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Wynn TAN
Singapore Management University, wynn.tan.2019@msps.smu.edu.sg

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Wynn Tan

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Master's Thesis Committee:

William Tov (Supervisor / Chair)
Associate Professor of Psychology
Singapore Management University

Ivy Lau
Associate Professor of Psychology
Singapore Management University

Andree Hartanto
Assistant Professor of Psychology
Singapore Management University

Singapore Management University
2022

I hereby declare that this Master's thesis is my original work
and it has been written by me in its entirety.
I have duly acknowledged all the sources of information
which have been used in this thesis.

This Master's thesis has also not been submitted for any degree
in any university previously.

Wynn Tan
20 May 2022

Abstract

Meaning-making literature largely focuses on predictors of global meaning rather than situational meaning. This is insufficient as both levels of meaning are necessary for a sustained sense of meaning. Past studies found evidence that downward counterfactuals can enhance the meaningfulness of events. However, those findings may be due to existing studies' focus on major events and did not study how meaning could change over time. For everyday events, upward counterfactuals were proposed to be more apt in enhancing meaning. Using a multiphase diary study, this paper examined whether upward counterfactual thinking predicted event meaningfulness, and more specifically if it was through learning lessons from those events. Event valence (i.e., positive vs negative) and individuals' implicit theories (i.e., growth vs fixed mindset) were explored as factors that could moderate this relationship. Interestingly, rather than enhancing meaning, upward counterfactuals reduced the meaning of positive events and preserved the meaning of negative events over time. In addition, there was support for a moderated mediation model: lesson learning mediated the relationship between upward counterfactuals and event meaningfulness—but this mediation pathway applied to negative events only. Individuals' growth theory did not moderate the effects. Limitations, theoretical, and practical implications of the study were discussed.

Keywords: counterfactual thinking, situational meaning, lesson learning, implicit theories

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Introduction

At the core of its definition, meaning is about drawing connections between things, events, and relationships (Baumeister, 1991). Being able to do so in one's life, that is to regard one's life as meaningful, has been found to confer a multitude of important benefits. For instance, life satisfaction (Chamberlain & Zika, 1988), positive affect (King et al., 2006), adaptive coping mechanisms (Park & Folkman, 1997), better physical health (Taylor et al., 2000), lower post-traumatic stress symptoms (Updegraff et al., 2008), and reduced suicidal ideations (Kleiman et al., 2013) have all been associated with having a sense of meaning in life. Hence, it is no wonder that research on how to possess meaning in life has been a popular endeavor for many. Evidently, research on the predictors of meaning in life, or global meaning has proliferated in recent years (Hicks et al., 2010; King et al., 2006; Schlegel et al., 2009; Suh & Chong, 2021). Global meaning refers to the overarching set of beliefs, goals, and subjective feelings through which people interpret their life experiences (Park, 2010).

Global meaning is also generally understood to consist of three facets—coherence, purpose, and mattering (sometimes also known as significance). Coherence relates to making sense of and comprehending one's life, *purpose* refers to having important aims and goals in life, and *mattering* is about how much one's existence is felt to be significant, important, and valued (George & Park, 2016; Martela & Steger, 2016).

Having a global sense of meaning and drawing on it to assign meaning to specific experiences relates to a *top-down* view of life. However, according to Reker and Wong (1988), this view alone is insufficient for a complete understanding of meaning as "it is not meaningful to talk about life as a whole as having meaning; life contains meanings—a series of meaningful specific activities, quests and goals" (p. 221). This describes having a *bottom-up* view of life, which focuses on the meaning of specific experiences. Both perspectives are imperative for a sustained sense of meaning (Reker & Wong, 1988). The ascription of

meaning to a particular event or experience is known as *situational meaning* (Park, 2010). Although there is a need for both levels of meaning, global meaning has been studied extensively and much less is known about situational meaning. Therefore, this paper seeks to shed some light on situational meaning, specifically on what predicts the meaningfulness of an event.

