % on the Psychological Change subscale). The subscales were formed on the basis of the principal components analysis by using a binary weighting system (1 = *present*, 0 = *absent*). The interitem correlations were what we would have expected. We found high correlations between the items within subscales and low correlations on items between subscales. The two subscales, Material Change and Psychological Change, revealed low correlations of .35 and .32 in Samples 2 and 3, respectively, suggesting that psychological change and material change contribute independently to the impact of transitional events. The subsamples were analyzed separately for the purpose of increasing the credibility of the results. Replication of the final factor structure was important, particularly because the TIS is a new inventory, and it was therefore desirable to minimize the possibility of overfitting and to provide evidence of replicability with the final scale (cf. Lindsay & Ehrenberg, 1993). Between samples, the congruence coefficient (Rummel, 1970) for Factor I loadings was .995, and that for Factor II loadings was .998. Therefore, the factor structure obtained for the TIS-12 was replicated, indicating that the two-dimensional structure for the TIS-12 was robust. Finally, the reliability of the cumulative subscales formed by adding the items constituting each factor maintained adequate Cronbach's alpha

coefficients for the respective samples: .84 and .83 for the total score, .79 and .84 on Material Change, and .86 and .80 for Psychological Change. The results were also free of gender bias (refer to Tables 1 and 2).

The mean TIS scores for various transitional events revealed differential loadings on material change and psychological change (see Fig. 1), with the distribution of chosen transitional events showing variability across participants—*immigrating to Canada* ($n = 51$), *moving from one city to another* ($n = 150$), *sustaining a serious injury* ($n = 23$), *being diagnosed with a serious health problem* ($n = 31$), *getting a car* ($n = 71$), *parents' divorce* ($n = 35$), *break-up of a serious romantic relationship* ($n = 140$), *death of a close family member* ($n = 194$), *being a victim of a criminal assault* ($n = 11$), *religious conversion* ($n = 29$), and *starting university* ($n = 917$). Some events produced subjectively high degrees of material change in people's lives, but had relatively low psychological impact (e.g., getting a car). Some events exerted high degrees of psychological impact while exerting relatively low degrees of material change (e.g., being diagnosed with a serious health problem, parents' divorce, break-up of a serious romantic relationship, being a victim of a criminal assault, or religious conversion). And, some events produced subjectively high degrees of both material and psychological change (e.g., immigrating to Canada, moving from one city to another, starting university). This suggests that it is important to evaluate both material and psychological effects when investigating the impacts of various events on human behavior.

General discussion

According to the TIS-12, characteristics of both material and psychological change result from transitional events. By constructing the TIS-12, we have provided a means for obtaining an index of transitional event impact, including an assessment of transitional event characteristics and a measure of their magnitude. We expected that various transitions would yield differential forms of change, and as such, produce differential effects. Additionally, it is now possible to raise a set of important issues concerning the ways that material and psychological change interact with one another, and the effects that they produce independently of one another.

A potential limitation of the present study was the sample of young adults who, inadvertently, had limited life experience. Student samples do limit generalizability in terms of age and other demographic features, such as socioeconomic status, as well as in terms of general intelligence and some aspects of personality. Naturally, it would be beneficial to test the factor structure of the TIS-12 with older populations and a greater number of transitional events. The TIS-12 will allow this research to be done. Moreover, we can assume that the

Table 1 Varimax-rotated principal component loadings for items of the Transitional Impact Scale (TIS-12) in two samples

Items	Sample 2 (<i>n</i> = 557)		Sample 3 (<i>n</i> = 553)	
	Material Change	Psychological Change	Material Change	Psychological Change
This event has changed the places where I hang out.*	.834	.093	.806	.100
This event has changed the things I own.	.705	.133	.753	.036
This event has changed my material circumstances.	.705	.110	.713	.125
This event has changed the activities I engage in.	.670	.276	.702	.244
This event has changed the people I spend time with.	.629	.237	.648	.256
This event has changed where I live.	.612	−.020	.603	−.029
This event has changed my attitudes.	.151	.844	.142	.835
This event has changed the way I think about things.	.131	.825	.042	.833
This event has impacted my emotional responses.	.029	.800	.044	.787
This event has changed my sense of self.	.217	.738	.221	.749
This event has impacted me psychologically.	.078	.656	.148	.662
This event has influenced my understanding of right and wrong.	.194	.612	.077	.585

* Subsequent uses of the TIS-12 should replace the first item with the more general wording: “This event has changed the places where I spend time.”

