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Prescribed Journeys through Life: Cultural Differences in Mental Time Travel between Middle Easterners and Scandinavians

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Abstract

Mental time travel is the ability to remember past events and imagine future events. Here, 124 Middle Easterners and 128 Scandinavians generated important past and future events. These different societies present a unique opportunity to examine effects of culture. Findings indicate stronger influence of normative schemas and greater use of mental time travel to teach, inform and direct behaviour in the Middle East compared with Scandinavia. The Middle Easterners generated more events that corresponded to their cultural life script and that contained religious words, whereas the Scandinavians reported events with a more positive mood impact. Effects of gender were mainly found in the Middle East. Main effects of time orientation largely replicated recent findings showing that simulation of future and past events are not necessarily parallel processes. In accordance with the notion that future simulations rely on schema-based construction, important future events showed a higher overlap with life script events than past events in both cultures. In general, cross-cultural discrepancies were larger in future compared with past events. Notably, the high focus in the Middle East on sharing future events to give cultural guidance is consistent with the increased adherence to normative scripts found in this culture.

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1. Introduction

When remembering our personal past we project ourselves backward in time to re-experience an event. Similarly, we have the ability to project ourselves forward in time to pre-experience future events in our imagination. These projections of the self into past and future scenarios are referred to as *mental time travel* (Tulving, 2002). Through the literature there are many suggestions as to what purposes the (p)re-experiencing of events in mental time travel might serve (see Szpunar, 2010, for a review). Memories of past events provide an opportunity to learn from prior mistakes, they help establish self-continuity and the reliving of past events can facilitate emotional regulation through meaning making processes (Kahneman & Miller, 1986; Pasupathi, 2003; Pillemer, 1998; Ritchie, Skowronski, Cadogan, & Sedikides, 2014; Sedikides & Green, 2009; Taylor, 1983). Although related, the representation of future events also referred to as *episodic simulations*, appear to have functions slightly distinct from the functions of autobiographical memory. Episodic future simulations support anticipatory behaviour, planning ahead, decision-making, motivation and goal attainment (Atance & O'Neill, 2001; D'Argembeau & Mathy, 2011; D'Argembeau, Lardi, & Van der Linden, 2012; Suddendorf & Corballis, 2007; Szpunar, 2010).

A prevailing assumption in the literature is that the construction of future events largely depends on the ability to flexibly combine episodic memories of the past (Suddendorf & Corballis, 2007). In the past decade this constructive-episodic-simulation hypothesis (Schacter & Addis, 2007a) has been empirically supported by findings at the neural and the behavioural level (e.g., Addis Pan, Vu, Laiser, & Schacter, 2009). Neuroimaging studies have found that mentally re-experiencing past events and pre-experiencing future events rely on a common set of brain regions (Schacter, Addis, & Buckner, 2007; Spreng & Grady, 2010; Szpunar, Watson, & McDermott, 2007). Behavioural studies have shown that re-experiencing and pre-experiencing events are similarly affected by experimental manipulations regarding temporal distribution, emotional valence and specificity (D'Argembeau & Van der Linden, 2004; Spreng & Levine, 2006; Williams, Ellis, Tyers, & Healy, 1996). These similarities are evident in both voluntary and involuntary mental time travel (Berntsen & Jacobsen, 2008; Finnbogadóttir & Berntsen, 2011). Altogether, these findings indicate that mental time travel into the past and future, respectively, is governed by

the same underlying neurocognitive system (see Szpunar, 2010, for a review).

However, normal-functioning individuals are able to distinguish between memories of their personal past and imagination of possible future events. Thus, it is not surprising that studies also show marked differences between remembering past events and imagining future events. At the neural level, frontal areas are more active in the construction of future events than in the reconstruction of past events (Botzung, Denkova, & Manning, 2008; Schacter & Addis, 2007b; Spreng & Grady, 2010). Behavioural studies show that past events are rated as more vivid, more specific and more detailed, while future events are rated as more positive, more idyllic and more central to self and identity (Berntsen & Jacobsen, 2008; Berntsen & Bohn, 2010; D'Argembeau et al., 2012; Rasmussen & Berntsen, 2013; Rubin, 2014; Wang, Hou, Tang, & Wiprovnick, 2011). The consensus conclusion following these studies is that, although similar cognitive processes underlie imagined future events and remembered past events, future episodic thoughts contain fewer sensory details and rely more on schema-based construction.

A *schema* organizes one's current knowledge while providing a framework for future understanding. In the concept of schema, Bartlett (1932) united the process of imagination with the process of remembering. Schema theory became a keystone of cognitive psychology, and it still provides a framework for new theories. According to Rubin (2014, p. 615) "imagined instances provide the clearest view of schema", because when we imagine our self in a future event there is usually no attempt to recall one single instance. Imagined future events follow the same principles that guides recall by taking into account previously acquired knowledge (e.g., Rubin, 1995). Similarly, Szpunar (2010) argues that future episodic thought might not necessarily rely on specific contents of episodic memory. When characters, conduct and context get to be familiar through numerous encounters, they turn into a series of well-known situations called *scripts* (Schank & Abelson, 1977). This scripted summary knowledge may suffice to construct an expected event without any episodic input (Szpunar, 2010). Atance and O'Neill (2001) refer to such familiar routine scenarios as *semantic future thinking*, rather than episodic future thinking. However, a simulation of specific future events probably includes a sampling of both episodic and semantic information in a dynamic interplay (Szpunar, 2010). Accordingly, a recent study by D'Argembeau and Mathy (2011) showed that, in the construction of future events, the participants accessed semantic information and general personal knowledge before they retrieved episodic details. Only a few elements from specific past events were used in the process. In other words, general knowledge structures guided the selection of episodic details that became building blocks in an imagined future

event. This is in support of the view that, even though individuals may draw on episodic memory in constructing future events, they are considerably constrained by culturally transmitted semantic knowledge from schemas and scripts.

1.1 Cultural Life Scripts Structure Mental Time Travel

In the present study we compare mental time travel in individuals from the Middle East (predominantly Qatar) and Scandinavia (predominately Denmark), with a special focus on the potential effects of different cultural norms and their associated life scripts (Berntsen & Rubin, 2004). The two cultures differ in a number of ways.

