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Why do I think and talk about it? Perceived functions and phenomenology of episodic counterfactual thinking compared to remembering and future thinking

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Abstract

People revisit situations from their past and imagine what could have happened had the situation played out differently. This form of hypothetical thinking is known as episodic counterfactual thinking. The reasons why people engage in episodic counterfactual thinking have not been examined in the same context with remembering the past and imagining the future. We addressed this gap, by focusing on the perceived functions and phenomenological characteristics of the most important episodic counterfactuals compared to episodic memories and future projections in younger adults. We base our analyses on four categories of functions previously identified for past events: Reflective, social, generative and ruminative (Harris, Rasmussen, & Berntsen, 2014). The reflective and social functions dominated across all events, with the reflective function being most pronounced for future projections, potentially suggesting a close connection between future projections and self-regulation and/or identity formation. Counter to predictions, the ruminative function was not rated higher for episodic counterfactuals than for other events; however, ratings of ruminative function showed unique correlations with the emotional intensity and involuntary remembering for episodic counterfactuals. Overall, these results suggest that episodic counterfactuals are used for self-reflection and social sharing more than they are used for rumination and generative concerns.

Keywords: episodic counterfactual thinking, episodic memory, episodic future thinking, function, phenomenology

Why do I think and talk about it? Perceived functions and phenomenology of episodic counterfactual thinking compared to remembering and future thinking

In his autobiography "On the Move: A life", Oliver Sacks (2015) shared, "I had no experience of owning a house, and disaster quickly ensued. When I left the house that first winter for a week in London, I did not realize I had to leave the heat on to prevent the pipes from freezing. When I got back from London and opened the front door, I was greeted by an appalling sight. A pipe upstairs had burst and flooded, and the entire ceiling of my dining room hung in tatters over the dining room table. … While I was in London, my father had suggested that I take his piano, now that I had a house; it was a beautiful old Bechstein grand dating from 1895, the year of his birth. … A wave of horror passed over me when I saw the devastation, made sharper by the thought that this is where the piano would have been had I got the house earlier in the year." (p. 281-282).

The thought that made Sacks' feelings sharper in this event is the type of thought that people engage in when they revisit situations from their past and imagine what could have happened if the situation had played out differently than it did. These "what if" thoughts have been defined as episodic counterfactual thinking, that is, the simulation of alternatives to past personal events that one actually experienced (Schacter, Benoit, De Brigard, & Szpunar, 2015). But why do people engage in episodic counterfactual thinking? What might be the perceived functions of such imagined alternatives to the personal past?

Do people perceive these events simply as ruminations or intrusive repetitive thoughts as hinted at by previous research with healthy and trauma-exposed individuals (e.g., Blix et al., 2016; El Leithy, Brown, & Robbins, 2006; Kasimatis & Wells, 1995; Mitchell, Contractor, Dranger, & Shea, 2016)? Or can they also be used as sources of self-reflection, something that could teach and inform others, or simply as a good story to share in conversation or in an autobiography to inspire

younger generations? More importantly, to what extent are these different uses unique to episodic counterfactual thoughts, or shared by memories of actually experienced events and imagined future events? These are some of the questions that this study sets out to investigate.

It has been suggested that our ability to think about alternative versions or outcomes of important events in our lives may draw on the same cognitive mechanisms that allow us to travel back into the past to re-experience an event that actually happened to us and project ourselves forward into the future to pre-experience an event that might happen (D'Argembeau & Van der Linden, 2004; Davison & Feeney, 2008; De Brigard, 2014; Epstude & Peetz, 2012). Although previous research highlighted the importance of counterfactuals by showing how they affect emotions, decisions, and behaviors (for review see Byrne, 2016), there are only few studies that have systematically compared both episodic counterfactuals to episodic memories and imagined future events (e.g., Özbek, Bohn, & Berntsen, 2017). In particular, little is known about the perceived functions of episodic counterfactuals compared to episodic memories and imagined future events.

We use the term "perceived functions" to refer to reasons or uses or motivations for purposefully remembering and imagining important life events (see Harris et al, 2014, p. 2). In other words, we are interested in people's perceptions about how they strategically use a particular memory, a counterfactual thought or a future projection for potentially different reasons by thinking or talking about it. The perceived functions that are the focus of this study differ conceptually from functions of counterfactual thoughts that have been well-documented in the literature (e.g., Epstude & Roese, 2008; Markman & McMullen, 2003; Roese, 1994, 1997; Roese & Epstude, 2017). In order to clarify differences and similarities between these two approaches, we start out by briefly describing the functional theory of counterfactual thinking. We next turn to the present approach

exploring the perceived functions of episodic counterfactuals in relation to autobiographical memories and future projections.

The Functional Theory of Counterfactual Thinking

An abundance of research has addressed how different forms of counterfactual thoughts serve different functions (e.g., Markman & McMullen, 2003; Markman, McMullen, & Elizaga, 2008; Roese, 1994, 1997; Roese & Olson, 1995). This research is concerned with the adaptive and maladaptive consequences of generating mental alternatives to actual outcomes of experienced events. According to Roese and colleagues (Epstude & Roese, 2008; Roese & Epstude, 2017), for instance, there are functional differences between an upward counterfactual thought, that is, imagining a better alternative, and a downward counterfactual thought, that is, imagining a worse alternative. Specifically, the functional theory of counterfactual thinking (Epstude & Roese, 2008; Roese & Epstude, 2017) argues that counterfactual thoughts are about goals. Therefore, a situational demand that makes us think about better alternatives (upward counterfactuals) serves a preparative function by helping us to make causal inferences based on the actual event and form behavioural intentions that can be turned into actual behaviors in the future to achieve a more favorable outcome (e.g., Epstude & Roese, 2008; Roese, 1994, 1997; Roese & Epstude, 2017). Upward counterfactuals are usually triggered by a negative event (e.g., a failed goal pursuit) and thus elicit negative emotions, such as regret or disappointment (Epstude & Roese, 2008; Roese & Epstude, 2017).

A situational demand that makes us think about worse alternatives (downward counterfactuals) serves an affect regulation function by helping us to make causal inferences based on the actual event and protect our status quo. This may create relief or feeling of luck in the face of an unfavorable alternative that did not happen (Epstude & Roese, 2008; Roese & Epstude, 2017). For instance, when our survival has been at stake, thinking about what we have just been spared evokes positive emotions.

Relatedly, research on life regrets, which are instances of upward, self-focused counterfactual thinking (Roese & Epstude, 2017), has shown that expressing regret in social relationships has a social-closeness function (Summerville & Buchanan, 2014), and diminished responsiveness to regrets is associated with healthy aging (Brassen, Gamer, Peters, Gluth, & Büchel, 2012). Thus, using the expression of regrets and self-blame as a means to fulfill social-closeness goals seems to be a good strategy for young people, whereas not thinking about regrets that might never be redeemed in the future (e.g., Wrosch & Heckhausen, 2002), possibly due to a limited future horizon seems to be an emotionally adaptive strategy for older people (Carstensen, Isaacowitz, & Charles, 1999).