factor structure will remain stable, as “[m]any properties of personality traits, such as factor structure and gender differences, appear to be universal” (McCrae, Terracciano, & 78 Members, 2005, as cited in McCrae, Kurtz, Yamagata, & Terracciano, 2011, p. 35). Ratings of the impact of events involve event selection, event perception/appraisal, and sentiments about the impact of an event upon the rater. As such, there should be individual differences in these attributions about the personal impact of the event. Self-perceptions and sentiments about events are personological features that are aspects of personality and broadly include disposition, values/attitudes, and aspects of psychosocial adjustment. Although personality generally deals with hypothetical events and general reactions (e.g., when someone jumps the queue right in front of me while I am standing in line at a movie, I generally retaliate), the work cited by McCrae and colleagues on the consistency of personality traits demonstrates considerable

consistency in factor structures across situations. This work, although not from the same domain as the present work, is supportive of the view that the correlational structure of ratings generally ought to be consistent across people, situations, and events. Future research in which a few different events are separately rated by the same people would be useful in establishing individual differences and evaluating the degree of factorial invariance. Furthermore, future studies will be able to evaluate the temporal stability (i.e., retest reliability) of the TIS-12, as well as to examine its convergent and discriminant validity with other measures.

In sum, the TIS-12 allows for the possibility of much future transition research. Experience with transitions is both nuanced and varied. We can conjecture that the variation comes in at least four forms and contains varying degrees of emotional valence. First is variation in the timing and predictability of

Table 2 Descriptive statistics for the Transitional Impact Scale (TIS)

TIS Scales	Mean	SD	Cronbach’s α	r_g
Sample 2 (<i>n</i> = 557)				
Material Change	19.62	6.12	.79	.05
Psychological Change	20.64	5.76	.86	.15*
Total	40.32	9.72	.84	.18*
Sample 3 (<i>n</i> = 553)				
Material Change	19.62	6.18	.80	.01
Psychological Change	20.88	5.52	.84	.02
Total	40.56	9.48	.83	.02

r_g denotes point-biserial correlations with gender (1 = male, 2 = female). The statistical significance of r_g is identical to a *t* test for equality of the means. * Correlation is significant at the .01 level (two-tailed)

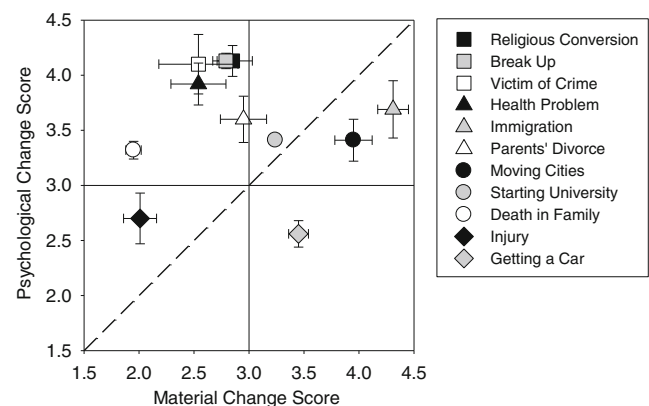


Fig. 1 Mean material and psychological change scores from Subsamples 2 and 3 on the TIS-12 (5-point scale) for the various transitional events. Events are ordered in descending order according to psychological change. Error bars represent standard errors