First, Middle Eastern countries are characterized as collectivistic societies due to below-average scores on Hofstede's (2001) individualism index, while Scandinavian countries are characterized as individualistic societies. In previous work based on Asian and Western samples, this difference has been shown to be associated with differences in the qualities of autobiographical memory. For example, Wang (2009) showed that Westerners recall more event-specific details than Asians. This is presumably because Western ideology primarily focuses on independent selves and values autonomy, while East Asian ideology favours interdependence and relatedness. These ideal cultural selves are internalized through socialization within a given culture (Markus & Kitayama, 1991). Parent-child conversations about past events comprise a key element of this socialization process (Nelson & Fivush, 2004; Fivush, Habermas, Waters, & Zaman, 2011). Based on previous studies, Reese, Yan, Jack and Hayne (2010) proposed that children with elaborative mothers, who are more common in Western cultures (Wang, 2007), draw more on personal memories when developing a self-concept (Reese et al., 2010). However, construction of the self might not be the primary role of parent-child reminiscing in all cultures. In interdependent collectivistic cultures, reminiscing may more often be used to reinforce social and moral values (Fivush et al., 2011).

Secondly, in terms of religion, Islam is prevailing in the non-secular countries of the Middle East (Matsumoto & Juang, 2004), while the traditionally Protestant countries in Scandinavia are secular and best defined as non-religious (Zuckerman, 2008). Ottsen and Berntsen (2014) showed that this difference was manifest in the cultural life scripts generated by a Qatari versus Danish sample, where the former contained more references to religious events than the latter. However, the influence of religion on remembered and imagined personal events remains to be studied in these cultures.

Thirdly, a marked difference regards gender segregation. In spite of increased gender

equality in the rich oil countries of the Middle East (Bahry & Marr, 2005), a patriarchal family structure persists in this region, and the role of a woman is viewed as very distinct from the role of a man (Charrad, 2011). Patriarchal traditions, such as arranged and consanguineous marriages, are on the rise in Qatar, despite the rapid modernization that has characterised the recent decades (Harkness & Khaled, 2014). In contrast, over half of the first-born children in Scandinavia have unmarried parents and they grow up in societies emphasizing gender and social equality as key normative principles (Bartal, 2015; Borchorst & Siim, 2008; Kurtz, 2004).

One respect in which cultural norms can be operationalized is through the *cultural life script*. A cultural life script is a culturally shared cognitive representation of the expected order and timing of important life events in a prototypical life (Berntsen & Rubin, 2004). It is stored in memory as semantic (i.e., not personal autobiographical) knowledge (Rubin & Berntsen, 2003). Numerous studies across different cultures have replicated Berntsen and Rubin's (2004) finding that cultural life scripts are markedly biased toward emotionally positive events, and that they guide retrieval of autobiographical memories (Bohn & Berntsen, 2008; Bohn, 2010; Coleman, 2013; Collins, Pillemer, Ivcevic, & Gooze, 2007; Erdoğan, Baran, Avlar, Taş, & Tekcan, 2008; Janssen & Rubin, 2011; Ottsen & Berntsen, 2014; Rubin, Berntsen, & Hutson, 2009). For a review of this literature, see Zaragoza Scherman (2013).

To our knowledge, the cultural life script of Qatar (Ottsen & Berntsen, 2014) is the only Middle Eastern life script studied to this date. In this population, Ottsen and Berntsen (2014) found gender-specific subcultures, with different expectations towards a normative life course in their own culture. More specifically, Qatari men showed less variety in culturally scripted events, and they generated significantly more events specific to Qatari culture (e.g. religious events), whereas the Qatari women generated more cross-cultural events (i.e., events shared with other cultures – e.g., educational events). These differences might reflect the fact that Muslim men are obligated to participate in more religious events than Muslim women, which probably made these events more cognitively accessible for men, when they were asked to generate events in a normative life. However, Qatari women still generated more religious events than participants in prior studies recruited from the more secular countries of Denmark (Berntsen & Rubin, 2004), the US (Rubin et al., 2009) and Turkey (Erdoğan et al., 2009). In addition, the Qatari life script was found to be significantly more positive compared with these countries. This effect was strongly tied to the scripted religious events and suggested that religiosity may add to the positivity bias in a cultural life script (see Ottsen & Berntsen, 2014, for more details).

Recent studies show that apart from structuring autobiographical memories, the cultural life script also guides future expectations (Berntsen & Jacobsen, 2008; Bohn & Berntsen, 2011; Gryzman, Prabhakar, Anglin, & Hudson, 2013). Berntsen and Jacobsen (2008) proposed that, as a predominantly positive form of semantic knowledge the cultural life script might partially explain the *positivity bias* found in episodic future thinking, whereby the imagined future is more positive than memories of past events (Mitchell, Thompson, Peterson, & Cronk, 1997; Newby-Clark & Ross, 2003; Schacter & Addis, 2007b; Shao, Yao, Ceci, & Wang, 2010). They tested this premise in a Danish study on involuntary memories versus voluntary word-cued memories and found that representations of future events were generally more positive than past events. However, future events were not significantly more scripted than past events according to the cultural life script. Berntsen and Bohn (2010), who asked participants to generate important versus word-cued events in both temporal directions, also found no differences between future and past events regarding their correspondence with the cultural life script. In contrast, Rasmussen and Berntsen (2013) asked specifically for positive and negative events and found that future events more frequently than past events referred to cultural life script events. Gryzman et al. (2013) recently attempted a different approach to examine past and future events in an American sample. Cued by time periods, participants generated past and future events for themselves, close friends and distant others. In line with the current study and Rasmussen and Berntsen's study, Gryzman et al. found that future events refer to life script events more frequently than past events. In fact, the large majority of life script events generated in this study – 105 out of 141 – were found in the future narratives.

1.2 The Functions of Mental Time Travel

Autobiographical memories of past events are commonly rated according to their perceived functions in everyday life. Bluck, Alea, Habermas, and Rubin (2005) introduced the Thinking About Life Experiences (TALE) which probes three different functions of autobiographical remembering (see also Pillemer, 1992), i.e., directive, self- and social functions. The directive function of autobiographical memory guides present and future thinking and behaviour, supports problem solving and the ability to cope with the physical and social environment. The social function is concerned with developing and maintaining social bonds through conversation. The self-function supports the development and maintenance of identity and a continuing sense of self across time (Bluck, Alea, Habermas, & Rubin, 2005; Pillemer, 1992). The self-function of individual

events may be probed by the centrality of event scale (CES). The CES is a self-rated measure of how central an event is to a person's identity and life story, whether it is used as a reference point for future expectations and represents a turning point in the life story (Berntsen & Rubin, 2006). In a more recent model of functions in autobiographical memory, Harris, Rasmussen and Berntsen (2014) have added a generative function based on McAdams' (1992; 1997) concept of generativity and the "teach and inform" function in Reminiscence Functions Scale (RFS; Webster, 1993). The generative function concerns "the motivation to create legacy and have a positive impact on the world". This is achieved by talking about personal experiences in relation to cultural norms and values with the purpose of teaching others how things should be done (Harris et al., 2014, p. 577).