Often, one has to reflect on an event in order to appreciate its meaning. Indeed, a study by Kray et al. (2010) demonstrated that one type of reflection—*counterfactual thinking* (CFT) or imagining how an event in one's life might have turned out differently—enhances the meaningfulness of that event. Other studies also suggest that CFT could lead to increased situational meaning through greater relationship satisfaction (Koo et al., 2008) or the experience of meaning in life as a whole (Heintzelman et al., 2013). However, previous research has tended to focus on major events (e.g., experiencing a turning point, meeting one's significant other, being born). As such, CFT could arguably have led to higher meaning perceptions precisely because such events are already significant to begin with (Choi & Markman, 2019). That is, using CFT to mentally undo major events, illuminates the impact they have had on one's life thereby facilitating recognition of the events' meaningfulness. An important question is whether CFT is also able to enhance the meaningfulness of minor, everyday events—events that are likely to vary greatly in their perceived meaningfulness. Further, (i) what is the mechanism of this meaning-enhancing process and (ii) what factors moderate this meaning-enhancing process? The aim of this present paper is to address these questions.

It is important to study the meaningfulness of everyday events because major life events are relatively infrequent compared with everyday events. Their rarity implies that the occurrence of intensely meaningful events may not adequately represent a person's normal life circumstances. The frequency of meaningful events may be just as critical as the intensity

of meaning in contributing to a sense of meaning in life. In fact, some studies even found that frequency of events and emotions is actually a better predictor of certain outcomes as compared with intense experiences (DeLongis et al., 1982; Kanner et al., 1981). For example, Diener et al. (1991) found that high subjective well-being is more strongly associated with frequency and duration of positive affect as compared with the intensity of those feelings. All in all, it could be that it is not just about having intensely meaningful experiences but also having many meaningful experiences. A counterpoint is that daily meaning may only have a minor impact on our well-being. However, research in other areas suggest that daily experiences can have cumulative effects on well-being over time that are substantial (Bøe et al., 2018; Conklin et al., 2019; Toepfer et al., 2012; Yeung et al., 2018) and may even predict well-being beyond personality traits (e.g., Tov, 2012). Therefore, generalizing CFT to daily events would clarify how important this process is to the creation of meaning more generally and this should engender valuable theoretical as well as practical implications.

To elucidate the effects of CFT on everyday meaning, I conducted a multiphase diary study that examines CFT in relation to situational meaning in greater detail. Lesson learning, event valence, and implicit theories were explored as possible factors involved in this relationship.

Counterfactual Thinking and Meaning

Counterfactual thoughts are "counter to the facts." They involve thinking about how the past might have been different (Byrne, 2005; Roese, 1997). This form of cognitive processing usually takes the form of an if-then conditional proposition and can be classified by its direction (Roese, 1997). *Upward* counterfactuals involve imagining better alternatives (e.g., "if only I studied harder, then I could have received an A); *downward* counterfactuals

involve imagining worse alternatives (e.g., “if I had not studied at all, then I might have received an F”).

Past research on CFT and meaning suggest that thinking about how an event might not have occurred could increase its meaningfulness. For example, in Koo et al. (2008, Study 4), participants who wrote about how they might have never met their romantic partner (absence condition) were more satisfied with their relationship compared with those who wrote about how they met their romantic partner (presence condition) or details of a typical day (control condition). Presumably, those in the absence condition thought about joyous occasions that may not have occurred if they had not met their romantic partner (a form of downward CFT). Hence, albeit not explicitly measured in the study, it is likely that participants in the absence condition perceive their first meeting as more meaningful than those in the control groups. Similarly, in Heintzelman et al. (2013, Study 2), participants who wrote about how they might not have been born (counterfactual condition) felt that their lives were more meaningful than those who wrote about the factors that led to their birth (factual condition). Although meaning in life does not render every specific life event more meaningful, one’s birth is the exception as it signifies the start of life. The most compelling evidence for the meaning-enhancing effects of CFT comes from Kray et al. (2010, Study 4) in which participants were tasked to write about a turning point in their life. Participants instructed to describe what would happen if the turning point had never occurred (counterfactual condition) generated the most counterfactual statements and were considerably more likely to perceive meaning in those turning points as compared with those who were told to describe exactly what happened (factual condition) and even those who were told to reflect directly on the meaning of the turning point (meaning condition). On the whole, these studies imply that CFT can embed deeper levels of meaning in a variety of life experiences.

