The coherence of critical event narratives and adolescents' psychological functioning

Yan Chen, Helena M. McAnally, Qi Wang & Elaine Reese

To cite this article: Yan Chen, Helena M. McAnally, Qi Wang & Elaine Reese (2012) The coherence of critical event narratives and adolescents' psychological functioning, Memory, 20:7, 667-681, DOI: 10.1080/09658211.2012.693934

To link to this article: https://doi.org/10.1080/09658211.2012.693934

Published online: 20 Jun 2012.

Submit your article to this journal

Article views: 593

View related articles

Citing articles: 14 View citing articles
The coherence of critical event narratives and adolescents’ psychological functioning

Yan Chen¹, Helena M. McAnally¹, Qi Wang², and Elaine Reese¹

¹Department of Psychology, University of Otago, Dunedin, New Zealand
²Department of Human Development, Cornell University, Ithaca, NY, USA

The present study examined the coherence of low- and high-point life-event narratives among adolescents (aged between 12 and 21 years) and their psychological functioning in terms of well-being and prosocial behaviour. The results showed robust age-related increases in narrative coherence. Age and gender significantly moderated the associations between narrative coherence and psychological functioning. Specifically, higher levels of coherence were significantly associated with prosocial behaviour only for older adolescents. Higher levels of narrative coherence were also associated with lower levels of well-being among adolescent boys, but not among adolescent girls. Results are discussed in terms of why coherent life-event narratives may not be linked to benefits for younger adolescents and for boys, and how low- and high-point life events both contribute to identity construction.

Keywords: Narrative coherence; Development; Adolescence; Psychological functioning.

The ability to remember autobiographical events and to recall them in coherent narratives develops in childhood (e.g., Fivush, Haden, & Adam, 1995; Hamond & Fivush, 1991; Peterson & McCabe, 1983; for reviews see Nelson & Fivush, 2004; Reese, 2002). However, it is not until late adolescence and early adulthood that we begin to actively link our personal past to the current self, and to integrate various autobiographical events into our life stories (Bohn & Berntsen, 2008; Habermas & Bluck, 2000). McAdams (1993, 1996) argued that life stories represent our narrative identity: a complex cognitive construct that consists of internalised, integrative accounts of critical life events. Meanwhile adolescence is a critical period for the construction of personal identity, and a mature sense of identity is linked with higher levels of psychological well-being (Erikson, 1968). A mature identity is also linked—conceptually and empirically—to a concern for others, as measured by prosocial behaviour and generativity (Busch & Hofer, 2011; Frensch, Pratt, & Norris, 2007; Hardy & Kisling, 2006; Pratt, Arnold, & Lawford, 2009). In the current paper we examine adolescents’ identity via their narratives about the low points and high points of their lives. We were especially interested in the links between the coherence of these critical life-event narratives and adolescents’ psychological functioning, both in terms of their well-being and their concern for others.

Two additional theoretical concerns need to be addressed before we introduce the current study in greater detail. First, instead of exploring adolescents’ entire life stories, we examined adolescents’ narratives about the low and high points of their lives. Although discrete life events only represent segments of a person’s entire life, narrative processing of these important events has been associated with the typicality of adolescents’ entire life stories and also with young adults’ identity status (e.g., Bohn & Berntsen, 2008;
McLean & Pratt, 2006). Second, we used multiple measures to tap narrative coherence, such as the narrator’s ability to use past experiences to explain personality change, the degree to which the narrative reflects the meaning of these experiences, and the extent to which a single life event is related to other parts of an individual’s autobiography.

THE DEVELOPMENT OF COHERENT EVENT NARRATIVES

Habermas and Bluck (2000) suggested that autobiographical reasoning is a narrative tool for people to understand how the current self has been developed through past experiences. They also argued that by engaging in autobiographical reasoning—a narrative process of connecting the past, present, and future self in life stories—people eventually develop coherent and meaningful narratives about their personal past, which indicates higher levels of identity (Habermas, 2011; Habermas & Bluck, 2000). Four types of coherence (i.e., temporal, causal, thematic, and cultural coherence) have been associated with autobiographical reasoning. Habermas and Bluck suggested that the ability to construct each type of coherence develops hierarchically, with some reaching adult-level performance earlier than others (e.g., temporal coherence) and some continuing to develop into adulthood (e.g., thematic coherence). In the current paper we mainly focus on how adolescents construct causal coherence in their narratives: the abilities to use autobiographical experiences to explain how one developed into the current self and to relate single life events to other life experiences.

Past research has empirically examined the developmental trajectory of life story coherence in adolescence. For example, Habermas and de Silveira (2008) found age-related increases in narrative coherence from 12- to 20-year-old adolescents’ life stories, even after controlling for adolescents’ intelligence, biographical practices, and prior autobiographical reasoning training. Specifically, adolescents’ scores on global causal coherence, measured by the developmental consequentiality scale (DC), increased significantly between ages 12 and 16. Developmental consequentiality assesses the ability to realise changes in personality and to use past experiences to explain why these changes had occurred.

Similarly, McLean and colleagues (McLean, 2005, 2008; McLean & Breen, 2009; McLean, Breen, & Fournier, 2010; McLean & Pratt, 2006; McLean & Thorne, 2003; Thorne, McLean, & Lawrence, 2004) argue that narrative meaning-making (MM) is another way to construct causal coherence. This narrative process refers to the way in which people extract meaning or lessons from past experiences as an attempt to understand how they become who they are. The level of meaning varies according to the depth of self-reflection and how the meaning is applied to a person’s life. McLean and Breen (2009) demonstrated that narrative meaning-making increases significantly at around age 16.