Although it is broadly agreed that future thinking serves important functions in daily life (e.g., Schacter et al., 2007), psychometric measures have rarely been applied to study the perceived functions of future events. To our knowledge, only one study has compared the TALE functions of episodic remembering with functions of future thinking. In this study, involving Danish participants, Rasmussen and Berntsen (2013) found that mental time travel into the future was mainly tied to the self-function. Imagined future events were rated as more central to identity and as more positive compared with past events. The positivity bias of future mental time travel may suggest an emotion regulation function and a motivation "to explore the environment and to set new goals with the expectation that we will succeed" (Rasmussen & Berntsen, 2013, p. 198). On the contrary, mental time travel into the past was hypothesised mainly to be associated with the directive function, since past negative events are often used for correction of thought and behaviour (Taylor 1991). Indeed this was supported for memories of negative, but not for positive events. With regard to positive events the future was rated as more directive than the past (Rasmussen & Berntsen, 2013).

In the present study we expect to see cultural differences with regard to the dominance of these functions for future and past events. In interdependent collectivistic cultures (such as Qatar), reminiscing may be more likely used to reinforce social and moral values (Fivush et al., 2011) and teach and inform other about such values, which would be consistent with a generative function in the framework by Harris et al., (2014). Lessons are learned from memories of past events and the directive function of memory guides future behaviour although constrained by social norms (Wang & Conway, 2004). Compared with Westerners, people from collectivistic cultures are more inclined to internalize societal norms (Boer & Fischer, 2013) and may therefore to a larger extent use memories and imaginations of past and future events to regulate social interactions and behaviour.

2. The Present Study

We investigated the role of culture in mental time travel by comparing a sample from the non-secular Middle East with a sample from the secular Scandinavia. We expected a number of effects of culture.

First, we hypothesised that mental time travel in the Middle Eastern sample would be more affected by scripts and schemas due to the increased adherence to social and cultural norms often found in collectivistic and/or religious cultures. Specifically, we expected both past and future events generated in the Middle East to show a greater correspondence with the Qatari life script compared with the correspondence between the Danish life script and the events generated in the Scandinavian sample. Second, based on the religious contents of the cultural life script of Qatar (Ottsen & Berntsen, 2014) we also expected more religious words in the Middle Eastern narratives than in the Scandinavian narratives. Third, we expected that the generative function of mental time travel would be more evident in the Middle Eastern sample since using memories for the purpose of teaching others is more likely to be associated with a collectivistic culture. The social function, on the other hand, were more likely to be rated higher in the Scandinavian sample, since personal memory sharing is indicative of individualistic values (Schug, Yuki, & Maddux, 2010).

Across the two samples, we expected effects of time orientations to replicate previous findings. Specifically we predicted that representations of the future would show a greater reliance on schema-based construction compared with recall of the past events. Thus, in both samples, we expected to see more frequent references to life script categories in the future narratives compared with the past narratives. We expected interactions between time orientation and culture, such that the predicted greater adherence to scripts in the Middle Eastern sample would result in greater differences between the past and the future events in this sample compared with the Scandinavian sample.

A secondary aim of this study was to explore possible effects of gender, since the Middle Eastern and Scandinavian samples differ by representing a gender-segregated versus a co-ed society. We expected potential effects of gender to be qualified by interactions between gender and culture, such that effects of gender would hold more strongly for the Middle Easterners, consistent with a greater gender segregation in this culture and consistent with previous findings (Ottsen & Berntsen, 2014).

3. Method

3.1 Participants

The countries of Qatar and Denmark were chosen as representatives of Middle Eastern and Scandinavian societies, respectively. Although these two countries are different with regard to gender roles and religious views, they are similar in other ways. Both countries are geographically small and they are among the countries with the highest gross domestic product (GDP) in the world. Education is high on the politically decided list of priorities, public schooling is free of charge and female students outnumber male students at the universities in both countries (Bahry & Marr, 2005; Johnstone, 2004; Kronfol, Ghuloum, & Weber, 2013; Qatar General Secretariat for Development Planning, 2011; Zieler, 2014).

The Middle Eastern sample included 124 participants – 62 women and 62 men ($M_{\text{age}} = 22.7$, $SD = 6.2$) with an age range of 17-55 years. The Scandinavian sample included 128 participants – 73 women and 55 men ($M_{\text{age}} = 22.9$, $SD = 3.7$), with an age range of 18-42 years¹. The initial sample consisted of 159 Middle Eastern participants, recruited from two universities in Qatar (Qatar University and Texas A&M University at Qatar), and 130 Scandinavians, recruited from Aarhus University in Denmark. Thirty-five participants were eliminated from the Middle Eastern sample because they left more than 10% of the questions unanswered or reported a non-Middle-Eastern nationality. In the Middle Eastern sample, 61% of the participants were Qataris. Other nationalities represented were primarily Palestinians, Jordanians, Syrians and Yeminis. Two participants were eliminated from the Scandinavian sample because they were from Germany. The remaining 128 participants were predominantly from Denmark (125), but Sweden (2) and Norway (1) were also represented. All participants received cinema tickets for the approximate amount of 100 Danish kroner (equivalent to \$15) in appreciation for their cooperation.

3.2 Procedure

The first author collected all data, accompanied by local student assistants. The measures reported here were included as part of a larger survey regarding cultural knowledge, personal

¹ Because age ranges in the two samples differed, in that the Middle Eastern sample included slightly older participants, additional analyses were conducted which excluded participants above the age of 30 to ensure that our findings were unaffected by this difference. All findings were replicated with these reduced samples. The only difference found was that the reduced samples showed a main effect of time for the variable "Distance in Years". Participants younger than 30 looked further into their future than into their own past, which was to be expected since younger people have a shorter past.

memories, expectations for the future, personal goals and perceived control. The Qatari questionnaire was translated from Danish into English by an English major from Aarhus University, and then into Arabic by a professional translator of Middle Eastern origin. After back-translation the questionnaires were checked and compared with the English version of the scales by two local Qataris. A back-translation was also conducted on the Danish questionnaire and checked by two local Danes. Each participant filled out the questionnaires at home with no prior instructions apart from the guide in the test battery. They handed in the questionnaires the following week in class. After collecting the data, all Arabic responses were translated into English by a local student assistant. Another student back-translated the responses, with these back-translations then compared with the original responses by two additional local student assistants, who reached agreement on the final wording by discussion.