Why would CFT facilitate meaning-making for those life experiences? The answer to this lies in the particular type of events investigated in the aforementioned studies. Notably, participants in those studies were required to mentally undo major events that were already significant, hence likely meaningful to begin with (e.g., being born, meeting a romantic partner, and experiencing a turning point in life). Subsequently, the counterfactuals generated were predominantly *downward* counterfactuals, which meant that most participants imagined how life could be *worse* without the major event rather than how it could have been better (Heintzelman et al., 2013; Koo et al., 2008; Kray et al., 2010). When reflecting on such events it should have been quite straightforward to think about how life would have turned out worse if not for those events. This might even apply to some major negative events (e.g., severe personal injury, death of a loved one) as individuals often perceive their life as being progressively better, that is to follow a redemption sequence (i.e., from bad to good) (McAdams, 2006). For instance, people reported that they might not have been as resilient today if not for overcoming adversity (e.g., Seery, 2011). To the extent that individuals believe that aspects of their lives (e.g., relationships, career, personal development) could be absent if not for certain major events, they would be inclined to confirm those events as having played an integral role in their lives and thus, are meaningful. After all, humans are compelled to maintain a sense of meaning in their lives (Heine et al., 2006) and this is evident by individuals' search for meaning when a loss or traumatic event occurs (e.g., Kernan & Lepore, 2009; Proulx et al., 2010; Silver & Updegraff, 2013). Imagining a life without a major event, and the impact it had on their lives, seems worse off (i.e., downward CFT). Therefore, this might threaten individuals' sense of meaning and motivate them to restore meaning by reasserting the meaningfulness of that event.

Downward vs Upward Counterfactuals on Everyday Meaning

Although downward CFT has been shown to enhance the meaningfulness of major life events, it is not clear whether such reflection also increases the meaningfulness of everyday events. First, downward CFT could have heightened the meaning of major events because they are typically regarded as meaningful, so much so that hypothetically doing away with major events might jeopardize individuals' sense of meaning—triggering compensatory mechanisms to restore it (Heine et al., 2006). Since everyday events vary much more in how meaningful they are, as compared with major events, imagining their absence may not trigger these meaning-maintenance mechanisms. Second, downward CFT does not occur frequently on a daily basis (Summerville & Roese, 2008), ergo potentially less influential in determining the meaningfulness of everyday events.

How else might CFT be able to enhance meaning for everyday events? As Roese and Olson (1997) put it, downward CFT illustrates ways to preserve and maintain the status quo while upward CFT motivates people to improve the status quo. Suppose the sense of meaning in life is analogous to the status quo, it is logical to expect that downward CFT allows individuals to confirm the meaningfulness of their experiences, thereby maintaining the level of meaning in life, whereas upward CFT allows individuals to seek meaning in their experiences which can then add to meaning in life. As such, the central hypothesis of this paper is that *upward* CFT would be more apt in predicting the meaningfulness of everyday events.

To my knowledge, the relationship between upward CFT and situational meaning in daily life has not been empirically investigated. The basis for this relationship, however, lies in the function of upward CFT. According to the functional theory of CFT (Epstude & Roese, 2008), upward CFTs are said to serve a preparative function as they specify actions that may lead to goal attainment which then prompt individuals to engage in self-improvement and