Perceived Functions of Different Types of Episodic Simulations

Numerous studies have examined the perceived functions of autobiographical memories (e.g., Bluck & Alea, 2011; Bluck, Alea, Habermas, & Rubin, 2005; Demiray & Janssen, 2015; Harris, et al., 2014; Pasupathi, 2003; Pillemer, 2003; Rasmussen & Berntsen, 2009, 2013; Rasmussen & Habermas, 2011; Webster, 1993, 2003). However, this literature has not been integrated with research on counterfactual thinking, although both are related to the personal past. As a result, little is known about the perceived functions of episodic counterfactuals, and whether they differ from those of autobiographical memories and future projections.

Autobiographical memories have been shown to serve self, social and directive functions. The "self" function refers to how memories contribute to coherence and continuity of the self, the "social" function refers to the social-communicative roles that memories play to enable us to form and maintain relationships, and the "directive" function refers to memories' ability to inform our present and guide our future behaviors (e.g., Harris et al., 2014). In one of the few studies considering the effects of temporal direction (past versus future), and event valence on functional differences, Rasmussen and Berntsen (2013) found that positive events scored higher on the self-

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and social functions than negative events, and this effect was even greater for future than past events. Additionally, Rasmussen and Berntsen found that people used the directive function equally often for negative and positive events for the past; yet, for the future, people used the directive function more for positive than for negative events. These results were in line with findings by Rasmussen and Berntsen (2009), suggesting that memories serving the self- and social functions are positively valenced. Overall, these results were consistent with earlier findings, showing that positive events carry more functions than negative events (Rasmussen & Berntsen, 2009). More importantly, it has been shown that this effect gets larger based on an interaction with temporal direction, that is, future positive events carry even more functions than past positive events (Rasmussen & Berntsen, 2013).

These results have been corroborated by a series of studies from a new, integrative functional approach put forth by Harris et al. (2014). They conceptualized four perceived functions that reflected 1) a tendency to use memory to understand more about one's self and one's behavior (reflective), 2) to interact with others and to build social relationships (social), 3) to dwell on sadness and loss (ruminative), and 4) to feel a sense of fulfillment and to leave a legacy (generative) (Study 1). Further, they investigated memories' valence and phenomenological characteristics when cued by specific items from each function domain (Study 3). For instance, they asked "What is a memory that you would think about or talk about…" "in order to leave a legacy of family history" (generative cue), "as a social lubricant to get people talking" (social cue), "to keep alive the memory of a dead loved one" (ruminative cue), and "to avoid repeating mistakes at some later date" (reflective cue). They found that memories cued by social and generative functions were more positive than memories cued by reflective and ruminative functions, whereas memories cued by the reflective function were more personally significant than memories cued by the generative function. Harris et al. also examined how these four functions changed as people age (Study 4) and found that

across different age groups, people used the social function most frequently, followed by reflective, generative, and ruminative functions. Importantly, the use of the generative function increased with age, whereas the use of all other functions decreased.

What have been lacking in the literature on the perceived functions of different types of episodic simulations are comparisons, not only including episodic memory and future thinking, but also episodic counterfactual thinking. Recent studies have examined phenomenological similarities and differences between all three types of episodic simulations (e.g., De Brigard & Giovanello, 2012; De Brigard et al., 2016; Özbek et al., 2017). However, no study has yet compared all three event types regarding their perceived functions, which is the aim of the present study.

Conceptual integration seems possible between the perceived reflective, social, ruminative, and generative functions as described in the autobiographical memory literature, and the functions of counterfactual thinking as conceptualized in the framework of the functional theory of counterfactual thinking. For example, since the perceived reflective function is about focus on the self and one's behavior to maintain personal continuity and facilitate problem-solving, the preparative function associated with upwards counterfactuals -- which are the typical form of counterfactual thoughts (Roese & Epstude, 2017) -- should be associated with the perceived reflective function. Furthermore, there should be overlap between the perceived social function and the social-closeness function of counterfactuals (Summerville & Buchanan, 2014). Lastly, intrusive negative thoughts (e.g., about regrets) in young age should map onto the perceived ruminative function (e.g., El Leithy et al., 2006; Mitchell et al., 2016), and the perceived generative function should be less relevant to counterfactual thinking in young age than other perceived functions due to its potential association with diminished regret responsiveness in old age (Brassen et al., 2012). Before stating more specific predictions regarding the perceived functions of episodic

counterfactuals in the present study, we now turn to the phenomenological characteristics of different episodic simulations.

Characteristics of Different Types of Episodic Simulations

In their seminal study on differences between re-experiencing past events and pre-experiencing future events, D'Argembeau and Van der Linden (2004) found that episodic memories contained more sensory details and were more clearly represented in terms of contextual information than imagined future events. Similarly, both Berntsen and Bohn (2010) and Rasmussen and Berntsen (2013) found that episodic memories were rated higher than imagined future events on sensory perceptual details, such as vividness and reliving. Further, they found that imagined future events were more positive and were guided largely by the cultural life script, that is, semantic knowledge about the types of events that a prototypical life in a given culture incorporates (Berntsen & Rubin, 2004; Rubin & Berntsen, 2003). These findings were replicated and extended in a study by Grysman, Prabhakar, Anglin, and Hudson (2013) for past and future events for the self and another person.

Similar results were obtained regarding phenomenology in a study comparing not only important episodic memories and future projections, but also episodic counterfactuals (Özbek et al., 2017). Even though episodic counterfactuals and future projections both refer to thoughts about hypothetical events, they differ because episodic counterfactuals are about events that did not happen in the past, whereas imagined future events might happen. Thus, there might be other reasons underlying the phenomenological differences than just past versus future temporal direction. Specifically, Özbek et al. found that episodic memories contained more sensory details, came to mind more easily and were remembered more dominantly from a first-person perspective than episodic counterfactuals and future projections. Yet, there were also some phenomenological differences between episodic counterfactuals and future projections. For instance, episodic

counterfactuals were not rated as important, voluntarily rehearsed, positive, and central to life story and identity as future projections were. Thus, these findings pointed to different cognitive and motivational processes underlying the unique characteristics of episodic memories, episodic counterfactuals, and future projections.

De Brigard and colleagues also reported differences between episodic counterfactuals and episodic future projections, regarding the valence and intensity of emotions associated with them (De Brigard & Giovanello, 2012; De Brigard et al., 2016). De Brigard and Giovanello (2012) showed that episodic counterfactuals were, in general, emotionally less positive and less intense than episodic memories and future projections. De Brigard et al. (2016) also found that negative future projections that were considered likely to occur were less negative than negative episodic counterfactuals that were considered either likely or unlikely to have occurred. Further, repeated simulations have different effects on the perceived plausibility of episodic counterfactuals and episodic future projections (De Brigard, Szpunar, & Schacter, 2013; Szpunar & Schacter, 2013). These findings again suggested that although both episodic counterfactuals and future projections are hypothetical events, there are notable differences between them.