3.3 Materials

3.3.1 Past and future events: Each participant recorded three important past events and three important future events. The order of time orientation was counterbalanced across both culture and gender. The instructions for the important memories, translated into English, were similar to ones used by Rubin and Berntsen (2009): "Your task here is to decide which events have been the most important in the story of your life. It is required that you have personally experienced these events. Imagine that you are telling your personal life story to a new friend, whom you have just met, and who, therefore, does not know anything about your past. It is a (fictitious) friend, whom you trust and with whom you can be completely honest. Give a detailed description of three most important events that you remember from your life, and assign a keyword to each event. Choose the events that you feel have been the most important in relation to your life story. You can choose any event that has taken place from when you were born until your current age." The instructions for the important future events were the same with minor changes: "Your task here is to imagine events that will occur in your personal future. Imagine that you are telling your future life story to a new friend [...]. Give a detailed description of three important future events that you believe will happen to you. It can be in the near future or a long time from now." The participants had four lines to write down a mini narrative and provide a keyword for each of the three past (or imagined future) events.

3.3.2 Self-ratings: After providing descriptions for all of the past and future events, participants were asked a series of questions about each event. These questions, which were modified from Rasmussen and Berntsen (2013) and Berntsen and Bohn (2010), are presented in Table 1. The table depicts the questions as they were formulated for the past condition. The questions for the future condition were the same, except that the wordings were changed in order to refer to future events. For instance, Question 9, addressing Vividness, was changed from “While remembering this event, I can see and/or hear what happened” to “While imagining this event, I can see and/or hear what happened.” As is shown in Table 1, Question 1 addressed the temporal distance of the remembered or imagined event from the present moment. Question 2 addressed the specificity of the event. Questions 3–5 addressed the perceived function of the events. Questions 6 and 7 addressed the perceived valence of each event. Finally, Questions 8–10 addressed the subjective (p)re-experiencing associated with the events and are thus referred to as phenomenological characteristics.

3.3.3 Centrality of Event Scale: After answering the questions from Table 1, participants completed the seven-item version of the Centrality of Event scale (CES - Berntsen & Rubin, 2006; Berntsen & Rubin, 2007). This scale addressed the centrality of the remembered event to personal identity, the extent to which the memory was used as a reference point for the attribution of meaning to other events in memory, and whether the event was considered a turning point in the person's life story. Each of the seven items was rated on a 5-point Likert scale (e.g., Item 1: “I feel that this event has become part of my personal identity,” 1 = totally disagree, 5 = totally agree). In reference to future events, the individual items referred to an imagined future event (e.g., Item 1: “I feel that this event will become part of my personal identity”). Rasmussen and Berntsen (2013) modified the CES to apply to the perceived centrality of potential future events (in order to allow comparison with the standard past directed version). The reliability for the seven items included in the CES was acceptable for both past and future events, respectively (Scandinavian $\alpha = .88 / .86$; Middle Eastern $\alpha = .92 / .92$).

3.4 Coding and Scoring of Event Content:

3.4.1 Life script events: All narratives of past and future events were categorised according to the event categories from the cultural life script of Qatar (Ottsen & Berntsen, 2014) and of

Denmark (Berntsen & Rubin, 2004) by two independent coders. Where events did not fit the cultural life script of the relevant country, new categories were created for all events mentioned by at least 4% of the sample, following the threshold used to generate life script events in life script studies (Berntsen & Rubin, 2004; Bohn, 2010; Erdoğan et al., 2008; Rubin et al., 2009). After the formation of new categories, the two research assistants independently assigned each event to the categories. The inter-rater agreement ranged from 88% to 91% for past and future events in each culture. Discrepancies were resolved by discussion.

3.4.2 Use of religious words: Religious Words in the narratives (e.g., *Mosque, Church, Quran, Bible, Allah and God*) were counted using Tausczik and Pennebaker's (2010) Linguistic Inquiry and Word Count (LIWC). Data were entered into this program using the English translations.

4. Results

A 2 (time orientation; past, future) x 2 (culture; Scandinavia, Middle East) mixed analysis of variance (ANOVA) was conducted on the ten questionnaire items and the three content measures (Word Count, Religious Words and Life Script events). Each analysis had culture as a between-subjects variable (Scandinavia versus Middle East) and one of the questionnaire items or content measures (e.g., Generative function), as a repeated-measure factor with two levels (Past vs. Future). We calculated the proportion of past and future events representing specific events; cultural life script events followed the same procedure. For the remaining measures, we calculated means ratings across the three past and the three future events, respectively, mentioned by each participant.

4.1 Main Effects of Culture

In line with our predictions, the Middle Eastern events contained more Religious Words and as expected, we also found main effects of culture showing greater adherence to the cultural life script norms in the Middle East (Table 2). Only few religious life script events were reported across the two cultures ("Hajj" and "Learning Islamic morals and values" in the Middle East and "Confirmation" in Scandinavia). The event categories, that did not match the cultural life scripts respectively, were similar in content across the two cultures².

² *Middle Eastern Future Events:* Influence Society; Events related to own children; First house.

The Generative function showed markedly higher ratings in the Middle Eastern sample (Table 2). This suggests that, compared with Scandinavians, the Middle Easterners more often shared personal events with the purpose of teaching others and guiding their decisions in accordance with cultural norms. In line with this, the Middle Easterners showed higher ratings on the Directive function too, suggesting that they use their personal events not only to guide the behaviour of others, but also to guide their own current and future behaviour. Additionally, we found that Middle Easterners rated their events as more Vivid, while Scandinavians generated more positive events.