prepare for future betterment toward desired goals (Epstude & Roese, 2011; Roese, 1994; Sanna et al., 2001). Accordingly, upward CFTs are particularly useful for events that are repeatable (Markman et al., 1993; Roese & Epstude, 2017), which can be said for many everyday events. Moreover, negative emotions of regret and self-blame that commonly arise because of upward CFT could be alleviated if individuals perceive a chance to rectify future similar problems (Boninger et al., 1994). Running through counterfactual simulations after a negative event might facilitate concrete plans on how to handle or avoid future such events (Hayes-Roth & Hayes-Roth, 1979; Taylor & Schneider, 1989). As an example, upward CFTs generated after faring poorly in an examination could guide and motivate the individual to prepare more thoroughly for future examinations. All in all, upward CFT should make everyday events more meaningful because it is through such cognitive processing that our experiences can be construed as a source of information (i.e., what works, what does not work) to prepare for the future in order to achieve desired goals.

H1: Upward CFT increases meaning of events compared with non-counterfactual thoughts.

Lesson Learning as a Mediator

One way for upward CFT to improve future performances is through *lesson learning*, which refers to learning a specific lesson from an event that could direct future behavior in similar situations (McLean & Thorne, 2003). Upward CFT has been found to be an effective way to acquire lessons as counterfactual ruminations elicit insights about the problem (Markman & McMullen, 2003; Roese, 1997; Sanna, 2000; Tykocinski & Steinberg, 2005), identify alternative courses of action (Kahneman & Miller, 1986; Markman et al., 2007; Roese, 1994), create a connection between the counterfactual and the desired behavior (Spellman et al., 2005; Spellman & Mandel, 1999) as well as strengthen relevant behavioral

intentions (Krishnamurthy & Sirivan, 2002; Nasco & Marsh, 1999; Roese, 1994; Smallman & Roese, 2009). Running through counterfactual simulations augments the intention to perform more adaptive behaviors in the future, eventually leading to a greater likelihood of carrying through with these intentions (Roese, 1994). The finding that upward CFT leads to subsequently improved performance has likewise been demonstrated in more recent studies (e.g., Myers et al., 2014) and this improved performance may be attributed to the learning that has taken place.

Moreover, drawing on findings from the coping literature, events that lead to growth are typically perceived as more meaningful. Growth relates to the concept of benefit-finding, broadly defined as being able to find something positive in the experience. Benefit-finding has been considered as a construal of meaning (Davis et al., 1998) and demonstrated to mediate the causal link between CFT and the construction of meaning (Kray et al., 2010). Categories of response for benefit-finding include "*growth in character*", "*gained perspective*", "*brought family together*", and "*others will benefit*" (Davis et al., 1998). Lesson learning is likely to be a form of benefit-finding as gaining insights from past experiences can be considered as finding something positive in those experiences. Upward CFT should facilitate this insight generation process by prompting individuals to think of specific if-then conditional statements to improve future outcomes. To the extent that individuals attribute more lessons learnt to a specific past event, that event should be perceived as more meaningful.

H2: Lesson learning from past events is positively associated with situational meaning (i.e., the meaning of those events).

H3: Upward CFT has an indirect effect on situational meaning through lesson learning.

Event Valence

Event valence refers to whether an event is positive or negative. This is subjective as the same objective outcome could be perceived differently for individuals. For example, a "C" grade on a test would be a positive outcome for a student expecting a "F" grade but a negative outcome for a student expecting an "A" grade.

Negative, relative to positive, outcomes trigger CFT more readily because the need to improve is greater for negative events compared with positive events (Roese & Olson, 1997). People are keen to understand how best to avoid negative outcomes again in the future (Gavanski & Wells, 1989). This is also consistent with the functional theory of CFT (Epstude & Roese, 2008) which postulates that the first step in the regulatory process of CFT is the identification of a problem (e.g., performance discrepancy) or the experience of negative affect. In such situations, individuals often attempt to reconcile discrepancies and upward CFT can help achieve these ends (Roese, 1994).