The Present Study

Our aim in the present study was to compare the perceived functions of episodic counterfactuals, episodic memories, and future projections in the same context by using a broader functional perspective (Harris et al., 2014). The most important implication of the design is that it addresses the question of whether some perceived functions uniquely apply to episodic counterfactuals or whether the perceived functions are mostly shared across different episodic simulations. In spite of the exploratory nature of the present study, tentative predictions could be generated based on previous research on the functions of autobiographical memory and future thinking (e.g., Harris et al., 2014; Rasmussen & Berntsen, 2013), and the functions of

counterfactual thinking (e.g., Brassen et al., 2012; Epstude & Roese, 2008; Roese & Epstude, 2017; Summerville & Buchanan, 2014; Wrosch & Heckhausen, 2002).

First, based on the earlier findings by Harris et al. (2014) and Rasmussen and Berntsen (2013), we expected that overall, the use of the reflective and social functions would be reported most frequently followed by the ruminative and generative functions. Second, on the basis of earlier work (Epstude & Roese, 2008; Rasmussen & Berntsen, 2013; Roese & Epstude, 2017), we expected the reported uses of functions to interact with event type, with the reflective function (possibly due to its self-related and preparative nature) being more dominant for future than past events. Third, based on previous research pointing to a relation between counterfactual thinking and rumination (e.g., El Leithy et al., 2006), we expected that compared to future projections and episodic memories, episodic counterfactuals, especially when in the upward form (Roese & Epstude, 2017), would be higher on the ruminative function.

Fourth, we expected episodic memories to be more detailed and episodic future projections to be more positive, important, central to life story and identity, and voluntarily rehearsed, consistent with previous work (e.g. Özbek et al., 2017). Additionally, we expected episodic counterfactuals to be lower on phenomenological quality in general and on intensity of emotion in particular (see De Brigard & Giovanello, 2012; Özbek et al., 2017). Also, we expected downward counterfactuals to be more emotionally positive than upward counterfactuals in line with the affect regulation function suggested by the functional theory of counterfactual thinking (Epstude & Roese, 2008; Roese & Epstude, 2017).

Lastly, we examined the content of different event types based on the Turkish cultural life script (Erdoğan, Baran, Avlar, Taş, & Tekcan, 2008). Cultural life scripts encompass a number of important life domains, such as college, first job, marriage, having children, and parents' death that overlap highly with the life domains in which people report their biggest regrets, such as education,

career, romance, parenting, and health (Roese & Summerville, 2005). We expected participants to report events from the same life domains as in earlier studies (e.g., Rasmussen & Berntsen, 2013; Roese & Summerville, 2005; Summerville & Buchanan, 2014), and to replicate earlier findings on a dominance of cultural life script events in future projections (e.g., Berntsen & Bohn, 2010; Grysman et al., 2013; Rasmussen & Berntsen, 2013).

Method

Participants

Sixty undergraduate students (48 women) from Boğaziçi University participated in the study. The mean age of the sample was 21.10 years (*SD*: 1.51, Range: 19 to 28) and the mean years of education was 15.49 years (*SD*: 1.09, Range: 13 to 18). Most participants were single (81.6%) and none had children. All participants received course credit for participating.

Materials

Participants were asked to write down "the most important memory from your life" (episodic memory), "the most important imagined event that could have happened, but did not happen in your life" (episodic counterfactual thought), and "the most important imagined future event that might happen in your life" (future projection). The order of these 3 events was counterbalanced between participants, thus we used 6 different booklets. In each booklet, participants were asked to write a few sentences for each memory/imagined event and give it a brief title. After recording each event, the participants answered questions related to the phenomenological characteristics and the perceived functional uses of the events.

Phenomenology questions were taken from Özbek et al. (2017). The following questions measured the extent of people's subjective experience when they recollected and imagined an event on 7-point Likert scales: emotional valence, emotional intensity, importance, voluntary rehearsal, involuntary rehearsal, and specificity. Additionally, participants answered two questions from the

Centrality of Event Scale (CES, Berntsen & Rubin, 2006), which measures the extent to which life events are evaluated as central to one's life story and identity (on a 5-point Likert scale). Table 1 shows all questions as they were asked for episodic memories and their corresponding scales. The questions were modified for episodic counterfactuals and future projections so that all three event types were clearly distinguishable. Appendix A shows the modified questions for episodic counterfactuals and future projections.

Function questions were taken from Harris et al. (2014, Study 3). Harris et al. used 32 function items (8 items per function domain) as retrieval cues with the stem "What is a memory that you would think about or talk about…" Here participants received the following instruction (in parentheses: instructions for episodic counterfactuals/future projections): "Sometimes people think back on or talk to other people about their memories (the events that could have happened but did not happen in their past/the events that might happen in their future). In the following questions, we present some different reasons why you may think about or talk about the memory (the event) you have just written. Mark on the scale for each question to indicate how often you think of or talk about this event with the given purpose: I think about or talk to other people about this memory (this event that could have happened but did not happen in the past/this event that might happen in the future)…" Next, participants answered all function items on a 5-point Likert scale for each event they generated. Table 2 presents all function items as they were asked for episodic memories. Items were modified for episodic counterfactuals and future projections so that all three event types were clearly distinguishable. Appendix B shows the modified items for episodic counterfactuals and future projections.

Procedure

Participants were tested in groups of 15-20. Testing sessions took approximately an hour. First, participants read and signed the informed consent form; then they received the "Memories

and Imagined Events" booklet, which contained the following information and instructions: "Dear participant, this is a study about memories and imagined events. On the following pages, you will be asked to remember an important memory from your life. You will also be asked to imagine important events, which might happen in your future, and which might have happened in your past but did not occur. Please read the instructions on each page carefully and write down specific memories/imagined events. This means that the memories/imagined events you write should belong to a specific time and a specific place, and their duration should not exceed a full day—24 hours. Please write a few sentences for each memory/imagined event. After you finish writing each memory/imagined event, please provide a brief title and answer a number of questions about it. All of your answers will remain confidential." The last page of the booklet consisted of demographic information questions (gender, age, years of education, marital status). At the end of testing sessions, participants were thanked and debriefed.

Coding for Counterfactual Direction and Content

Episodic counterfactuals were coded for their direction by the first author and an independent coder into three groups: 1) downward counterfactuals that described a worse alternative to reality, 2) upward counterfactuals that described a better alternative to reality, and 3) unspecified counterfactuals with no specific information about the positivity or negativity of the alternative event (e.g., Things could have been *different* had I chosen the other path), or with both positive and negative parts. The agreement between the coders was satisfactory (83%, Cohen's κ = .72, p < .001). Disagreements were solved by discussion.