transitional events. Some transitions are normative, predictable, and temporally prescribed (e.g., starting university). Others are normative but temporally variable (e.g., getting a car, death of a close family member). Still others are temporally unrestricted, but entail planning and preparation (e.g., immigrating to Canada, moving from one city to another). Then there are sudden transitions that come about by chance (e.g., sustaining a serious injury, being diagnosed with a serious health problem, parents' divorce, break-up of a serious romantic relationship, being a victim of a criminal assault, or religious conversion). Second, variation can occur in the nature of the changes that are brought about by a transition. Some transitions change the way that people live (e.g., bankruptcy), some change the way that they feel about themselves or understand the world (e.g., religious conversion), and some bring about changes of both sorts (e.g., immigration). Third, the amount of change wrought by a given transition will also vary. Some transitions affect almost every aspect of a person's life (e.g., incarceration), whereas others affect only a few (e.g., promotion from one grade to the next). Finally, transitions differ in terms of their scope, with some affecting individuals (e.g., debilitating illness), some affecting families (e.g., divorce) or cohorts (e.g., graduation), and some affecting specific social groups or a society as a whole (e.g., civil war). Moreover, as we mentioned at the beginning of this article, transitional events are also linked with a wide range of issues concerning health, stress, and clinical psychology. For example, section II of the DSM-5 (American Psychiatric Association, 2013) contains an entire section titled "Trauma- and Stressor-Related Disorders" (pp. 265–290), followed by one on "Dissociative Disorders." Stress is relevant to these conditions as both a contributory and an exacerbating factor. Studying stress, trauma, and subjective appraisals of transitions is relevant to better understanding, diagnosing, and treating DSM-5 disorders. For assessing any form of life transition, the TIS-12 provides a unique measure upon which future predictions and interventions may be applied and implemented.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed., DSM-5). Washington, DC: Author.
- Belli, R. F. (1998). The structure of autobiographical memory and the event history calendar: Potential improvements in the quality of retrospective reports in surveys. *Memory*, *6*, 383–406. doi:10.1080/741942610
- Berntsen, D., & Rubin, D. (2004). Cultural life scripts structure recall from autobiographical memory. *Memory & Cognition*, *32*, 427–442. doi:10.3758/BF03195836
- Blagov, P. S., & Singer, J. A. (2004). Four dimensions of self-defining memories (specificity, meaning, content, and affect) and their relationships to self-restraint, distress and repressive defensiveness. *Journal of Personality*, *72*, 481–511. doi:10.1111/j.0022-3506.2004.00270.x
- Brown, N. R. (1990). Organization of public events in long-term memory. *Journal of Experimental Psychology: General*, *119*, 297–314. doi:10.1037/0096-3445.119.3.297
- Brown, N. R., Hansen, G. B., Lee, P. J., Vanderveen, S. A., & Conrad, F. G. (2012a). Historically defined autobiographical periods: Their origins and implications. In D. Berntsen (Ed.), *Theoretical perspectives on autobiographical memory* (pp. 160–180). Cambridge, UK: Cambridge University Press.
- Brown, N. R., & Lee, P. J. (2010). Public events and the organization of autobiographical memory: An overview of the Living-in-History Project. *Behavioral Sciences of Terrorism and Political Aggression*, *2*, 133–149. doi:10.1080/19434471003597431
- Brown, N. R., Lee, P. J., Krslak, M., Conrad, F. G., Hansen, T., Havelka, J., & Reddon, J. R. (2009). Living in history: How war, terrorism, and natural disaster affect the organization of autobiographical memory. *Psychological Science*, *20*, 399–405. doi:10.1111/j.1467-9280.2009.02307.x
- Brown, N. R., & Svob, C. (2012). *Collective transitions and the temporal distribution of autobiographical memories*. Unpublished Manuscript.
- Cattell, R. B., & Vogelmann, S. A. (1977). A comprehensive trial of the scree and KG criteria for determining the number of factors. *Multivariate Behavioral Research*, *12*, 289–325. doi:10.1207/s15327906mbr1203_2
- Clausen, J. A. (1995). Gender, contexts, and turning points in adults' lives. In P. Moen, G. H. Elder, & K. Luscher (Eds.), *Examining lives in context: Perspectives on the ecology of human development* (pp. 365–389). Washington, DC: American Psychological Association.
- Conway, M. A. (2005). Memory and the self. *Journal of Memory and Language*, *53*, 594–628. doi:10.1016/j.jml.2005.08.005
- Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review*, *107*, 261–288. doi:10.1037/0033-295X.107.2.261
- Cordova, M. T., Cunningham, L. L. C., Carlson, C. R., & Andrykowski, M. A. (2001). Posttraumatic growth following breast cancer: A controlled comparison study. *Health Psychology*, *20*, 176–185. doi:10.1037/0278-6133.20.3.176
- Friedman, W. J. (1993). Memory for the time of past events. *Psychological Bulletin*, *35*, 1–36. doi:10.1037/0033-295X.107.2.261
- Galambos, N. L., & Krahn, H. J. (2008). Depression and anger trajectories during the transition to adulthood. *Journal of Marriage and the Family*, *70*, 15–27. doi:10.1111/j.1741-3737.2007.00458.x
- Girshick, M. A. (1939). On the sampling theory of roots of determinantal equations. *Annals of Mathematical Statistics*, *10*, 203–224. doi:10.1214/aoms/1177732180
- Gluck, J., & Bluck, S. (2007). Looking back across the life span: A life story account of the reminiscence bump. *Memory & Cognition*, *35*, 1928–1939. doi:10.3758/BF03192926
- Gorsuch, R. L. (1974). *Factor analysis*. Philadelphia, PA: Saunders.
- Habermas, T. (2007). How to tell a life: The development of the cultural concept of biography across the lifespan. *Journal of Cognition and Development*, *8*, 1–31. doi:10.1207/s15327647jcd0801_1
- Habermas, T., & Bluck, S. (2000). Getting a life: The emergence of the life story in adolescence. *Psychological Bulletin*, *126*, 748–769. doi:10.1037/0033-2909.126.5.748
- Hareven, T., & Masoka, K. (1988). Turning points and transitions: Perceptions of the life course. *Journal of Family History*, *13*, 271–289. doi:10.1177/036319908801300117
- Hobson, C. J., & Delunas, L. (2001). National norms and life-event frequencies for the revised social readjustment rating scale. *International Journal of Stress Management*, *8*, 299–314. doi:10.1023/A:1017565632657
- Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research*, *11*, 213–218. doi:10.1016/0022-3999(67)90010-4
- Jackson, J. E. (1991). *A user's guide to principal components*. New York, NY: Wiley.