In contrast to the autobiographical memory literature, which shows that girls tend to provide narratives with more details and to include more references to the emotional and psychological aspects of events (Haden, Haine, & Fivush, 1997), McLean and Breen found no gender differences in the complexity of meaning that adolescents extracted from their turning-point events. This finding supports Habermas and Bluck’s (2000) claim that the formation of identity is of paramount importance for girls and boys during adolescence due to societal and developmental demands. Although there are gender differences in the recollection of individual autobiographical memories, gender is not foregrounded in the construction of narrative identity (Fivush & Buckner, 2003). In other words, gender differences in autobiographical memories may not necessarily interfere with adolescents’ ability to construct coherent and meaningful life narratives.

ASSOCIATIONS AMONG NARRATIVE COHERENCE, AGE, GENDER, AND WELL-BEING

Identity construction or self-understanding is linked with well-being for both children and adults (Erickson, 1968; Reese, Bird, & Tripp, 2007). Given that people’s autobiographical memories serve the function of self-understanding (Bluck, Alea, Habermas, & Rubin, 2005), one would expect that the way in which people process the meaning of critical life events, as well as the coherence of these narratives, would both be related to well-being.

Baerger and McAdams (1999) collected adults’ narratives about critical life events (e.g., a peak
experience, a nadir experience, a turning-point experience) and investigated how the coherence of these event narratives was related to well-being. Narrative coherence was defined as story orientation, structure, affect, and integration. Note that, although their definition of coherence only captures some aspects of life narrative coherence as suggested by Habermas and Bluck (2000), there is some overlap between these two approaches (see Reese et al., 2011). For instance, similar to thematic coherence, the integration subscale captures the narrator’s ability to express meaning of the experiences and to integrate these experiences into the context of an entire life story. The total coherence scores (i.e., the sum of all subscales) were positively correlated with well-being, and this association was further moderated by event type. Specifically, higher levels of coherence for peak, nadir, and turning-point events were correlated with higher levels of happiness and life satisfaction and lower levels of depression in adulthood, whereas coherence was not related to well-being for other events (e.g., childhood, adolescent, and adulthood experiences). Their findings suggest that certain life events, such as life’s low, turning, and high points, play a more prominent role in the connection between coherence and well-being than do other less-important events.

However, very few studies have investigated the relation between narrative coherence and well-being in adolescence or earlier. Adolescence is often associated with declines in well-being, such as lower levels of self-esteem and higher levels of depression (Block & Robins, 1993; Petersen, Sarigiani, & Kennedy, 1991; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002). In addition, gender interacts with age on well-being, such that girls tend to experience a steeper decrease of well-being compared to boys; girls also stay in this recession period for a longer period of time than do boys (Nolen-Hoeksema, 2001; Petersen, 1988; Petersen et al., 1991). Meanwhile the ability to construct coherent narratives and the desire to incorporate critical life events into one’s identity also increase rapidly during adolescence. These improvements in narrative skills may buffer against some of the decreases in well-being observed in adolescence. However, this would only be the case if coherent narratives have the same positive links to well-being among adolescents as have been demonstrated among adults (e.g., Baerger & McAdams, 1999). Contrary to the adult literature, McLean and Breen (2009) found no significant correlation between narrative coherence (i.e., meaning-making) in turning-point narratives and adolescents’ self-esteem. It was suggested that age and gender could moderate this association; in a sample comprising solely adolescent boys, meaning-making was negatively related to self-esteem in early adolescence, whereas no such relation was found in late adolescence (McLean et al., 2010). It should be noted that McLean et al. only examined narrative meaning-making of turning point narratives and its relation to psychological well-being in terms of self-esteem. In the current investigation, we extend these findings to girls because patterns of risk and well-being differ as a function of gender, especially during adolescence. Furthermore, most of the literature has focused on the link between narrative processing of turning-point events and well-being. It is important to consolidate this link using other critical life events, such as high and low points, which also contribute to our understanding of the self. Finally, we wished to extend the measurement of adolescent well-being and psychological functioning, as discussed further below.

**EVENT VALENCE AND THE COHERENCE OF CRITICAL LIFE EVENTS**

Although the telling of both positive and negative events has been related to self-understanding and well-being in adults (McLean & Lilgendahl, 2008), event valence moderates the degree of cognitive processing required to make sense of these highly emotional life experiences. Relative to positive and neutral events, people often exhibit more physiological, cognitive, and emotional activity after experiencing negative events (Fiedler, 1988; Ison, Daubman, & Gorgoglione, 1987; Suls & Mullen, 1981; Vinokur & Selzer, 1975). Because negative events are often unexpected, people are more likely to engage in cognitive processes to fully understand the causes and consequences and to resolve the negative aspects of these experiences (Taylor, 1991).

Event valence also moderates the link between narrative processing and well-being. Using Pennebaker’s expressive writing paradigm, people’s physical and psychological health improved significantly after asking them to write or talk about traumatic life experiences on consecutive days.
In contrast, writing or talking about positive events has been linked with decreases in life satisfaction (e.g., Lyubomirsky, Sousa, & Dickerhoof, 2006; for health benefits of writing about positive experiences cf. Burton & King, 2004). However, this negative association may be moderated by the modality of the cognitive process, such that analysing positive events in writing was related to lower well-being. In contrast, thinking about positive experiences and appreciating the positive feelings from these experiences (as evidenced in behaviours such as savouring) has been linked to better well-being (Jose, Lim, & Bryant, in press). Lastly it is possible that the health benefit of emotional writing is an age-related phenomenon. In fact, preadolescent children who wrote about negative experiences with a greater number of evaluations and explanations reported higher levels of depression, anxiety, and difficulty than children who wrote about neutral topics (Fivush, Marin, Crawford, Reynolds, & Brewin, 2007). Therefore it is crucial to take a developmental approach to find out the associations among age, event valence, autobiographical reasoning, and adolescents’ psychological functioning.