Moreover, the mobilization-minimization hypothesis proposed by Taylor (1991) argues that negative events evoke strong and rapid physiological, cognitive, emotional, and social responses in an attempt to mobilize and direct resources to minimize, and even erase the impact of negative events. This is so because resolving negative events is often perceived as more urgent than attending to positive events. According to Roese (1997), negative affect triggers upward CFTs because it signals a problem that requires rectification (i.e., not meeting one's goals). In other words, it would be easier for participants to generate upward CFTs after a negative event because they may be more motivated to avoid future negative events than they are to improve upon positive events (Baumeister et al., 2001; Taylor, 1991). Therefore, higher motivation to improve and greater ease of generating upward CFTs for negative, rather than positive, events could lead to more lesson learning.

Even though negative outcomes are more likely to spontaneously trigger CFT, upward CFT could occur after positive outcomes as well. Few studies have examined the specific effects of upward CFT after positive outcomes, perhaps because such thoughts are less common in response to positive events (Klauer & Migulla, 1995; Sanna & Turley, 1996). Some insights might be gained from research on maximizers. These are people who constantly ask themselves whether they have obtained the best outcome or if they can achieve a better one (Schwartz et al., 2002). In essence, maximizers can be said to engage in upward CFT when they compare an outcome to a better actual or imagined alternative even when that outcome might generally be considered positive (Iyengar et al., 2006). The tendency to maximize is positively associated with regret, depression, and perfectionism (Ma & Roese, 2014; Schwartz et al., 2002; Sirois et al., 2010). This could mean that it is dysfunctional to generate upward CFT in response to positive outcomes. Moreover, the extent of improvement from a positive outcome to an "even better" alternative may sometimes be only marginal (e.g., improving one's grade from an A to an A+). This renders the upward CFT futile in producing valuable lessons. Thus, upward CFT generated after positive outcomes may not result in lesson learning—or the lesson learned might have limited value.

H4: The effect of upward CFT on lesson learning is moderated by the valence of an event.

H4a: For negative events, upward CFT will increase lesson learning.

H4b: For positive events, upward CFT will not increase lesson learning.

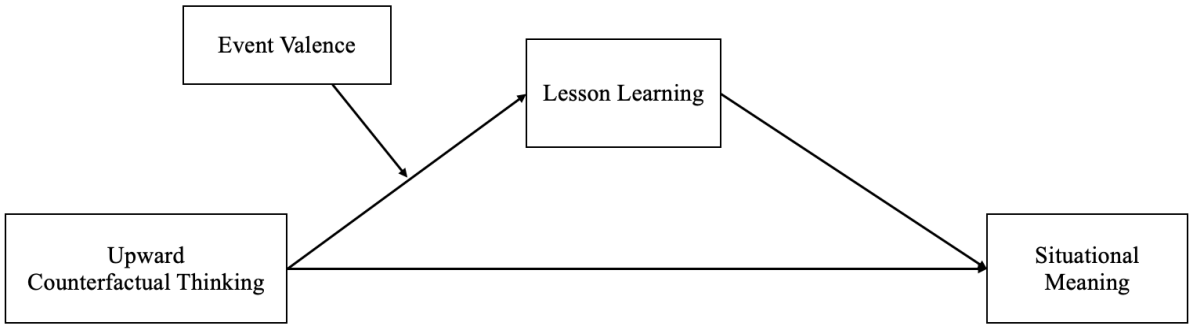

Figure 1. Proposed moderated mediation model between upward CFT and situational meaning through lesson learning, with event valence as the moderator.

Implicit Theories

What other factors determine whether a lesson is learned from events? A possible factor could be the implicit theories held by individuals, which refer to lay beliefs about the nature of human attributes, such as intelligence or personality (Dweck, 1999, 2006; Bernecker & Job, 2019). Fixed theorists (a.k.a., entity theorists) believe that human attributes are generally fixed and immutable while growth theorists (a.k.a., incremental theorists) believe that human attributes are largely malleable. Due to the belief that attributes are malleable, growth theorists are more interested in improving themselves and hence, are less vulnerable to get discouraged by mistakes and setbacks (Bernecker & Job, 2019). It has been found that a growth mindset makes people more attuned to their mistakes which in turn, improves performance after the error (Moser et al., 2011). In addition, growth theorists tend to attribute failure to a lack of effort rather than a lack of ability, and hence are more likely to engage in remedial action to correct mistakes if necessary (Dweck, 1999). Overall, this suggests that growth theorists may be more inclined to view many negative events as learning opportunities for betterment and hence, upward CFTs may be more effective in generating lessons for growth theorists than for fixed theorists.