The content of all event presentations was coded by the two coders based on the Turkish cultural life script (Erdoğan et al., 2008). The interrater agreement was satisfactory across different event types; namely, 95% for memories (Cohen's κ = .92, p < .001), 83% for counterfactuals (Cohen's κ = .70, p < .001), and 86% for future events (Cohen's κ = .83, p < .001). Events coded as

"other", that is, as not belonging to the cultural life script were coded according to the 17 memory content categories developed by Schlagman, Schulz, and Kvavilashvili (2006, see also Berntsen & Bohn, 2010; Rasmussen & Berntsen, 2013). The categories were *person* (i.e., primarily about other people), *accidents including injuries and illnesses, stressful events* (i.e., psychological stress), *holidays, conversations*, *leisure/sports activities*, *objects/places*, *going out*, *work/university*, *romantic involvement*, *school* (elementary and high school), *deaths/funerals*, *special occasions* (e.g., birthdays, parties), *births*, *traveling/ journeys*, *war/army*, and *miscellaneous*. The agreement between coders was satisfactory across events: Memories (87%, Cohen's κ = .84, *p* < .001), counterfactuals (81%, Cohen's κ = .77, *p* < .001), and future projections (93%, Cohen's κ = .92, *p* < .001). Disagreements were resolved by discussion.

Results

In the first section, we present results pertaining to the perceived function ratings. In the second section, we present results for the phenomenology ratings. Lastly, we examine the effect of counterfactual direction on function and phenomenology ratings and present results pertaining to the content of the different event types.

Perceived Function Ratings

First, we conducted reliability analyses separately for different event types to check whether the eight function items that comprise each function domain cluster reliably together. Item-total statistics for the "people close" item (number 15 in Table 2) in the ruminative function subscale and the "personal completion" item (number 2 in Table 2) in the generative function subscale were not satisfactory. After removing these items from the analyses, levels of Cronbach's α were acceptable. Across event types, Cronbach's α ranged from .84 to .86 (social function), from.71 to .73 (ruminative function), from .58 to .80 (generative function), and from .70 to .85 (reflective function). Although the generative function subscale for episodic memories was the only subscale

with Cronbach's α less than .70, we did not eliminate any other items from that subscale in order not to run the risk of having too few items[1].

Next, we averaged the 8 items in the social and reflective subscales and the 7 items in the ruminative and generative subscales to get mean ratings of each function across different event types. Finally, we conducted a 3 (event type: episodic memory, episodic counterfactual thought, future projection) x 4 (perceived function: reflective, social, ruminative, generative) repeated measures ANOVA to test whether there were any differences in mean function ratings based on event type and/or function type. Figure 1 shows the mean function ratings based on event type and function type.

There was a significant main effect of the perceived function type; $F (3, 171) = 106.88$, $p < .001$, $\eta^2_p = .652$. Bonferroni-corrected post-hoc tests of the main effect of the perceived function type showed that regardless of event type, reflective function was the highest ($M = 3.06$, $SD = .70$) and significantly different from other functions (all ps $< .001$). It was followed by social function ($M = 2.46$, $SD = .79$), which was higher than ruminative ($M = 1.68$, $SD = .52$) and generative ($M = 1.62$, $SD = .54$) functions (all ps $< .001$). Ruminative and generative functions were significantly lower than both reflective and social functions (all ps $< .001$), but they did not differ from each other. Importantly, this main effect of the perceived function was qualified by a significant interaction with event type, to be described shortly.

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[1] The low alpha value (.58) was obtained only for the generative function subscale of episodic memories. Exploratory factor analyses showed that this was due to separation of (1) teach/inform and (2) death preparation items under the generative function. When we treated these as two different functions, the new generative functions had satisfactory alpha values; $\alpha = .76$ and $\alpha = .82$, respectively. More importantly, when we repeated the analyses with the new functions, the results replicated the original findings. In other words, reflective and social functions scored higher than other functions. In addition, ruminative function was higher than teach/inform, whereas no other differences were found. Since a floor effect regarding teach/inform in the original analyses was clearly the cause of the low alpha value of the generative function subscale of episodic memories and since no such problems were observed regarding other events, we preserved our original analyses in the article regarding four function domains in line with Harris et al. (2014).

There was a significant main effect of event type as well; $F(2,114) = 7.17$, $p = .001$, $\eta^2_p = .112$. Bonferroni-corrected post-hoc tests of the main effect of event type showed that regardless of the perceived function, future projections were rated higher than episodic memories ($p = .002$) and episodic counterfactuals ($p = .018$), which did not differ from each other. Future projections received higher overall function scores ($M = 2.38$, $SD = .57$) than episodic memories ($M = 2.16$, $SD = .55$) and episodic counterfactuals ($M = 2.20$, $SD = .56$).

Importantly, there was a significant interaction between the perceived function and event type; $F(6, 342) = 5.97$, $p < .001$, $\eta^2_p = .095$, showing that this pattern was not consistent across event types. Bonferroni-corrected simple effects analyses focusing on functional differences for each event showed that for episodic memories, ratings for social and reflective functions did not differ from each other, but both were higher than ratings for ruminative (both ps < .001) and generative functions (both ps < .001), which were not different from each other. For episodic counterfactuals, differences in ratings of all functions were significant (all ps ≤ .015), that is, reflective function was rated the highest followed by social, ruminative, and generative functions. Finally, for future projections, reflective function was rated significantly higher than all other functions (all ps < .001). Social function was significantly higher than ruminative and generative functions (all ps < .001), whereas ruminative and generative functions did not differ from each other.

Further, Bonferroni-corrected simple effects analyses focusing on event-related differences for each perceived function showed that for reflective function, episodic counterfactuals and future projections did not differ from each other, but both were higher than episodic memories ($p = .024$ and $p < .001$, respectively). For social function, the only significant difference between event types was that future projections were higher than episodic counterfactuals ($p = .046$). For generative function, episodic memories and future projections did not differ from each other, but both were

higher than episodic counterfactuals ($p = .021$ and $p < .001$, respectively). Finally, for ruminative function, there were no differences between event types, counter to our prediction.

Overall, the analyses showed that the perceived reflective and social functions were used more than the perceived ruminative and generative functions, replicating findings by Harris et al. (2014). This effect was especially pronounced for future projections, for which the reflective function was rated the highest. Thus, extending the work by Harris et al. (2014), the present results have shown functional differences based on event type. The perceived ruminative and generative functions were used less than the perceived reflective and social functions. The frequency with which they were used was similar to each other, except for episodic counterfactuals, where the perceived generative function was especially low.

Counter to our prediction, the ruminative function was not especially frequent for episodic counterfactuals. In order to explore the background for this indistinctive pattern for the ruminative function, we conducted correlational analyses within each event type to explore how ratings of the ruminative function correlated with phenomenological characteristics. Due to the exploratory nature of the analyses, we limited ourselves to reporting correlations significant at $p < .01$. Ratings of the ruminative function correlated positively with emotional intensity ($r = .34$, $p = .008$) and involuntary rehearsal ($r = .34$, $p = .008$) of the episodic counterfactuals. Ruminative function did not show any significant positive correlations with phenomenology ratings of episodic memories and future projections.

Phenomenology Ratings

In order to test whether there were differences in ratings as a function of event type, we conducted one-way ANOVAs for the phenomenology items. Analyses showed that differences between ratings for all the items, except involuntary rehearsal and temporal distance in time, were

statistically significant as a function of event type. Table 3 shows the descriptive statistics and ANOVA results.