THE PRESENT STUDY

In this study we focused on adolescents’ ability to construct coherent narratives about life’s low- and high-point events. Given the influence of age, gender, and event valence on autobiographical reasoning, we also explored how these factors interact with adolescents’ psychological functioning. Adolescents aged between 12 and 21 years were asked to tell a low-point and a high-point event of their lives. The degree of narrative coherence was measured in terms of theme, developmental consequentiality, and meaning-making. We also extended the measurement of psychological functioning beyond prior research to assess various dimensions of well-being (e.g., self-esteem, depression, and life satisfaction) as well as adolescents’ psychological adjustment, measured by the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The SDQ assesses adolescents’ negative (e.g., internalising and externalising difficulties, peer problems) and positive adjustments (e.g., prosocial behaviour). Given that optimal well-being is more than just the absence of symptoms, including the prosocial subscale of the SDQ adds to our understanding of how well our adolescents are functioning, both behaviourally and psychologically. Moreover, the prosocial subscale of the SDQ offers an age-appropriate measure of concern for others. Prosocial behaviour in adolescence is, in turn, linked to generativity in emerging adulthood (Frensch et al., 2007).

Overall we predicted that age would interact with narrative coherence to predict individual well-being. Specifically, we predicted that coherent event narratives would be negatively or unrelated to well-being in early adolescence, whereas a positive association between narrative coherence and well-being would be in place in late adolescence. We also wanted to explore whether the link between narrative coherence and well-being could differ as a function of gender. However, no particular predictions were made in this regard given that no prior research has been conducted directly comparing the relation between narrative coherence and well-being in male and female adolescents. We also predicted that adolescents with more mature levels of causal coherence on narrative identity measures would show greater prosocial behaviours, given that narrative processing measures are correlated with identity status measures (McLean & Pratt, 2006), and that identity achievement is linked to higher levels of prosocial behaviour in older adolescents and young adults in diverse cultures (Busch & Hofer, 2011; Hardy & Kisling, 2006).

METHOD

Participants

Our participants, aged between 12 and 21 years, were undergraduate students at the University of Otago, Dunedin, New Zealand and pupils attending a local Catholic secondary school in Dunedin. A total of 90 participants were recruited, all of European descent. Participants were further divided into three age groups: the early, mid, and late adolescence groups. These age groups took into consideration the theoretical claims that late adolescence is a critical period for identity construction (e.g., Erikson, 1968; Habermas & Bluck, 2000) and also culturally defined landmark events that define transitional periods in a person’s life (e.g., [in New Zealand] starting secondary education at age 12, getting a driver’s licence at age 15, voting at 18). The early adolescence group...
Consisted of adolescents aged between 12 and 14 years \((M = 13.5, SD = 1.04; 13\) girls and 16 boys), the mid-adolescence group consisted of adolescents aged between 15 and 17 years \((M = 16.4, SD = .83; 16\) girls and 15 boys), and the late adolescence group consisted of adolescents aged between 18 and 21 years \((M = 19.5, SD = .84; 18\) girls and 12 boys). Maternal education level did not differ as a function of adolescents’ age; on average mothers had completed some education above secondary school level. Participants were reimbursed with NZ$ 20 for their contribution. As part of a larger research project investigating the development of the life story in adolescence, various life story narratives were collected during the interview; only information pertaining to the current paper is reported.

**Procedure**

Each participant attended a single session at a university lab, during which they were interviewed about their life stories and also completed questionnaires regarding their well-being. The second author, a young New Zealand European woman, interviewed all participants. All interviews were later transcribed verbatim for subsequent coding.

*Critical life events*

Participants were asked to think back over their life and narrate a low-point and a high-point event from their life story, using an interview guideline adapted from McAdams’ (2008) Life Story Interview. Participants always told the low-point event first, and the high-point event last. A low-point event was defined as a specific experience in which one felt “…really negative emotions, such as extreme sadness, loneliness, fear, despair, disillusionment, guilt, and so forth”. A high-point event was defined as a specific experience in which one felt “…extremely positive emotions, like joy, excitement, great happiness, or even deep inner peace”. These critical life events were something that the participant remembered clearly, and could be from any time in the participant’s life. Once participants provided exhaustive free-recall of the event, they answered some specific questions for each critical life event, such as “…when it happened, who else was involved, how did you and any others present feel, why was this a low (or high) point in your life, and how did the event change your life”. Participants also completed computerised questionnaires to measure various aspects of psychological functioning.

*Adolescents’ psychological functioning*

Participants’ well-being and prosocial behaviour were assessed across different domains. These questionnaires were presented on a computer through Media Lab (Jarvis, 2006). The interviewer remained in the room to answer any questions participants had about the questionnaires but stayed in a position where she could not see the computer screen to ensure each participant’s privacy. Two participants required assistance with reading the questionnaire and thus responded while the interviewer was able to see the screen.