4.2 Main Effects of Time Orientation

Main effects of time orientation were found for all variables except the Social function, the Generative function, Intensity of event and Distance in Years (Table 2). In support of our hypothesis, representation of future events appeared to rely more on schematized knowledge compared with recall of past events. Notably, across cultures, a significantly greater percentage of future events than past events reflected life script events, $t(251) = 8.66, p = .001, d = 1.09$. Moreover, the participants rated future events as more Directive, more Thought of and more Central to Identity as rated on the CES. Future events were also rated as being more positive (cf. Mood and Current Emotions in Table 2) and they contained more Religious Words. Past events, on the other hand, were rated as more vivid, more specific, and the participants generated significantly longer narratives (Word Count) for memories of past events compared with imaginations of future events. These findings are largely consistent with previous findings (Berntsen & Jacobsen, 2008; Berntsen & Bohn, 2010; Rasmussen & Berntsen, 2013; Rubin, 2014; Wang et al., 2011).

4.3 Interactions between Culture and Time Orientation

In line with our predictions, the main effects of time orientation and culture were qualified by a number of interactions (Table 2). Interactions for the Social and the Generative function showed that the Middle Easterners rated future and past events as equally relevant for these functions ($p > .32$), whereas a significant difference was seen for the Scandinavian sample, both

Scandinavian Future Events: Traveling; Moving; Romantic relationship; Family Life; First house. *Middle Eastern Past Events:* Wedding of relatives; Relatives moving; Losing a friend; Romantic relationships; Break-up/Divorce; Traveling; Serious accident/Illness, Sports.
Scandinavian Past Events: Personal development; Military Service; Moving; Birth of siblings; Family Life; Romantic relationship; Parents' Divorce; Traveling; Traumatic Experiences/Illness; Sports.

reflecting higher ratings for past events [Social: $t(127) = 3.01, p = .003, d = .33$; Generative: $t(127) = 4.12, p = .001, d = .39$]. The interaction for Vividness reflected the same pattern in that, contrary to previous findings in Westerns samples (Berntsen & Bohn, 2010; Rasmussen & Berntsen, 2013) and to the Scandinavian sample in the present study, Middle Easterners rated future and past events as equally vivid ($p = .48$), whereas a significant difference was seen for the Scandinavian sample, who rated future events as less vivid, $t(127) = 10.02, p = .001, d = .95$. The interaction for Thoughts reflected that the Scandinavians showed no effect of temporal orientation ($p = .95$), while the Middle Easterners thought more about future events $t(123) = 4.78, p = .001, d = .49$.

The interaction for Word Count showed that, though the future narratives were shorter than the past narratives in both cultures (see Table 2 for main effect), this disparity was significantly greater in the Middle Eastern sample $t(182.93) = 2.37, p = .019, d = .31$ [Middle Eastern_{gap} $M=21.98$; $SD=31.74$ and Scandinavian_{gap} $M=14.03$; $SD=18.26$]. The interaction for Religious words reflected that the higher frequency of religious words in the Middle Eastern sample was only significant for future events, $t(120.91) = 3.67, p = .001, d = .48^3$, and not for past events ($p = .11$). Not all participants used religious terms. However, more Middle Eastern participants used religious words to describe future than past events ($N_{past}=18$; $N_{future}=28$), while the opposite was the case for the Scandinavian participants ($N_{past}=11$; $N_{future}=5$). The fact that religious terms were more frequent in the Middle Eastern future narratives is of particular interest in the current study due to the more religious nature of the Qatari cultural life script (Ottsen & Berntsen, 2014). Approximately one in every hundred words included in the Middle Eastern future narratives was a religious term - e.g. “finding the ideal life-long partner to marry and thereby complete the other half of my religion, insha’Allah” (13.5 % of the 52 Middle Eastern narratives regarding marriage contained religious terms). In comparison, the Scandinavian future narratives only showed six religious words for every ten thousand words written.

The interaction for Current Emotions reflected that although emotions felt while thinking about future events were more positive than emotions felt when thinking about past events in both cultures, this disparity was significantly greater in the Middle Eastern sample $t(235.51) = 2.76, p = .006, d = .35$ compared with the Scandinavian sample [Middle Eastern_{gap} $M= .93$; $SD= 1.64$ and Scandinavian_{gap} $M= .41$; $SD= 1.33$].

³ Degrees of freedom were depressed because equality of variance across both samples could not be assumed. This was likewise the case in other instances throughout the results section where the degrees of freedom in an analysis were smaller than would be expected from our n.

In summary, Middle Easterners showed greater adherence to their cultural life script compared with Scandinavians and their expected future events contained more religious terms. With regard to functions, the Middle Easterners focused more on the use of personal events to teach others and to guide own decisions, as compared with Scandinavians. The interactions suggested that compared with the Scandinavians, the Middle Eastern participants used imagined future event as frequently as past events to teach others and to bond socially, and their future events were relatively more positive, vivid and contained more religious words.

4.4 Exploration of Gender Differences

In order to explore possible effects of gender in relation to the two main factors, a series of 2 (time orientation; past, future) x 2 (culture; Scandinavia, Middle East) x 2 (gender; male, female) mixed ANOVA's were conducted with the dependent variables listed in Table 2. Main effects of gender were found for four variables: Specificity, $F(1,234) = 4.38, p = .038, \eta^2_p = .02$. [Women_{past} M=0.55; SD=0.36 versus Men_{past} M=0.49; SD=0.40 and Women_{future} M=0.48; SD=0.37 versus Men_{future} M=0.38; SD=0.35] and Social $F(1,248) = 4.70, p = .031, \eta^2_p = .02$. [Women_{past} M=4.86; SD=1.17 versus Men_{past} M=4.58; SD=1.37 and Women_{future} M=4.70; SD=1.29 versus Men_{future} M=4.43; SD=1.45] and Word Count, $F(1,237) = 11.77, p = .001, \eta^2_p = .05$ [Women_{past} M=65.6; SD=36.2 versus Men_{past} M=51.5; SD=31.9 and Women_{future} M=46.5; SD=26.61 versus Men_{future} M=36.9; SD=23.5] and Distance in Years, $F(1, 241) = 6.95, p = .009, \eta^2_p = .03$ [Women_{past} M=6.3; SD=4.4 versus Men_{past} M=5.7; SD=3.3 and Women_{future} M=5.3; SD=3.7 versus Men_{future} M=7.9; SD=6.2].