As predicted, our results replicated earlier findings (e.g., Özbek et al., 2017) that episodic memories, episodic counterfactuals, and future projections were phenomenologically different from each other. Consistent with predictions, episodic memories were rated as more specific than episodic counterfactuals and future projections. Future projections were more positive and more central to life story and identity than episodic memories and episodic counterfactuals. Moreover, future projections were more important and more voluntarily rehearsed than episodic counterfactuals, although they were not different from episodic memories. Episodic counterfactuals were rated as significantly less emotionally intense than episodic memories and future projections. At the same time, they were rated as emotionally negative, unlike episodic memories and future projections. Finally, all event types were equally rehearsed involuntarily. They were also sampled from similar time distances from the present.

Counterfactual Direction

Replicating earlier findings (e.g., Roese, 1994), most episodic counterfactuals were upward (48%), 22% were downward, and 30% were unspecified. We conducted one-way ANOVAs treating counterfactual direction (downward, upward, unspecified) as a between subjects variable to explore whether there was an effect on any of the functions (especially ruminative) or phenomenology (especially emotional valence) ratings of episodic counterfactuals. Counter to our hypothesis, there was no significant difference between downward counterfactuals and the two other counterfactual types on emotional valence. However, the means (downward, $M = .15$, $SD = 2.54$; upward, $M = -.90$, $SD = 2.19$; unspecified, $M = -.50$, $SD = 2$) did seem to suggest that downward counterfactuals were more likely to be positive than other counterfactuals, agreeing with earlier findings (e.g., Roese, 1994). Counterfactual direction did not have a significant effect on ruminative function, but

there was a significant effect on generative function ratings; $F(2, 57) = 3.91$, $p = .026$, $\eta^2_p = .121$. Bonferroni-corrected post-hoc tests showed that generative function ratings of downward counterfactuals ($M = 1.78$, $SD = .80$) were higher than those of unspecified counterfactuals ($M = 1.24$, $SD = .48$) ($p = .034$). Generative function ratings of upward counterfactuals ($M = 1.32$, $SD = .49$) did not differ from the other two categories.

Counterfactual direction also had a significant effect on emotional intensity ratings; $F(2, 57) = 5.11$, $p = .009$, $\eta^2_p = .152$. Bonferroni-corrected post-hoc tests showed that emotional intensity of downward ($M = 6.08$, $SD = 1.04$) and upward ($M = 5.66$, $SD = 1.29$) counterfactuals did not differ from each other but was higher than that of unspecified counterfactuals ($M = 4.61$, $SD = 1.65$) ($p = .014$ and $p = .040$, respectively).

Content of the Simulated Events

Concerning the content of the three event types, Table 4 shows the percentages of cultural life script events and other events (listed according to the content categories based on Schlagman et al., 2006) for episodic memories, counterfactuals and future projections. Replicating earlier findings (e.g., Rasmussen & Berntsen, 2013), future projections contained more cultural life script events (75%) than both episodic memories (36.7%) and counterfactuals (46.7%) ($F(2,118) = 12.04$, $p = .001$, $\eta^2_p = 0.17$; $p < .001$ and $p = .005$, respectively), which did not differ from each other. An inspection of Table 4 shows that almost one third of all episodic counterfactuals were college-related, in line with the finding from a meta-analysis (Roese & Summerville, 2005, Study 1) that people had the highest number of regrets in "education" domain. A chi-square test showed indeed that there was a significant association between event type and cultural life script category ($\chi^2 = 93.13$, $p < .001$, Cramer's V $= .70$), and that episodic counterfactuals were more likely to include "college" events than episodic memories and episodic future projections. Future projections referred to themes like "marriage", "having children", and "first job". These results paralleled earlier

findings (e.g., Berntsen & Bohn, 2010; Rasmussen & Berntsen, 2013; Roese & Summerville, 2005) and reflected the developmental stage of these young participants.

Discussion

We compared the perceived functions and the phenomenological characteristics of episodic counterfactuals to episodic memories and future projections to examine whether there are functional differences in the everyday use of these episodic simulations, and whether previously found phenomenological differences between these different types of episodic simulations replicate across studies.

In line with our first prediction, there were consistent differences between different perceived functions regarding their overall dominance regardless of event type. The reflective function was used most across event types, followed closely by the social function, whereas ruminative and generative functions were used considerably less. A potential explanation may be that since the reflective function has components like "self-focused attention to one's behaviors" and "problem-solving", which have previously been found to be more relevant for young adults (Harris et al., 2014), the greater use of reflective function for the future is attributable to the identity formation processes that take place during late adolescence and early adulthood (e.g., Conway & Holmes, 2004; Habermas & Bluck, 2000; McLean, 2005; Webster & McCall, 1999). In other words, identity formation requires young adults to focus on their behaviors and to reflect on mistakes for more effective problem-solving in similar situations that may be encountered in the future.

In line with our second prediction, there were also consistent differences between event types overall in the degree to which they were perceived to carry different functions. Participants estimated that they would use all functions more when thinking about or talking to other people about events that might occur in the future. This is in line with Rasmussen and Berntsen's finding

(2013) that future events seem to have more functional uses. This bias suggests that imagined future events play a more important role for self-regulation and contribute more to a positive self-image than events that actually happened in the past (episodic memories) or could have happened in the past (episodic counterfactuals). For instance, imagining future events may play a key role in self-regulation through its link with the specific future selves one has (e.g., I will be a mother, I will study harder, I will spend more time with close friends; see Rathbone, Conway, & Moulin, 2011). Theoretically, it has indeed been suggested that possible selves that are representations of who one might become in the future (Markus & Nurius, 1986; Rathbone et al., 2011) direct one's future behaviors through their motivational effects in the self-regulation process (e.g., Hoyle & Sherrill, 2006; vanDellen & Hoyle, 2008). This interpretation is consistent with the fact that this dominance was especially pronounced for the reflective function.

Importantly, a significant interaction between event type and perceived functions was found. Supporting the proposal that self- and emotion regulation are closely associated with projecting oneself into the future (Rasmussen & Berntsen, 2013) and that upward episodic counterfactuals mainly serve a preparative function for the future (Epstude & Roese, 2008; Roese & Epstude, 2017), the reflective function was used significantly more than the social function for episodic counterfactuals and future projections, but not for episodic memories. Similarly, although the ruminative and generative functions were rated lower than other functions in general, the generative function was used significantly less than the ruminative function for episodic counterfactuals, but not for episodic memories and future projections. Thus, our findings also point to a lower relevance of the generative function, specifically for episodic counterfactuals.