- Johnson, H., & Thompson, A. (2008). The development and maintenance of post-traumatic stress disorder (PTSD) in civilian adult survivors of war trauma and torture: A review. *Clinical Psychology Review*, 28, 36–47. doi:10.1016/j.cpr.2007.01.017
- Kingdon, D. G., & Turkington, D. (2005). *Cognitive therapy of schizophrenia*. New York, NY: Guilford Press.
- Lindsay, R. M., & Ehrenberg, A. S. C. (1993). The design of replicated studies. *The American Statistician*, 47, 217–228. doi:10.2307/2684982
- Lundberg, U., Theorell, T., & Lind, E. (1975). Life changes and myocardial infarction: Individual differences in life change scaling. *Journal of Psychosomatic Research*, 19, 27–32. doi:10.1016/0022-3999(75)90047-1
- McAdams, D. P. (2001). The psychology of life stories. *Review of General Psychology*, 5, 100–121. doi:10.1037/1089-2680.5.2.100
- McCrae, R. R., Kurtz, J. E., Yamagata, S., & Terracciano, A. (2011). Internal consistency, retest reliability, and their implications for personality scale validation. *Personality and Social Psychology Review*, 15, 28–50. doi:10.1177/1088868310366253
- Perrig-Chiello, P., & Perren, S. (2005). Biographical transitions from a midlife perspective. *Journal of Adult Development*, 12, 169–181. doi:10.1007/s10804-005-7085-x
- Pillemer, D. B. (1998). *Momentous events, vivid memories*. Cambridge, MA: Harvard University Press.
- Pillemer, D. B. (2001). Momentous events and the life story. *Review of General Psychology*, 5, 123–134. doi:10.1037/1089-2680.5.2.123
- Pillemer, D. B., Goldsmith, L. R., Panter, A. T., & White, S. H. (1988). Very long-term memories of the first year in college. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 14, 709–715. doi:10.1037/0278-7393.14.4.709
- Reddon, J. R. (1997). *Confidence intervals approach to scree test (version 1.0)*. Edmonton, Alberta: Author.
- Rummel, R. J. (1970). *Applied factor analysis*. Evanston, IL: Northwestern University Press.
- Rutter, M. (1996). Transitions and turning points in developmental psychopathology: As applied to the age span between childhood and mid-adulthood. *International Journal of Behavioral Development*, 19, 603–626. doi:10.1177/016502549601900309
- Shum, M. S. (1998). The role of temporal landmarks in autobiographical memory processes. *Psychological Bulletin*, 124, 423–442. doi:10.1037/0033-2909.124.3.423
- Singer, J. A., & Salovey, P. (1993). *The remembered self: Emotion and memory in personality*. New York, NY: Free Press.
- Skowronski, J. J., Ritchie, T. D., Walker, W. R., Betz, A. L., Sedikides, C., Bethencourt, L. A., & Martin, A. L. (2007). Ordering our world: The quest for traces of temporal organization in autobiographical memory. *Journal of Experimental Social Psychology*, 43, 850–856. doi:10.1016/j.jesp.2006.10.001
- Svob, C., & Brown, N. R. (2012). Intergenerational transmission of the reminiscence bump and biographical conflict knowledge. *Psychological Science*, 23, 1404–1409. doi:10.1177/0956797612445316
- Tennant, C. (2002). Life events, stress and depression: A review of recent findings. *The Australian and New Zealand Journal of Psychiatry*, 36, 174–182. doi:10.1046/j.1440-1614.2002.01007.x
- Thomsen, D. K., & Berntsen, D. (2008). The cultural life script and life story chapters contribute to the reminiscence bump. *Memory*, 16, 420–435. doi:10.1080/09658210802010497
- Thorne, A., McLean, K. C., & Lawrence, A. M. (2004). When remembering is not enough: Reflecting on self-defining memories in late adolescence. *Journal of Personality*, 72, 513–541. doi:10.1111/j.0022-3506.2004.00271.x
- Wheaton, B. (1990). Life transitions, role histories, and mental health. *American Sociological Review*, 55, 209–223. doi:10.2307/2095627
- Wilson, A. E., & Ross, M. (2001). From chump to champ: People's appraisals of their earlier and current selves. *Journal of Personality and Social Psychology*, 80, 572–584. doi:10.1037/0022-3514.80.4.572
- Yalom, I. D. (1983). *Inpatient group psychotherapy*. New York, NY: Basic Books.
- Zebian, S., & Brown, N. R. (2013). Living in history in Lebanon: The influence of chronic social upheaval on the organisation of autobiographical memories. *Memory*. Advance online publication. doi:10.1080/09658211.2013.775310