The main effects of Specificity $F(1,234) = 5.68, p = .018, \eta^2_p = .02$, Social $F(1,248) = 17.30, p = .001, \eta^2_p = .07$ and Word Count $F(1,237) = 11.25, p = .001, \eta^2_p = .05$ were qualified by interactions between culture and gender (Figure 1). Follow-up *t*-tests within each culture showed significant gender differences for Specificity and Word Count in the Middle East but not in Scandinavia ($ps > .46$). Compared with Middle Eastern men, the Middle Eastern women generated more specific events for both the past, $t(111.45) = 2.480, p = .015, d = .46$, and for the future, $t(111.54) = 3.06, p = .003, d = .57$. The Middle Eastern women also wrote longer narratives for both past events, $t(120) = 3.41, p = .001, d = .62$, and future events, $t(109.40) = 4.52, p = .001, d = .83$ than did Middle Eastern men (Figure 1). In contrast to our expectations, the Scandinavians also showed a culture-specific gender difference. Compared with Scandinavian men, Scandinavian women rated both past $t(87.47) = 2.60, p = .011, d = .48$ and future events $t(126) = 4.52, p = .001, d$

= .81 higher on social function, while no differences were found in the Middle Eastern sample ($p > .09$). A three-way-interaction was found between gender, culture and time orientation. Middle Eastern men, compared with Middle Eastern women and Scandinavians of both sexes, were more inclined to use the generative function when sharing future relative to past events $F(1,248) = 4.59, p < .033, \eta^2_p = .02$.

In sum, Culture-specific gender differences were primarily found in the Middle East and showed that both past and future narratives generated by Middle Eastern women were longer and rated as more specific compared with Middle Eastern men.

4.5 Interactions between Gender and Time Orientation

Interactions between time and gender were found for Centrality to identity scores and Distance in Years. Follow-up t-tests comparing the responses of men and women within each temporal direction showed that across cultures women rated future events as more central to their identity, $t(250) = 2.112, p = .036, d = .27$ [Women_{past} $M=3.59$; $SD=0.67$ versus Men_{past} $M=3.66$; $SD=0.66$ and Women_{future} $M=4.16$; $SD=0.57$ versus Men_{future} $M=4.01$; $SD=0.61$]. This gender difference was not found for past events ($p > .50$). With regard to temporal distance, past events did not show any gender difference either ($p > .31$), but men, relative to women, imagined future events significantly more distantly into the future $t(178.28) = 3.923, p = .001, d = .59$. The gender difference in future Centrality to identity held when future events were limited to 0-5 years into the future. Compared with men, women still rated future events as more central to their identity within this short time range $t(106) = 2.044, p = .043, d = .40$. In sum, the gender differences across cultures were tied to future events. Women in both cultures imagined future events that were closer to the present and more central to their identity compared with men.

5. Discussion

Few studies have examined cultural differences in the construction of past and future events (De Smedt & De Cruz, 2011; Guo, Ji, Spina, & Zhang, 2012; Shao et al., 2010; Wang et al., 2011). The current study was conducted to begin to fill this gap in the literature. Our findings showed a number of important cultural differences between a Middle Eastern and Scandinavian sample. Most notably we found a stronger influence of normative schemas and a greater use of mental time travel to teach, inform and direct behaviour in the Middle Eastern sample compared with the Scandinavian sample. More specifically, main effects of culture were seen for the Directive and the Generative

Function, Mood Impact, Vividness, Religious Words and Cultural Life Script content. These effects reflected higher ratings in the Middle Eastern than in the Scandinavian sample, except for Mood impact at the time of an event, which was rated as more positive in the Scandinavian sample.

Consistent with our prediction, the Middle Easterners scored higher on the Generative Function compared with Scandinavians. Sharing personal events with the purpose of teaching others and guiding their decisions according to cultural norms is in line with collectivistic adherence to social norms (Boer & Fischer, 2013). Reminiscing while taking into account cultural norms reinforces social and moral values (Fivush et al., 2011). Simulations of future scenarios according to cultural norms might have the same purpose of carrying on cultural knowledge into the next generation, while creating a legacy for one self (Harris et al., 2014). In addition to using personal events to guide others in decision-making, the higher score on the Directive Function in the Middle Eastern sample showed that Middle Easterners also relied more on personal events to solve their own problems and guide their own current and future decisions compared with Scandinavians. This is in accordance with a study by Wang and Conway (2004) showing that the lessons learned from personal memories of past events are more valued in collectivistic compared with individualistic cultures. Furthermore, the cultural difference on the Directive Function might be related to the Middle Easterners generating fewer events with a positive emotional impact, in that negative events are more frequently used for correction of thought and behaviour than positive events (Rasmussen & Berntsen 2013; Taylor 1991).

In line with our hypotheses, the Middle Easterners generated more events that corresponded with the life script of their culture than did the Scandinavians. It would be a fair assumption that scripted religious events from the Qatari life script could account for this difference. However, in accordance with findings from Ottsen and Berntsen's (2014) study of life stories, the Middle Easterners generated only few religious events that were part of the cultural life script when asked about important personal events. This suggests that the Middle Easterners are not simply more inclined to generate religious cultural life script events compared with Scandinavians, but that they are generally more inclined to generate events from their cultural life script, when asked for important life events. The Middle Easterners did, however, show impact of religion in a different way. They used more religious words in their narratives regardless of event content. So even though the events mentioned by Middle Easterners were not frequently religious life script events, the terminology used to describe past and especially future events reflected a religious homogenous culture.

This is consistent with a study of Islamic prayer, in which interviews with 18 Muslims showed that events attributed to answered prayers were structured by collective narratives, e.g. religious texts, indicating that religious scripts govern the meaning making process of the events following prayer (Lindgren, 2005). In general, people from homogenous religious collectivistic cultures tend to be more guided by internalized scripts of societal norms (Boer & Fischer, 2013). Such norms are passed on from one generation to another through storytelling, when the elder generation share memories of their own experiences (Berntsen & Rubin, 2004).