However, fixed theorists tend to view negative events as the result of their lack of innate ability to succeed, or external factors out of their control (e.g., someone else, the circumstances) (Dweck et al., 1995; Mizrahi, 1984; Mueller & Dweck, 1998). Doing so reduces the perceived opportunity for corrective action and upward CFTs would be less functional in preparing for the future (Roese & Epstude, 2017). Thus, upward CFTs produced by such individuals may not be as effective in generating lessons.

H5: Upward CFTs are more likely to lead to learned lessons for growth theorists as compared with fixed theorists.

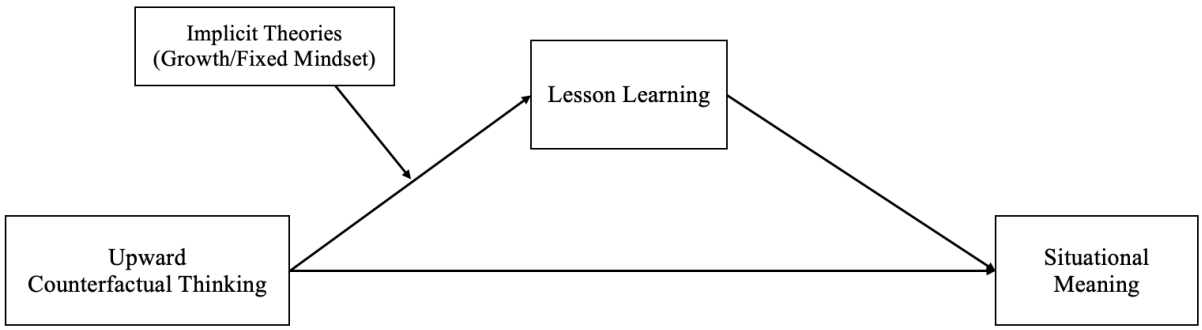

Figure 2. Proposed moderated mediation model between upward CFT and situational meaning through lesson learning, with implicit theories as the moderator.

Methods

Participants

Kray et al. (2010) reported Cohen's *d* of .64 to .81 for the between-person effect of CFT on meaning across a variety of *major* events. Since the current study examines *everyday* events, a more conservative effect size estimate of .30 was assumed. Based on an a priori G*Power analysis (Faul et al., 2007), a minimal sample of 90 is needed to achieve 80% power to detect the within-person main effects of CFT at the .05 significance level. It is

important to acknowledge that H5 might require a larger sample size to test given that implicit theories is a between-person variable. However, in view of resource constraints, detection of the main effects of H1 (i.e., upward CFT on meaning) and H2 (i.e., lesson learning on meaning) were prioritized. Thus, to ensure sufficient power the target sample size was 110 participants.

A total of 128 undergraduate students from Singapore Management University (SMU) were recruited via the university's online subject pool system. In exchange for completing the multiphase study, participants were compensated with course credits and/or cash. Among them, five participants failed to complete at least seven out of eight surveys for the second phase of the study and one participant failed two out of three attention checks. The final sample retained for analysis was 122 (M_{age} = 21.75, SD_{age} = 1.89, 96 females, 104 Chinese).

Procedure

Participants completed the study in three main phases.

Phase 1 consisted of individual difference measures which assessed participants' implicit theories, tendency to maximize, and level of self-esteem. In addition, they were asked to rate the extent to which they search for and experience meaning in life.