*Depression.* The Reynolds Adolescent Depression Scale – 2nd Edition (RADS-2; Reynolds, 2002) was used to examine participants’ levels of depression (Cronbach’s \(z = .91\)). The RADS-2 consists of 30 items and provides an indication of the severity of depressive symptoms in adolescents, but it is not designed as a formal DSM-IV diagnosis for Major Depressive Symptom. A 4-point scale is assigned to each item, and participants were asked to choose the answer that best described their feelings. The answers on the scale were *Almost never* (0), *Hardly ever* (1), *Sometimes* (2), and *Most of the time* (3). A total score of the scale was produced for each participant by summing scores for each item. Items on the RADS-2 were written to be understood by adolescents with approximately grade 2 reading competency, and it has been demonstrated to have acceptable validity and reliability when tested among New Zealand adolescents across different ethnic groups (Walker et al., 2005). We used raw scores because we wanted to be able to control for age and gender separately, and also because the adjusted scores did not differ significantly from the raw scores.

*Life satisfaction.* Life satisfaction was measured by the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larson, & Griffin, 1985), which consists of five items tapping into the overall quality of life (Cronbach’s \(z = .79\)). Each item is answered with a seven-point scale, indicating the extent to which participants agree with...
the statement such as “The conditions in my life are ideal” and “I am satisfied with my life”. The SWLS has been demonstrated as a reliable measure of overall life satisfaction (Pavot, Diener, Colvin, & Sandvik, 1991), and exhibits high internal consistency and discriminant validity (Diener et al., 1985).

**Self-esteem.** The Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) is a 10-item questionnaire to assess participants’ level of self-esteem (Cronbach’s α = .78). Participants rated each item on a four-point scale, indicating the extent to which they agreed with the scale in terms of positive and negative evaluations of the self.

**Strengths (prosocial behaviours) and difficulties.** The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) is a 25-item questionnaire to measure adolescents’ functioning. Each item was rated on a 3-point Likert scale. A total difficulties score was produced by summing up participants’ answers to the 20 items measuring their hyperactivity, emotional symptoms (depression and anxiety symptoms), conduct problems, and peer problems (Cronbach’s α = .76). The SDQ also includes 5 items measuring adolescents’ strengths in the form of prosocial behaviours (Cronbach’s α = .61). The total difficulties and prosocial behaviour scores have been normed (in the US, UK, and Australia) for adolescents up to 17 years of age.

**Narrative coding**

Reliability coding was performed by the second author and another coder, who was naïve to the hypotheses as well as the participants’ gender and age. The coders independently coded 25% of the total transcripts to establish reliability on all the narrative variables; disagreements were resolved through discussion. The remaining transcripts were coded by the naïve coder.

**Event type**

We adapted previous schemes (e.g., McLean & Pratt, 2006; McLean & Thorne, 2003) to arrive at six event categories (e.g., relationships, achievement, accidents, leisure, immigration, and personal development) to represent the types of events that adolescents chose as the low and high points of their life stories. Each type was coded as a dichotomy (present or absent) to capture multiple topics in the narratives. Thus a narrative could contain one or more event types. Proportions of agreement between the two coders were .91 and .94 for the low- and high-point narratives, respectively.

**Narrative coherence**

The degree of autobiographical reasoning was coded in terms of three dimensions: theme, developmental consequentiality, and meaning-making. Intraclass correlations for reliability are reported below for each coherence dimension, separately for the low- and high-point event.

**Theme.** The theme subscale from the Narrative Coherence Coding Scheme (NaCCS; Reese et al., 2011) was used to capture the degree to which a narrative was on-topic, elaborated, resolved, and integrated into the narrator’s life. Intraclass correlations were .83 for the low point and .76 for the high point. Only adolescents’ free recall of the event was included for the theme coding, because the follow-up questions specifically asked adolescents to connect the event with their other autobiographical experiences. The theme of the narrative was based on a 4-point scale. A score of 0 was given to a narrative that was marked by multiple digressions and had no clear topic. A score of 1 was given to an on-topic narrative that lacked substantial development. A score of 2 was given to a narrative that substantially developed its topic via causal linkages, elaborations, evaluations, and interpretations. Narratives that scored a 2 did not contain any resolutions or links to other autobiographical experiences. The highest score of 3 was given to a narrative that contained all of the above, and also incorporated resolutions to the event, and/or links to other autobiographical experiences or self-concept.

**Developmental consequentiality.** The Developmental Consequentiality scale (DC; Habermas & de Silveira, 2008) was used as an indicator of the extent to which the narrator established links between events and changes to their personality or outlook on life. Intraclass correlations were .80 for the low point and .88 for the high point. In our study, DC was coded on a four-point scale; each point corresponded to the anchor points in the original seven-point scale (1, 3, 5, and 7, respectively). A score of 0 was given to a narrative in which the narrator did not provide any reference
of personality change or realisation of personal development. External changes, such as “I go to a different school now”, were not considered as having any developmental consequentiality. A score of 1 was given to a narrative that indicated changes in personality or personality development, but there was no articulation or explicit explanation of such changes. An example would be “I was a shy person then”; the use of past tense and the word “then” implies that the narrator was no longer shy, but no explicit description was given of how the narrator’s personality had changed. A score of 2 was given to a narrative in which the narrator explicitly described the change in personality, but did not explain why such a change had occurred. In other words, the development in personality was fairly meaningful, but not comprehensive. In addition, such a change should be internal, regarding personality or opinion rather than an external change or temporary transition between emotions. A score of 3 was given to a narrative in which the development of or change in personality was described with reference to motives or causes. The narrator could also offer evaluations on the emotional content of the event and again the emphasis was on internal states and personality. The DC scores were assigned based on the overall content, including participants’ free-recall narratives and answers to the specific questions.