Generativity has been conceptualized as "the motivation to create a legacy and have a positive impact on the world" (Harris et al., 2014, p. 19) and it has been argued to take precedence over other motivations in old age (McAdams & de St. Aubin, 1992; McAdams, de St. Aubin, &

Logan, 1993). Harris et al. (2014) found that the generative function was the only one that increased with age. It has also been suggested that generativity is theoretically related to processes that are elevated in old age, such as meaning-making and psychological well-being (Mather & Carstensen, 2005; Schnell, 2011; Sharot, Riccardi, Raio, & Phelps, 2007; Singer, Rexhaj, & Baddeley, 2007). Paralleling these theoretical arguments and empirical findings, we presented further support for the generative function being rarely used by young adults, and expanded previous findings by showing that episodic counterfactuals are rarely used by young adults regarding generative concerns.

Counter to our third prediction, the ruminative function was not rated higher for episodic counterfactuals than for other event types. Counterfactual direction did not have an effect on the ruminative function ratings of episodic counterfactuals either. However, exploratory correlational analyses showed unique correlations within episodic counterfactuals between ratings of ruminative function and emotional intensity and involuntary rehearsal of the episodic counterfactuals. This pattern was not found for other event types and may suggest that the ruminative function becomes central for episodic counterfactuals when these are experienced as highly intense, such as associated with deeply felt regret, relief or disappointment. More research is needed to resolve this question.

Consistent with our fourth prediction, the event types differed systematically on the phenomenological characteristics. First, episodic memories were more specific than episodic counterfactuals and future projections, that is, they contained more event details, such as time and location. This is in line with previous findings (e.g., De Brigard & Giovanello, 2012; Özbek et al., 2017) and the reality and source monitoring theory (e.g., Johnson, Hashtroudi, & Lindsay, 1993; Johnson & Raye, 1981; McGinnis & Roberts, 1996), which suggests that people retrieve richer and more concrete perceptual and contextual details from events they actually experienced, and this helps them differentiate what is real and what is imagined in life—an ability that has important adaptive functions. Second, future projections were more positive and central to life story and

identity than other event types, paralleling results from Özbek et al. (2017). This underscores the robustness of the positive and idealized nature of future projections, regardless of the way they are elicited. Factors such as self-enhancement motives (e.g., Alicke & Sedikides, 2009; Sedikides & Gregg, 2008; Ross & Wilson, 2002; Wilson & Ross, 2000, 2001, 2003) or uncorrected positive illusions associated with the future (e.g., Markus & Nurius, 1986; Taylor & Brown, 1988) might contribute to the stronger positivity of future projections compared to episodic memories and episodic counterfactuals.

Third, episodic counterfactuals scored lower on phenomenological qualities in general, and they were the lowest on emotional intensity in particular. Regardless of the method with which episodic counterfactuals are elicited, the finding of lower emotional intensity has been consistent (e.g., De Brigard & Giovanello, 2012; Özbek et al., 2017; but see Stanley, Parikh, Stewart, & De Brigard, 2017). One explanation for this may be that people find it difficult to assess what the strength of their emotions could have been for a counterfactual alternative, given that they know how strong their emotions really were for the actual event. There is no such duality of competing emotional representations when remembering an actual event or imagining a future event. Alternatively, the emotions when people mentally compare the counterfactual alternative to the actual event may not be so intense, but may rather get intensified over time as a result of, for instance, repeated simulation (e.g. De Brigard et al., 2013).

Lastly, in line with the functional theory of counterfactual thinking (Epstude & Roese, 2008; Roese & Epstude, 2017), the majority of episodic counterfactuals were upward, that is, participants were overall more likely to imagine better alternatives to actually experienced events. Upward and downward counterfactuals were more emotionally intense than unspecified ones, suggesting that when people have a clear mental representation of a better or worse alternative to reality, they

experience higher emotional intensity, possibly because they are able to immerse themselves more in the alternative situation.

Limitations

The present study has some limitations. For instance, we used a college student sample and this may potentially affect the generalizability of the results. Moreover, we instructed the participants to report "the most important" life events. Given that previous research has found a dominance of positive events in response to requests for important life events (e.g., Berntsen & Rubin, 2002), we may have elicited events that had greater social and personal significance, rather than a ruminative outlook. Furthermore, due to the use of self-reports, we were able to examine only the *perceived* functions of the event simulations. While this is a relevant research question (e.g., Bluck et al., 2005; Harris et al., 2014; Pillemer, 2003) and indeed the aim of the present work, it does not clarify the question of the "actual" functions and adaptability of the event simulations, when measured more objectively. The replication of a number of established findings from previous research on perceived functions, however, supports the reliability and validity of the current findings. Future studies may focus on comparing important life events with more mundane events to examine the potential functional differences, cueing with specific function items as Harris et al. (2014) did, or using more objective methods to determine the "actual" functions of event simulations.

Conclusion

We documented differences in the perceived reflective, social, ruminative, and generative functions between episodic memories, episodic counterfactuals, and future projections, and replicated previously found phenomenological differences (e.g. Özbek et al., 2017). Overall, the perceived reflective and social functions were used more than the perceived ruminative and generative functions, with the reflective function being used more for future projections, and

episodic counterfactuals rarely being used for generative purposes. Surprisingly, episodic counterfactuals were not used more for ruminative purposes. Rather, they seem to carry functions such as self-reflection and social sharing to the same extent that other episodic simulations do. Unique correlations between the ruminative function and emotional intensity and involuntary rehearsal of the episodic counterfactuals suggested that high emotional intensity may represent conditions under which episodic counterfactuals become associated with rumination.

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Table 1

Phenomenology Questions (including CES items) Answered for Episodic Memories

1. (Emotional valence) The emotions I have when I recall the memory are (-3 = *very negative*, +3 = *very positive*).

2. (Emotional intensity) The emotions I have when I recall the memory are intense. (1 = *not at all*, 7 = *to a very high degree*).

3. (Importance) The memory is important to my life. (1 = *not at all*, 7 = *to a very high degree*).

4. (Voluntary rehearsal) Since it happened, I have willfully thought back to this event in my mind and thought about it or talked about it. (1 = *not at all*, 7 = *very often*).

5. (Involuntary rehearsal) Has the memory of the event suddenly popped up in your thoughts by itself—that is, without your having attempted to remember it? (1 = *not at all*, 7 = *very often*).

6. (Specificity) This memory was specific in the sense that it happened at a specific time and place, and its duration did not exceed a full day—24 hours. (1 = *not at all*, 7 = *very specific*).

7. (Date) How long ago did this event occur? (Please elaborate, e.g., days, weeks, months, or years).

8. (Identity) I feel this memory has become part of my identity. (1 = *totally disagree*, 5 = *totally agree*).

9. (Centrality) I feel that this memory has become a central part of my life story. (1 = *totally disagree*, 5 = *totally agree*).