Phase 2 began the day after Phase 1 and lasted for two weeks (i.e., 14 days). On eight days within this two-week timeframe, participants reported one positive and one negative event that happened to them that day (i.e., day of reporting) and rated how positive or negative they considered the event to be. Participants were given a large text space to write about the event to prime them to include more details. The eight days chosen were relatively spaced out within the two-week timeframe to capture a variety of days and corresponding experiences. Participants were also randomly assigned to one out of two schedules, each with a different pattern of days chosen. Surveys were administered at 9 p.m. as many of the day's

events should have already occurred by then. In addition to reporting of events, participants rated event intensity, how meaningful the event is, past and future occurrence of a similar event as well as the emotional experience. Participants who completed less than seven out of eight surveys were not allowed to proceed on to Phase 3, thus excluded from further analysis.

Phase 3 started a week after Phase 2 ended. Participants completed a task in which they recalled and reflected on the events reported in Phase 2. Those events were presented one at a time, along with the items measuring situational meaning of and lesson learning from each event. Upward CFT was manipulated within participants. For half of the events (8 out of 16) participants were instructed to write down what they could have done to make the event turn out better (upward CFT condition). For the other half of the events, participants were told to recall the event as vividly as possible and write specific details of what actually happened (control condition; see Appendix A). To minimize order effects, half of the participants engaged in upward CFT first before recalling the factual aspects, while for others the order was reversed. In between the two event sets, participants rated the extent to which they experienced meaning in life. To illustrate, participants who recalled the first eight events factually rated their overall meaning in life before they processed the remaining eight events using upward CFT.

Measures

Phase 1.

Implicit theories. Implicit theories held by participants, that is whether they typically have a fixed mindset or growth mindset were assessed using items from Dweck's (1999) implicit theory scales (see Appendix B), namely the domain-specific Theories of Intelligence Scale (4 items; e.g., "You have a certain amount of intelligence, and you can't really do much to change it") and the domain-general "Kind of Person" Implicit Theory Scale (4 items; e.g.,

"The kind of person you are, is something very basic about you and it can't be changed very much."). These will henceforth be referred to as growth theory of intelligence and general growth theory. Participants were asked to indicate the extent to which they agree with each of the statements, on a scale from 1 (*strongly agree*) to 6 (*strongly disagree*). Higher overall scores reflect a stronger endorsement of growth theory. Growth theory of intelligence and general growth theory scores were computed by averaging the respective four items for each subscale. An overall growth theory score consisting of all eight items was not computed as the subscales were only moderately correlated, $r(120) = .56$, $p < .001$. Both subscales demonstrated high internal reliability ($\alpha_{intelligence} = .92$, $\alpha_{general} = .90$).

Maximizing tendencies. Maximization is posited to consist of two components, selecting the best option and searching for alternatives (Cheek & Schwartz, 2016). The maximization goal of selecting the best was assessed using three items (e.g., "I never settle for second best") selected from Dalal et al.'s (2015) Maximizing Tendency Scale-7 (MTS-7) (see Appendix C). The maximization strategy of searching for alternatives was assessed using two items (e.g., "I spend time wondering if other alternatives might be better after buying what I want") adapted from Turner et al.'s (2012) Maximization Inventory and Weinhardt et al.'s (2012) Revised Short Form Maximization Scale (see Appendix C). Participants were asked to indicate the extent to which they agree with the statements on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). An overall maximizing score was derived by averaging scores from the two subscales ($\alpha = .62$) where higher scores reflect higher maximizing tendencies.

While maximizers and growth theorists are inclined to improve themselves, they may do so to different extents. Maximizers are expected to strive for the best and would be willing to search for all the possible alternatives to achieve their goal while growth theorists may strive to make incremental progress.

Self-esteem. Self-esteem was assessed using Rosenberg's (1965) Self-Esteem Scale (10 items; e.g., "I feel that I'm a person of worth, at least on an equal plane with others") (see Appendix D). Participants were asked to indicate how strongly they agree with each statement, on a scale from 1 (*strongly agree*) to 4 (*strongly disagree*). Self-esteem was calculated by averaging scores from all the items. Relevant items were reverse-coded such that higher overall scores reflect higher self-esteem ($\alpha = .83$). According to the Meaning Maintenance Model (Heine et al., 2006), individuals desire to maintain a certain level of self-esteem and threats to self-esteem would activate restoration efforts. It has also been demonstrated that self-esteem is positively associated with meaning in life (Shek, 2012; Steger et al., 2006). As such, self-esteem was expected to influence the extent to which one makes meaning in an event and included as a control variable in some of the analyses.