**Meaning-making.** The meaning-making scale (McLean & Pratt, 2006) was used to capture the degree of meaning participants drew from their critical life events. Meaning-making referred to what the narrator understood and learned from previous experiences. Intraclass correlations were .82 for the low point and .79 for the high point. Meaning-making was coded on a 4-point scale ranging from No meaning to Gaining insight depending on the level of self-reflection that was undertaken. A score of 0 (no meaning) was given to a narrative in which no self-reflection or change in the person’s life was mentioned. A score of 1 (lesson learned) was given to a narrative in which the narrator learned a specific behaviour or action from the event but did not engage in self-reflection. A score of 2 (vague meaning) was given to a narrative in which the narrator specifically stated some internal changes to the self, without explaining in detail how this change had occurred or offering elaborations on how this change would impact his/her life in the future. A score of 3 (gaining insight) was given to a narrative where there was clear evidence of in-depth self-reflection. The narrator also explained why and how the internal change occurred by making causal connections between past experiences and the present self. In addition, this type of meaning could be generalised to form part of the narrator’s life philosophy. Again, participants’ meaning-making scores were based on the content of the entire event narratives, including free recall and participants’ answers to specific questions.

## RESULTS

### Descriptive statistics

The total number of memory themes identified for low- and high-point events as a function of age group is presented in Table 1. Because memory themes were not mutually exclusive, the total number of themes exceeded the total number of events. Pearson’s chi-square tests showed that age was not associated with the distribution of most memory themes except for high-point achievement themes; participants in the oldest age group were more likely to provide achievement memories as their high-point events compared to

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Distribution of event types for low- and high-point events</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low-point</td>
</tr>
<tr>
<td></td>
<td>EA</td>
</tr>
<tr>
<td>Relationships</td>
<td>24</td>
</tr>
<tr>
<td>Leisure</td>
<td>0</td>
</tr>
<tr>
<td>Achievement</td>
<td>0</td>
</tr>
<tr>
<td>Accidents</td>
<td>4</td>
</tr>
<tr>
<td>Personal Development</td>
<td>1</td>
</tr>
<tr>
<td>Immigration</td>
<td>2</td>
</tr>
</tbody>
</table>

EA = early adolescence, MA = mid adolescence, LA = late adolescence.
participants from the other two younger age groups, $\chi^2(2, 18) = 8.85, p = .01$. Across age groups, relationships (82%) were the most common theme for low-point events, followed by accidents (13%), whereas leisure (50%) was the most common theme for high-point events, followed by relationships (24%) and achievement (24%).

Narrative coherence was measured by the Theme, Developmental Consequentiality (DC) and Meaning-Making (MM) scales. Table 2 contains the descriptive statistics of these scores as a function of age group and event valence. Pearson’s correlations were conducted among the narrative variables. As shown in Table 3, all narrative variables were moderately positively correlated with each other and also with the length of the entire life story interview.

As shown in Table 4, most of the psychological functioning measures were also moderately correlated with each other. The only exception was found with regards to participants’ scores on the prosocial scale of the SDQ, which was negatively correlated with the total difficulty score of the SDQ and uncorrelated with the other measures of psychological functioning. A principal components analysis was conducted on the five measures of psychological functioning. Table 5 shows the descriptive statistics and the component loadings (without rotation). Two components had eigenvalues greater than 1 (2.76 for factor 1 and 1.04 for factor 2) and together they explained 76% of the variance.

The component loadings in Table 5 indicate that component 1 represents well-being (higher self-esteem and life satisfaction coupled with lower levels of depression and fewer problems) and component 2 represents prosocial behaviour. Analyses of variance (ANOVAs) were conducted on these two components as a function of gender and age group. For well-being there were no main effects of gender or age, but there was a significant gender $\times$ age interaction, $F(2, 83) = 6.11, p < .05, \eta^2 = .13$. Independent-samples t-tests showed that boys in the mid-adolescence group ($M = .39, SD = 1.06$) had higher well-being than did girls ($M = -.53, SD = 1.00$), $t(29) = 2.47, p < .05$, whereas there were no gender differences for either the early adolescence group ($M = .04, SD = .98$ for boys and $M = .36, SD = .47$ for girls) or the late adolescence group ($M = -.53, SD = 1.22$ for boys and $M = .22, SD = .84$ for girls). For prosocial behaviour, there was a main effect of gender, $F(1, 83) = 22.51, p < .001, \eta^2 = .21$, such that girls ($M = .43, SD = .74$) had higher scores than did boys ($M = -.46, SD = 1.04$). There was no main effect of age or interaction between gender and age for prosocial behaviour. Subsequently, regression analyses were conducted to examine how narrative coherence and its interactions with age and gender predicted adolescents’ psychological functioning using these two factors (i.e., well-being and prosocial behaviour).