Table 2

Function Questions Answered for Episodic Memories

I think about or talk to other people about this memory… (1 = Almost never, 5 = Very often)

1. (Social) Because it brings me closer to newer friends and acquaintances

2. (Generative) Because it gives me a sense of personal completion or wholeness

3. (Social) When I hope to also learn more about another person's life

4. (Social) To create ease of conversation

5. (Reflective) To try to understand myself better

6. (Reflective) Because remembering this memory helps me define who I am now

7. (Reflective) To avoid repeating the mistakes at some later date

8. (Generative) Because it helps me to cope with thoughts of my own mortality

9. (Generative) As a way of bridging the generation gap

10. (Ruminative) For lack of any better mental stimulation

11. (Generative) In order to leave a legacy of family history

12. (Generative) Because it helps me to prepare for my own death

13. (Social) When I want to maintain a friendship by sharing this memory with friends

14. (Reflective) When I want to understand how I have changed from before

15. (Ruminative) To remember people I was close to but who are no longer part of my life

16. (Ruminative) For something to do

17. (Reflective) When I believe that thinking about this memory can help guide my future

18. (Ruminative) To keep painful memories alive

19. (Reflective) To see how my strengths can help me solve a current problem

20. (Reflective) When I am concerned about whether my beliefs have changed over time

21. (Generative) Because I feel less fearful of death after I finish reminiscing

22. (Generative) In order to teach younger persons about cultural values

23. (Generative) To teach younger family members what life was like when I was young

24. (Reflective) When I need to make a life choice and I am uncertain which path to take

25. (Social) When I want to help someone by telling them about my own past experience

26. (Ruminative) To rekindle bitter memories

27. (Ruminative) To keep alive the memory of a dead loved one

28. (Social) As a social lubricant to get people talking

29. (Social) When I want to make someone else feel better by talking to them about similar past experiences
30. (Ruminative) To reduce boredom

31. (Ruminative) To keep memories of old hurts fresh in my mind

32. (Social) Because it promotes fellowship and a sense of belonging

Table 3

Descriptive Statistics and One-way ANOVA Results for Phenomenology and CES Items

Study Variables	Episodic Memory		Episodic Counterfactual		Episodic Future Projection			
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*	η^2_p
Specificity	6.07[a]	1.66	4.61[b]	2.05	4.39[b]	2.16	15.67***	.213
Emotional Valence	.58[a]	2.64	-.55[b]	2.22	2.33[c]	1.63	26.90***	.313
Importance	6.32[a,b]	.91	6.10[a]	1.23	6.57[b]	.72	3.34*	.054
Identity (CES)	3.73[a]	1.03	3.73[a]	1.34	4.30[b]	.83	5.34**	.083
Centrality (CES)	3.50[a]	1.23	3.55[a]	1.44	4.33[b]	.93	9.07***	.133
Emotional Intensity	6.37[a]	1.13	5.43[b]	1.45	6.13[a]	.91	11.68***	.165
Voluntary Rehearsal	5.38[a,b]	1.60	5.08[a]	1.62	5.93[b]	1.19	6.35**	.097
Involuntary Rehearsal	4.62[a]	1.73	4.47[a]	1.83	4.67[a]	1.57	.28	.005
Temporal Distance (in weeks)	69.76[a]	62.94	48.34[a]	43.97	63.55[a]	50.37	2.54	.045

Note – Means with the same superscripts across the rows are not significantly different from each other at *p* < .05
**p* < .05, ***p* < .01, ****p* < .001

Table 4

Percentages of cultural life script- and other events described in episodic memories, episodic counterfactuals, and episodic future projections

	Episodic Memory	**Episodic Counterfactual**	**Episodic Future Projection**
Cultural Life Script Categories	All Events N = 60	All Events N = 60	All Events N = 60
Marriage	-	-	10.00
Having children	-	-	5.00
First job	-	-	31.67
Falling in love	8.33	5.00	-
College	10.00	30.00	13.33
Own death	-	1.67	-
Others' death	8.33	-	1.67
Beginning high school	-	5.00	-
Parents' death	1.67	1.67	1.67
Accident/injury	3.33	-	1.67
Getting into fights	-	1.67	-
Illness	5.00	1.67	-
Moving	-	-	10.00
Other Event Categories			
Person	3.33	5.00	3.33
Accidents (inc. injuries & illnesses)	5.00	5.00	-
Stressful events	20.00	3.33	-
Holidays	1.67	3.33	1.67
Conversations	3.33	6.67	-
Leisure/sports (inc. hobbies & games)	16.67	20.00	5.00
Objects/places	-	-	5.00
Work/university	1.67	1.67	-
Romantic involvement	1.67	1.67	-
School	1.67	1.67	-
Miscellaneous	1.67	1.67	1.67
Special occasions (e.g. birthdays)	6.67	3.33	3.33
Births	-	-	1.67
Travelling/journeys	-	-	3.33
Column Total %	100.00	100.00	100.00

Figure 1. Mean function ratings based on event type and function type. Error bars represent the standard errors of the means. Episodic memories, episodic counterfactuals, and episodic future projections are referred to as past, counterfactual, future in the figure for the sake of brevity.
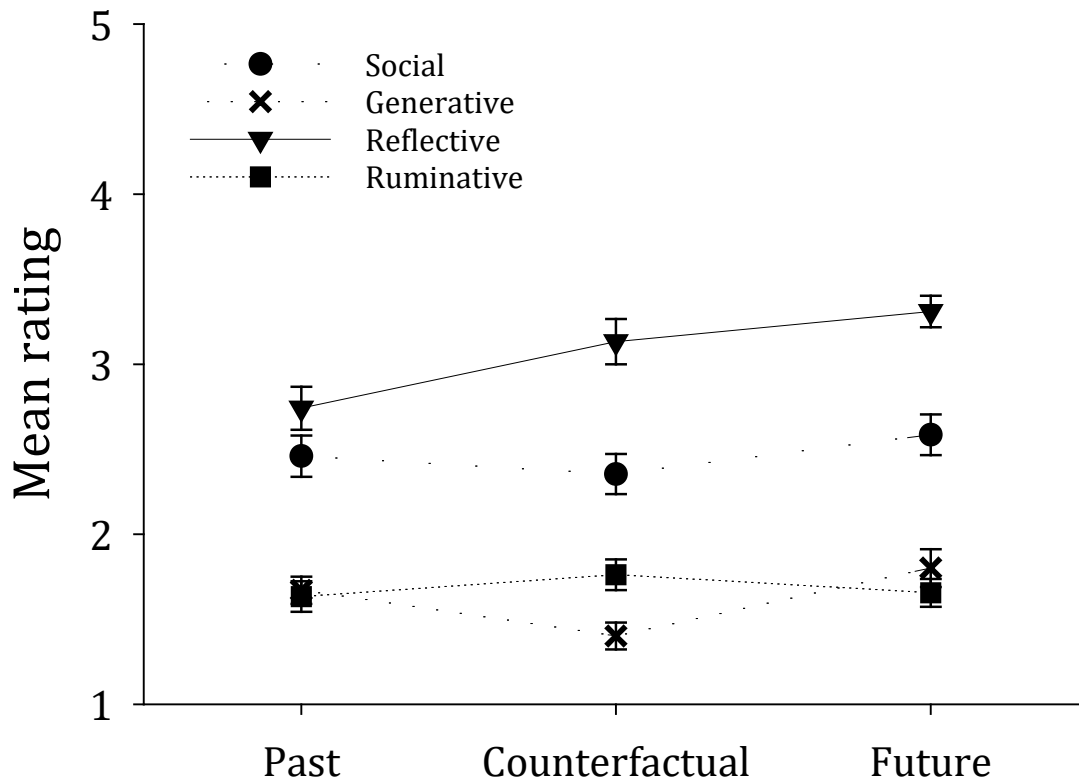
APPENDIX A

Phenomenology Questions (including CES items) Answered for Episodic Counterfactuals

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1. (Emotional valence) The emotions I have when I imagine the event are (-3 = *very negative*, +3 = *very positive*).