As expected, main effects of time orientation replicated previous findings by showing that past events were more specific and vivid, while future events were more central to identity and more positive in nature (Berntsen & Jacobsen, 2008; Berntsen & Bohn, 2010; Rasmussen & Berntsen, 2013). Furthermore, the future events in the current study were rated as more directive than the past events in both cultures. This followed Rasmussen and Berntsen's (2013) finding for positive future events and probably reflects that important personal events are mostly positive (Berntsen & Rubin, 2002). So while negative past events are often used for correction of thought and behaviour (Taylor 1991), positive future events might have the same function. Also in line with previous findings, both past and future events showed high overlap with the life script representing each culture respectively (Bohn & Berntsen, 2010; Bohn, 2010; Erdoğan, Baran, Avlar, Taş, & Tekcan, 2008; Janssen & Rubin, 2011; Ottsen & Berntsen, 2014; Rasmussen & Berntsen 2013; Rubin, Berntsen, & Hutson, 2009). As shown in Table 2 more than 50% of all events generated in both cultures matched life script events regardless of time orientation. In line with our prediction, we found that future events showed higher overlap with the cultural life script than did past events in both cultures. This is in accordance with the findings of Rasmussen and Berntsen (2013) and Gryzman et al. (2013). Our main effects of time orientation support the prevailing idea that constructions of future events draw more on schematized knowledge than construction of past events.

5.1.1 Culture and Time Interactions

Interactions between culture and time orientation were seen for a number of measures. These interactions generally reflected Middle Easterners showing either relatively smaller scores for past events compared with Scandinavians, or relatively larger scores for future events compared with Scandinavians. This may suggest that the Middle Easterners are relatively more likely, compared with the Scandinavians, to use their imaginations of the future, rather than their memories

of the past, to guide their behaviour and social interactions. This can be seen as supported by the interaction effect found for the Social and the Generative Functions. Both were rated higher for the past than for the future in the Scandinavian, but not in the Middle Eastern sample, for which a reverse pattern tended to be seen. Thus, compared with the Scandinavians, the Middle Easterners more frequently used imagined future events to bond with and to guide the decisions of others. A similar pattern explained the interaction effect for religious words. As could be expected, Middle Easterners used more religious words than Scandinavians in both past and future narratives, but interestingly the difference was only significant for future narratives. These interaction effects will be discussed in further details in the following.

The interaction effects for the generative and social function are consistent with previous studies showing that adolescents across cultures benefit from sharing visions of their personal future with peers and parents (Ellison, Wohn, & Greenhow, 2014; Iovu, 2014; Zhang & Zhang, 2008). The disposition for approval seeking in interdependent collectivistic societies might encourage increased sharing of future events (Eby & Dobbins, 1997). Personal choices for the future are perceived as reflecting on kin in Middle Eastern families. Therefore, Middle Easterners are inclined to feel that potential future events need to be validated by family members, whereas Scandinavians feel freer to choose their own path in life, following a more individualistic mindset (Kagitcibasi, 2005). Future narratives that linked personal visions to family expectations and cultural norms were especially frequent in the Middle Eastern sample. For example, narratives about marriage frequently contained statements like "pleasing my parents" and/or "completing half of my religion by marriage". Marriage is one of the most significant events in the life course of a Muslim. It is regarded as a religious duty and a rite of passage for achieving adulthood (Sherif, 1999). In addition to increased sharing of future events, the current study showed that Middle Easterners thought more about personal future events compared with past events, while the Scandinavians showed no difference between past and future thinking.

The greater use of religious words in future narratives in the Middle Eastern sample is consistent with observations in previous research. The use of religious expressions in ordinary Arabic conversation is extensive regardless of the topic. The phrase *Insha'Allah* - meaning God willing - is frequently used to mitigate any statement regarding the future, or hopes for the future (Clift & Helani, 2010). Furthermore, the increased religiosity in future narratives might be due to praying. The act of praying is future-oriented in the sense that Islamic tradition encourages prayer and promises that at an appropriate time in the future Allah will answer all prayers (e.g., Sura 27:62

in the Qur'an). Lindgren (2005) found that when a prayer is not answered, schematized coping strategies come into play. Unanswered prayer could be interpreted as Allah giving the answer "no". However, they are often seen as a test, a sign to wait patiently or to repent a sin. In this way religious schemas affect the future behaviour of the person praying.

Finally, the Middle Easterners' imaginations of future events were rated as vivid as their memories of past events. This is in contrast with a significant difference in the Scandinavian sample as well as with the majority of previous findings based on Western samples, where future events usually are rated less vivid than past events (Berntsen & Bohn, 2010; Rasmussen & Berntsen, 2013; Rubin, 2014; Grysman et al., 2013; but see Berntsen & Jacobsen, 2008). The fact that such reduced vividness of future events were absent in the Middle Eastern sample in the present study may agree with the more prescriptive role of future events in the Middle Eastern sample. Future research is needed to clarify this potential connection between vividness and the ability of mental events to guide and inform behaviour.

5.1.2 Effects of Gender

The main effects of gender for specificity and length of narratives were qualified by interactions with culture rendering them significant in the Middle East only. Middle Eastern women rated their events as more specific and generated longer narratives compared with Middle Eastern men in both time orientations. This is in accordance with previous studies showing stylistic differences in narration of memories with women telling and writing longer narratives than men (Fivush et al., 2011; Schulkind, Schoppel, & Scheiderer, 2012). Also it supports studies showing that women tend to generate longer, more detailed and more specific narratives of personal events (Hayne & MacDonald, 2003; Herlitz & Rehnman, 2008; Pillemer, Wink, DiDonato, & Sanborn, 2003; Ross & Holmberg, 1990; Wang, 2011).

The absence of these differences in the current Scandinavian sample is most easily accounted for by the gender-neutral socialization in Scandinavian countries (Hofstede, 2001). Children learn to process information in terms of the evolving gender schema that is dominant in the society they grow up in, and thus gender-based schema processing is incorporated into the self-concept (Bem, 1981). Similarly, the social-cultural-developmental theory states that gender identity is developed through gender-different styles of parent-child reminiscing (Nelson & Fivush, 2004). In this process, mothers and fathers more or less knowingly provide information about culturally appropriate gender roles, when they talk to their children about the past events (Fivush & Buckner,

2003). According to these theories, the gendered self will be less evident in cultures with weak differentiation between the role of man and the role of woman. Only one culture-specific effect of gender was found in the Scandinavian sample. Compared with the Scandinavian men, the women were more likely to engage in social sharing of both past and future events. This is in accordance with previous findings showing that women are more likely to disclose personal experiences than men and that disclosure is more common in Western compared with Eastern societies (Schug et al., 2010).

Research on the association between religious norms and gender schemas is still in its infancy, but the concepts are found to be mutually constitutive (Avishai, Jafar, & Rinaldo, 2015). Likewise, the association between gender roles and collectivism is rarely explored (McBride & Lucio, 2011). Based on the current findings, we speculate that both gender roles and religion structure future mental time travel. However, it is out of the scope of the present study to elaborate further on the link between collectivism, religiosity and perception of gender in relation to mental time travel. Future research might clarify this question.