**Main analyses**

*The development of narrative coherence*

Multivariate analysis of covariance (MANCOVA) was conducted to examine the effects of age

### Table 2

<table>
<thead>
<tr>
<th>Age group</th>
<th>EA</th>
<th>MA</th>
<th>LA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td><strong>Low-point narratives</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theme</td>
<td>2.14</td>
<td>.65</td>
<td>2.27</td>
</tr>
<tr>
<td>DC</td>
<td>.36</td>
<td>.68</td>
<td>1.10</td>
</tr>
<tr>
<td>MM</td>
<td>.21</td>
<td>.63</td>
<td>1.07</td>
</tr>
<tr>
<td><strong>High-point narratives</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theme</td>
<td>2.11</td>
<td>.79</td>
<td>2.13</td>
</tr>
<tr>
<td>DC</td>
<td>.46</td>
<td>.58</td>
<td>.83</td>
</tr>
<tr>
<td>MM</td>
<td>.32</td>
<td>.72</td>
<td>.87</td>
</tr>
<tr>
<td>Interview length*</td>
<td>4433</td>
<td>1722</td>
<td>4879</td>
</tr>
</tbody>
</table>

EA = early adolescence, MA = mid adolescence, LA = late adolescence, DC = developmental consequentiality, MM = meaning-making.

*Interview length (number of words) increased significantly with age, $F(2, 87) = 3.18, p < .05$. 
and gender on the narrative variables (see Table 2 for descriptives), controlling for narrative length. Significant main effects were followed up with univariate tests. Using Pillai’s trace, there was a significant main effect of age on the level of narrative coherence across events, \( V = .40, F(12, 154) = 3.18, p < .001, \eta^2 = .20. \) Univariate tests showed significant age-related differences in low-point developmental consequentiality and meaning-making scores, \( F(2, 81) = 15.78, p < .001, \eta^2 = .28 \) and \( F(2, 81) = 15.27, p < .001, \eta^2 = .27 \), respectively. Age differences in high-point developmental consequentiality and meaning-making scores were marginally significant \((p < .10).\) In contrast there were no age-related differences in narrative theme scores for either event. Post-hoc Bonferroni tests showed linear increases in low-point DC scores across age groups, such that participants in the early adolescence group scored significantly lower than those in the mid adolescence group \((p < .05),\) who in turn scored significantly lower than those in the late adolescence group \((p < .001).\) In terms of low-point MM scores, participants in the youngest age group scored significantly lower than the other two age groups \((p < .05),\) but there were no differences between the two older age groups.

Furthermore, MANCOVA showed no main effects of gender on any of the narrative variables, \( V = .05, F(6, 76) = .68, \text{ns},\) nor were there significant interactions between age and gender on any of the narrative variables. Across age groups, paired sample \( t\)-tests were conducted to examine whether narrative coherence differed as a function of event valence. Significant differences were found for DC scores between low- and high-point events, \( t(87) = 2.88, p < .05,\) and marginal differences were found for MM scores between low- and high-point events, \( t(88) = 1.97, p < .10.\) DC and MM scores were higher for the low-point narratives than for the high-point narratives. In contrast, no differences were found between events for theme scores.

**Associations among narrative coherence, gender, age, and adolescents’ psychological functioning**

In order to investigate whether age moderated the relation between narrative coherence and well-being we ran regression analyses which included narrative coherence, age, and the interaction between narrative coherence and age as predictors of adolescents’ well-being and prosocial behaviour. Given the gender differences in well-being and prosocial behaviour we ran another set of regression analyses to explore if gender also interacted with narrative coherence to predict adolescents’ well-being and prosocial behaviour. All narrative variables and the associated interaction terms were grand-mean centred to reduce collinearity among the predictors. Age was represented categorically using two dummy codes, with the early adolescence group as the reference group. This allowed us to examine different patterns between age groups without a
priori assumptions that the effect of age was linear. Variables were entered in the following sequence: Narrative length was entered first as a covariate, followed by the main effects of the narrative variable, then gender (or age), and finally the interaction terms. To streamline the results we only used theme and DC scores as the narrative predictors for the main regression analyses, given that DC and MM were highly correlated with each other.¹

Low-point events. Regression analyses showed no main effects of narrative coherence or age when well-being was the outcome variable, nor were there any significant age by narrative interactions. In contrast, significant narrative by age interactions were found when prosocial behaviour was the outcome variable. Although none of the regression models were significant overall \((R^2 < .10)\), significant interaction terms were present. Table 6 shows a summary of regressions with significant narrative by age interactions when prosocial behaviour was the outcome variable.

The significant narrative by age interactions were followed up with simple slope analyses (Aiken & West, 1991) to examine how age moderates the relation between narrative coherence and well-being. With regard to the significant DC by age interaction, the simple slope values were not significantly different from zero for the early \((b = -.30, SE = .28, t = -1.07, ns)\) or mid-adolescence groups \((b = .14, SE = .18, t = .75, ns)\), indicating that DC was not a significant predictor of prosocial behaviour for these two age groups. In contrast, the simple slope value was significantly different from zero for the late adolescence group \((b = .40, SE = .18, t = 2.25, p = .03)\), suggesting that higher levels of DC were linked with increases in prosocial behaviour among adolescents aged between 18 and 21. With regard to the significant theme by age interaction, the simple slope values were not significantly different from zero for the early \((b = -.33, SE = .29, t = -1.14, ns)\) or late adolescence groups \((b = .45, SE = .36, t = 1.27, ns)\). In contrast, the simple slope value was marginally different from zero for the mid-adolescence group \((b = .54, SE = .31, t = 1.73, p = .09)\), indicating that higher levels of theme might be related to higher levels of prosocial behaviour in mid-adolescence.

The current findings thus suggest the possibility that age moderates the relationship between narrative coherence and prosocial behaviour, such that higher levels of coherence are related to more prosocial behaviour among older adolescents, while this effect may be negative or absent among younger adolescents. However, these results need to be interpreted with caution given the relatively small sample sizes in each age group and the cross-sectional design of the current study.