2. (Emotional intensity) The emotions I have when I imagine the event are intense. (1 = *not at all*, 7 = *to a very high degree*).

3. (Importance) If it had happened, the imagined event would have been important to my life. (1 = *not at all*, 7 = *to a very high degree*).

4. (Voluntary rehearsal) Since the time it could have happened, I have willfully thought back to this event in my mind and thought about it or talked about it. (1 = *not at all*, 7 = *very often*).

5. (Involuntary rehearsal) Has the imagined event suddenly popped up in your thoughts by itself—that is, without your attempting to imagine it? (1 = *not at all*, 7 = *very often*).

6. (Specificity) This imagined event was specific in the sense that it could have happened at a specific time and place, and its duration would not have exceeded a full day—24 hours. (1 = *not at all*, 7 = *very specific*).

7. (Date) If this event had happened, how long ago would it have happened? (Please elaborate, e.g., days, weeks, months, or years).

8. (Identity) If it had happened, this event would have become part of my identity. (1 = *totally disagree*, 5 = *totally agree*).

9. (Centrality) If it had happened, this event would have become a central part of my life story. (1 = *totally disagree*, 5 = *totally agree*).

Phenomenology Questions (including CES items) Answered for Episodic Future Projections

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1. (Emotional valence) The emotions I have when I imagine the event are (-3 = *very negative*, +3 = *very positive*).

2. (Emotional intensity) The emotions I have when I imagine the event are intense. (1 = *not at all*, 7 = *to a very high degree*).

3. (Importance) The imagined event will be important to my life. (1 = *not at all*, 7 = *to a very high degree*).

4. (Voluntary rehearsal) I have willfully imagined the event in my mind and thought about it or talked about it. (1 = *not at all*, 7 = *very often*).

5. (Involuntary rehearsal) Has the imagined event suddenly popped up in your thoughts by itself—that is, without your attempting to imagine it? (1 = *not at all*, 7 = *very often*).

6. (Specificity) This imagined event was specific in the sense that it might happen at a specific time and place, and its duration will not exceed a full day—24 hours. (1 = *not at all*, 7 = *very specific*).

7. (Date) How long from now do you imagine this event to happen? (Please elaborate, e.g. days, weeks, months, or years).

8. (Identity) I feel this event will become part of my identity. (1 = *totally disagree*, 5 = *totally agree*).

9. (Centrality) I feel that this event will become a central part of my life story. (1 = *totally disagree*, 5 = *totally agree*).

Appendix B

Function Questions Answered for Episodic Counterfactuals

I think about or talk to other people about this event that could have happened but did not happen in the past... (1 = *Almost never*, 5 = *Very often*)

1. (Social) Because it brings me closer to newer friends and acquaintances

2. (Generative) Because it gives me a sense of personal completion or wholeness

3. (Social) When I hope to also learn more about another person's life

4. (Social) To create ease of conversation

5. (Reflective) To try to understand myself better

6. (Reflective) Because imagining these events helps me define who I am now

7. (Reflective) To avoid repeating the mistakes at some later date

8. (Generative) Because it helps me to cope with thoughts of my own mortality

9. (Generative) As a way of bridging the generation gap

10. (Ruminative) For lack of any better mental stimulation

11. (Generative) In order to leave a legacy of family history

12. (Generative) Because it helps me to prepare for my own death

13. (Social) When I want to maintain a friendship by sharing this imagined event with friends

14. (Reflective) When I want to understand how I could have changed from before

15. (Ruminative) To imagine people I could have been close to but who are not part of my life

16. (Ruminative) For something to do

17. (Reflective) When I believe that imagining these events can help guide my future

18. (Ruminative) To keep painful visions alive

19. (Reflective) To see how my strengths can help me solve a current problem

20. (Reflective) When I am concerned about whether my beliefs could have changed over time

21. (Generative) Because I feel less fearful of death after I finish imagining

22. (Generative) In order to teach younger persons about cultural values

23. (Generative) To teach younger family members what life could have been like when I was young

24. (Reflective) When I need to make a life choice and I am uncertain which path to take

25. (Social) When I want to help someone by telling them about my own imaginations about past

26. (Ruminative) To rekindle bitter visions

27. (Ruminative) To keep alive the vision that a loved one might have died

28. (Social) As a social lubricant to get people talking

29. (Social) When I want to make someone else feel better by talking to them about similar events
30. (Ruminative) To reduce boredom

31. (Ruminative) To keep visions of potential hurts fresh in my mind

32. (Social) Because it promotes fellowship and a sense of belonging

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Function Questions Answered for Episodic Future Projections

I think about or talk to other people about the event that might happen in the future… (1 = Almost never, 5 = Very often)

1. (Social) Because it brings me closer to newer friends and acquaintances

2. (Generative) Because it gives me a sense of personal completion or wholeness

3. (Social) When I hope to also learn more about another person's life

4. (Social) To create ease of conversation

5. (Reflective) To try to understand myself better

6. (Reflective) Because imagining my future helps me define who I am now

7. (Reflective) To avoid repeating the mistakes at some later date

8. (Generative) Because it helps me to cope with thoughts of my own mortality

9. (Generative) As a way of bridging the generation gap

10. (Ruminative) For lack of any better mental stimulation

11. (Generative) In order to leave a legacy of family history

12. (Generative) Because it helps me to prepare for my own death

13. (Social) When I want to maintain a friendship by sharing this imagined event with friends

14. (Reflective) When I want to understand how I might change from now

15. (Ruminative) To imagine people I might be close to but who are not yet part of my life

16. (Ruminative) For something to do

17. (Reflective) When I believe that imagining these events can help guide my future

18. (Ruminative) To keep painful visions alive

19. (Reflective) To see how my strengths can help me solve a current problem

20. (Reflective) When I am concerned about whether my beliefs might change over time

21. (Generative) Because I feel less fearful of death after I finish imagining

22. (Generative) In order to teach younger persons about cultural values

23. (Generative) To teach younger family members what life might be like when I get older

24. (Reflective) When I need to make a life choice and I am uncertain which path to take

25. (Social) When I want to help someone by telling them about my own imaginations about future

26. (Ruminative) To rekindle bitter visions

27. (Ruminative) To keep alive the vision that a loved one might die

28. (Social) As a social lubricant to get people talking

29. (Social) When I want to make someone else feel better by talking to them about similar events

30. (Ruminative) To reduce boredom

31. (Ruminative) To keep visions of potential hurts fresh in my mind

32. (Social) Because it promotes fellowship and a sense of belonging