In a broader perspective, increased understanding of cross-cultural differences in cognition is valuable in a world that grows increasingly small through digital connections. We ascribe the Middle Eastern propensity for future time travel to greater adherence to cultural life scripts and to the inclination to share future plans to achieve consensus and approval. This might provide individuals with a clearer sense of direction in life, but it might also be experienced as a constraint. It could increase conservatism when new ideas challenge existing norms. This line of research potentially has practical implications in relation to integration, immigration and international negotiations, either politically or regarding cross-cultural trading.

5.2 Limitations

The present study has a number of limitations. We chose university students as participants partly because the Qatari society is a relatively closed society, making access to participants difficult, and partly because it made the present studies comparable with previous studies. While this choice was well motivated for the sake of cross-cultural comparison, the ensuing reduction of the diversity with regard to age, wealth and educational level obviously makes these samples less representative of each culture's general population. Our samples differed across cultures in that the Scandinavian sample was primarily Danish while only 61% of the Middle Eastern sample was Qatari. However, the majority of the Middle Eastern participants had been living in Qatar for most

of their lives and they all shared a cultural background though Islam. Despite the greater mix of nationalities in the Middle Eastern sample, we find that they are homogeneous compared with Scandinavians, in that they were more inclined to use scripted cultural knowledge.

5.3 Conclusion

The current study compares mental time travel in the less studied cultures of Scandinavia and the Middle East. It adds to the literature by showing cultural differences in the characteristics of remembered past and imagined future events. A marked overlap between events generated and the relevant cultural life script were found in both cultures. However, compared with Scandinavians, the Middle Easterners generated significantly more events that corresponded to their life script. They also used more religious terms and showed more culture-specific gender differences. This suggests a stronger influence of normative schemas in the Middle East. Furthermore, the findings indicate greater use of mental time travel to teach, inform and direct behaviour in the Middle Eastern compared with the Scandinavian sample.

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Figure 1:

Top panel: Percentage Specific Events. Middle panel: The Length of the Narratives (Word Count). Bottom panel: Importance of the Social Function in sharing personal events. All shown as generated by Males versus Females in the Middle East versus Scandinavia.

Table 1
Questions and Response Options Shown for the Past Condition

1. Age at event: How old were you when the remembered event took place?
(age estimated in years)
2. Specificity: The memory deals with a concrete event that happened on a specific day?
(yes or no)
3. Directive: I think of this memory in order to handle present or future situations.
(1 = not at all, 7 = to a very high degree)
4. Social: I have often shared this memory with other people.
(1 = not at all, 7 = to a very high degree)
5. Generative: I often talk about this memory, because other people can learn something from it
(1 = not at all, 7 = to a very high degree)
6. Mood: When this event occurred, it affected my mood
(-3 = extremely negatively, 3 = extremely positively)
7. Current emotion: The emotions that I experience right now, recalling this event, are
(-3 = extremely negatively, 3 = extremely positively)
8. Intensity: The feelings I experience as I recall the event are intense
(1 = not at all, 7 = to a very high degree)
9. Vividness: While remembering this event, I can see and/or hear what happened
(1 = not at all, 7 = to a very high degree)
10. Thought: I have previously thought about this event
(1 = almost never, 7 = extremely often)

Table 2

Self-rated Measures and Content Measures by Time Orientation and by Culture

	Past				Future				Main Effects						Interaction		
	Scandinavia		Middle East		Scandinavia		Middle East		Time		Culture						
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	<i>F</i>	η^2_p	<i>F</i>	η^2_p	<i>F</i>	η^2_p			
Functions																	
Directive	3.71	(1.32)	4.53	(1.05)	4.24	(1.27)	5.25	(1.20)	50.48	***	0.17	53.31	***	0.18	1.00		0.00
Social	4.83	(1.29)	4.63	(1.25)	4.40	(1.34)	4.75	(1.39)	2.31		0.01	0.30		0.00	7.32	**	0.03
Generative	3.81	(1.33)	4.57	(1.34)	3.28	(1.44)	4.72	(1.45)	3.60		0.01	58.82	***	0.19	11.71	***	0.05
CES (identity)	3.65	(0.59)	3.60	(0.73)	4.05	(0.51)	4.13	(0.66)	92.74	***	0.27	0.06		0.00	1.44		0.01
Valence																	
Mood	1.27	(1.32)	0.80	(1.50)	2.36	(0.83)	1.96	(1.09)	112.68	***	0.31	15.98	***	0.06	0.12		0.00
Current emotions	1.42	(1.11)	1.09	(1.41)	1.83	(1.00)	2.03	(0.92)	51.03	***	0.17	0.39		0.00	7.67	**	0.03
Phenomenology																	
Intensity	4.85	(1.22)	4.51	(1.39)	4.82	(1.27)	4.73	(1.39)	1.21		0.00	2.30		0.01	2.15		0.01
Vividness	5.28	(1.29)	5.13	(1.22)	3.96	(1.48)	5.03	(1.42)	52.07	***	0.17	10.76	**	0.04	37.83	***	0.13
Thought	5.24	(1.05)	4.78	(1.24)	5.23	(0.97)	5.36	(1.13)	13.75	***	0.05	2.11		0.01	14.37	***	0.05
Specificity	0.50	(0.34)	0.55	(0.42)	0.44	(0.35)	0.43	(0.39)	9.72	**	0.04	0.45		0.00	1.65		0.01
Distance in years	6.01	(3.32)	5.99	(4.64)	6.78	(5.53)	6.16	(4.74)	1.20		0.01	0.62		0.00	0.49		0.00
Content measures																	
Word count pr. event	19.99	(8.72)	20.12	(14.14)	15.31	(7.81)	12.79	(9.14)	118.21	***	0.33	1.00		0.00	5.76	*	0.02
Religious words (%)	0.15	(0.53)	0.30	(0.83)	0.06	(0.32)	1.01	(2.79)	5.70	*	0.02	16.32	***	0.06	9.43	**	0.04
Cultural life script	0.52	(0.27)	0.64	(0.30)	0.73	(0.24)	0.81	(0.26)	74.74	***	0.23	14.48	***	0.05	0.77		0.00

df range (1-250), * $p < .05$, ** $p < .01$, *** $p < .00$