Another set of analyses was conducted to examine the associations among the coherence of low-point narratives, gender and adolescents’ psychological functioning. When well-being was the outcome variable, the regression models showed no main effect of theme or significant interaction between theme and gender. However, there was a marginal main effect of DC on well-being \((\beta = -.34, SE = .18, p = .09)\), such that higher levels of DC tended to be linked to lower well-being, with no significant DC by gender interaction. When prosocial behaviour was the outcome variable, the regression models revealed only a main effect of gender \((\beta = .44, SE = .19, p = .000)\), such that girls \((M = .43, SD = .75)\) had higher prosocial behaviour scores than did boys \((M = -.46, SD = 1.04)\), as noted above. Furthermore there were no main effects of narrative coherence or

### TABLE 5
Descriptive statistics and component loadings for the psychological functioning measures

<table>
<thead>
<tr>
<th></th>
<th>Girls</th>
<th></th>
<th>Boys</th>
<th></th>
<th>Component loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>26.59</td>
<td>4.88</td>
<td></td>
<td>25.77</td>
<td>5.19</td>
</tr>
<tr>
<td>Depression</td>
<td>56.35</td>
<td>9.85</td>
<td></td>
<td>54.86</td>
<td>14.09</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>20.13</td>
<td>3.66</td>
<td></td>
<td>21.51</td>
<td>3.29</td>
</tr>
<tr>
<td>Pro-social behaviour</td>
<td>8.28</td>
<td>1.35</td>
<td></td>
<td>6.77</td>
<td>1.78</td>
</tr>
<tr>
<td>Total problems</td>
<td>10.49</td>
<td>4.12</td>
<td></td>
<td>11.32</td>
<td>5.83</td>
</tr>
</tbody>
</table>

¹We also conducted regression models with MM as the main narrative variable and MM by age (or MM by gender) interactions. There were no main effects of MM in any of the regression models and there were only marginal MM by age interactions.
results revealed age-related increases in adolescents’ ability to construct coherent life-event narratives, as well as gender differences in adolescents’ psychological functioning. We also found age and gender differences in the link between narrative coherence and adolescents’ psychological functioning. Our findings suggest that higher levels of narrative coherence were associated with poorer psychological functioning among younger adolescents, especially for boys. In contrast, for older adolescents higher levels of narrative coherence were linked to better psychological functioning.

The development of coherent critical event narratives in adolescence

In the present study, older adolescents scored significantly higher on the developmental consequentiality and meaning-making scales in their low-point narratives than did younger adolescents. Coherence as measured by developmental consequentiality increased across adolescence, whereas coherence as measured by meaning-making increased only between early and mid-adolescence. Marginal age-related increases were also found for high-point developmental consequentiality and meaning-making scores. Consistent with past research (e.g., Habermas & de Silveira, 2008; McLean & Breen, 2009), our results showed that causal coherence in life narratives is undergoing rapid development between the ages of 12 and 16. In contrast, no age-related differences were found on theme scores for either the low- or high-point event. We acknowledge that only the highest score of theme captures signs of causal coherence. In order to receive the highest score of 3, adolescents had to show evidence of coherence by relating the event to other autobiographical experiences. Although not at ceiling, the average theme scores were in the range of between 2 and 2.5. This pattern suggests that adolescents have already achieved the ability to stay on-topic and to elaborate upon and evaluate the details of past events; they are also beginning to exhibit the ability to introduce resolutions and to integrate other autobiographical experiences.

Note that our participants’ scores on theme are slightly elevated compared to the adolescent samples in Reese et al. (2011); however, the younger adolescents in that sample were drawn

**DISCUSSION**

The present study examined adolescents’ identity construction via narratives about low points and high points in their lives, and the associations among the coherence of these critical event narratives, age, gender, and adolescents’ psychological functioning (well-being and prosocial behaviour). Consistent with past research, our
from more ethnically and economically diverse populations. Note also that the participants in our study had previously narrated a whole-life story prior to narrating the high-point and low-point life events. Thus they received more scaffolding in telling the life events than did participants who are asked only to narrate single autobiographical events. Theme scores using the NaCCS may not be as sensitive an indicator of coherence in life event narratives when obtained in the context of life story elicitation procedures. Nevertheless, we believe it captures some early signs of causal coherence in life-event narratives and, as we discuss below, theme scores were still significantly linked with well-being for boys’ high-point narratives.

Age and gender moderate the link between narrative coherence and adolescents’ psychological functioning

Participants’ age moderated the relation between narrative coherence and prosocial behaviour. The strongest moderation effect of age was found when adolescents’ developmental consequentiality scores for low-point narratives predicted prosocial behaviour. Specifically, developmental consequentiality scores were not related to prosocial behaviour among participants in the early and mid-adolescence groups, whereas higher developmental consequentiality scores were significantly related to higher prosocial scores in late adolescence. Thus, as predicted by Pratt et al. (2009), narrative measures of identity are positively linked to care for others in the form of prosocial behaviours by older adolescence. This finding extends prior research noting a link between identity achievement, using identity status measures, and prosocial behaviour in late adolescence and young adulthood (Busch & Hofer, 2011; Hardy & Kisling, 2006). In future research with older samples, it would be interesting to extend this link to generativity (see Frensch et al., 2007).

According to Erikson’s psychosocial theory (1968), generativity is considered as the hallmark of midlife; life stories with generative themes have also been found among middle-aged American European adults (McAdams, 2001; McAdams & de St. Aubin, 1992). Although generativity may only emerge in midlife, its developmental precursors could be present between late adolescence and early adulthood (Pratt et al., 2009). Thus the current finding that narrative coherence is associated with prosocial behaviour may reflect associations between an early developmental stage of generativity and one’s narrative identity. However, if younger adolescents are not yet capable of using life narratives as an expression of personal identity (e.g., Habermas & Bluck, 2000), this could be why we did not observe positive links between narrative coherence and prosocial behaviour until late adolescence.

By including both female and male adolescents of different ages the present study offers empirical data to suggest that higher levels of narrative coherence are not always linked positively to well-being or psychological functioning among adolescents (McLean & Breen, 2009; McLean et al., 2010; McLean & Mansfield, 2011). Not only do younger adolescents lack the ability to construct coherent accounts of their lives, but it is also more difficult for them to comprehend the long-term consequences of the changes in their personality that they are currently experiencing. This finding is consistent with previous research in young people indicating that writing about negative emotions is associated with decreases in well-being (Fivush et al., 2007). Also, narrating these extremely negative events was likely to evoke negative emotions, and younger adolescents may not yet be able to fully understand and resolve these negative emotions. Thus the narration of negative events may act as a form of rumination for younger adolescents. Future research would benefit from measuring and controlling for the influence of rumination on the associations between narrative coherence and well-being. Our current narrative measures do not allow us to identify the presence of rumination and its link to narrative coherence.

The moderating effect of gender on the relationship between narrative coherence and adolescents’ psychological functioning was found only for adolescents’ high-point narratives. Regardless of age, higher levels of theme were related to lower levels of well-being among boys, whereas theme scores were not related to well-being among girls. Note, however, that in line with McLean and Breen (2009), we did not find significant gender differences in narrative coherence for either high-point or low-point events. It is not the case that adolescent girls are more advanced at narrative coherence than adolescent boys, but adolescent boys are demonstrating
stronger negative connections between their narrative identity and well-being. This might be because girls are more socialised to disclose and discuss personal events; thus doing so might not influence their sense of well-being to the same extent as this process might do for boys. In future research we will need to rule out the possibility of a temporary negative effect of disclosure on well-being for boys. It is possible that, if boys are not used to disclosing, there might be a temporary decrease in well-being immediately after the interview. Future research needs to counterbalance the order of the narrative interview and the well-being assessment.

The function of low points and high points in identity formation

Our findings suggest that narrative processing of life’s low and high points contributes to adolescents’ developing narrative identity. The present findings also revealed that adolescents engaged in higher levels of narrative processing when telling low-point events, in comparison to high-point events. This is not surprising given that negative events require more cognitive resources and analytical skills to understand and resolve the negative emotions from these experiences (Fiedler, 1988; Taylor, 1991). In contrast, processing positive events requires less cognitive effort, because it is not necessary to resolve or analyse positive emotions. In fact, simply thinking about rather than analysing positive life events may result in better well-being outcomes (Lyubomirsky et al., 2006).

Both low- and high-point narratives have been associated with the self function of recalling autobiographical events, and both types of events are important elements of people’s life stories. By engaging in narrative processing, people are more likely to find resolutions of negative events. Once people understand and resolve why those events happened, as well as develop solutions to avoid similar negative experiences in the future, they are more likely to put the negative feelings behind them. It may be this process of resolution and problem solving that ultimately leads to better well-being and psychological functioning. Although positive life events may not require the same degree of processing as negative life events, narrating high-point events was also related to well-being among young adults if they used these high-point narratives for the self-function (McLean & Lilgendahl, 2008). Our results also suggest that it is not the valence of the event per se that moderates the association between narrative coherence and adolescents’ psychological functioning. Rather, these associations are affected more by the developmental level of the adolescent. Older adolescents may be better at using the past in service of well-being than younger adolescents.

Limitations and conclusions

The cross-sectional design of the present study does not allow us to answer questions about precisely when the positive associations between narrative coherence and well-being develop. However, the current findings suggest that a positive narrative processing and well-being connection might emerge by late adolescence. Furthermore the correlational results do not imply any causal links between narrative coherence and well-being. Longitudinal and experimental investigations would be able to address these limitations. Moreover our measure of prosocial behaviour was not normed for the oldest age group; however, there were no mean differences in prosocial behaviour as a function of age. Thus it was the link between narrative coherence and scores on the prosocial scale that changes across age, not prosocial behaviour per se. These associations between narrative coherence and prosocial behaviour are novel and need to be replicated. Lastly, although there are cultural differences in the content and structure of autobiographical memories and also in people’s views of the self (Markus & Kitayama, 1991; Wang, 2001, 2006; Wang & Conway, 2004), the current study does not address the possibility that cross-cultural differences in the way that adolescents narrate critical life events influence the association between narrative coherence and well-being.

In conclusion, we have shown that the ability to construct coherent critical event narratives develops across adolescence, with the most dramatic developments occurring between early and mid-adolescence. Both age and gender moderate the relationship between narrative coherence and adolescents’ psychological functioning: complex, sophisticated narrative processing is associated with better psychological functioning only in older adolescents. Coherence of high-point narratives is linked to lower well-being for male adolescents. Given that gender- and age-related differences emerge with regard to the
relationship between narrative processing and well-being, it is of great importance to consider the developmental implications of using narrative processing as a tool to promote well-being among adolescents. Longitudinal studies and narrative interventions are now sorely needed in order to draw conclusions about the best ways to help adolescents make sense of their lives.

REFERENCES