Meaning in life. Meaning in life was assessed using the Meaning in Life Questionnaire (MLQ; Steger et al., 2006) (see Appendix E) which consists of two subscales, namely the Presence of Meaning in Life subscale (5 items; e.g., "I have a good sense of what makes my life meaningful") and Search for Meaning in Life subscale (5 items; e.g., "I am searching for meaning in my life"). Participants were asked to indicate how strongly they agree with each statement, on a scale from 1 (*absolutely untrue*) to 7 (*absolutely true*). In addition, to Steger et al.'s (2006) subscale, presence of meaning in life was assessed using the 16-item Multidimensional Meaning in Life scale (MMIL; Costin & Vignoles, 2020) (see Appendix F) on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Certain items were reverse-coded such that higher overall scores reflect higher presence of and search for meaning in life. Presence of meaning was derived by averaging scores from the presence subscale in MLQ and all items from MMIL ($\alpha = .94$) while search for meaning was derived by averaging scores from the search subscale in MLQ ($\alpha = .88$).

Phase 2.

Event intensity. Event intensity was assessed using one item ("Please rate how positive/negative you consider the following event") (see Appendix G), on a scale of 1 (*extremely negative*) to 6 (*extremely positive*). Extreme scores would indicate that higher event intensity.

Situational meaning. Situational meaning was assessed by a total of four items (see Appendix H). One item ("How much meaning does this event have for you personally?") assessed situational meaning as a whole, on a scale from 1 (*it means nothing to me*) to 6 (*it is extremely meaningful to me*). The remaining three items assessed each facet of meaning, namely coherence, purpose, and mattering. These items were measured on a scale from 1 (*strongly disagree*) to 6 (*strongly agree*). Higher overall scores indicated that the event is more meaningful.

Occurrence of similar situation. The occurrence of a similar situation was assessed by two items (see Appendix I). One item assessed how frequently a similar situation has occurred in the past on a scale from 0 (*never*) to 6 (*always*). The other item assessed how likely a similar situation is to occur in the future on a scale from 0 (*very unlikely*) to 6 (*very likely*). The term "situation" was used in place of "event" to distinguish the scenario itself from the outcome of an event. To illustrate, for the event of failing a test, the situation is "taking a test" while the event outcome is a failing grade.

Emotional experience. Emotional experience of the event was assessed (see Appendix J) using a variety of emotional items (e.g., "happy", "disappointed") adapted from the Scale of Positive and Negative Experience (SPANE; Diener et al., 2009), Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) and the Self-Discrepancy Theory (Higgins, 1987). Participants were asked to indicate the extent to which they experienced each of the emotions during the event. Items were rated on a scale from 1 (*not at all*) to 6

(*extremely*). This question serves as a manipulation check for the events reported. Namely, positive events should correspond to having more positive emotions and vice versa for negative events.

Phase 3.

Situational meaning. Situational meaning was assessed using the same items as those used in Phase 2.

Presence of meaning in life. Presence of meaning in life was assessed using the same five-item Presence of Meaning in Life subscale (Steger et al., 2006) as well as the 16-item Multidimensional Meaning in Life (Costin & Vignoles, 2020) used in Phase 1 (α = .94).

Lesson learning. Lesson learning was assessed using three items (e.g., "If a similar situation occurs again in the future, I will change how I deal with it") (see Appendix K). Items were based on the definition offered by McLean and Thorne (2003) which emphasized that lessons usually involve changing one's behavior in future similar situations. Items were rated on a scale from 1 (*strongly disagree*) to 6 (*strongly agree*), such that higher scores reflected more lessons learnt. An overall lesson learning score was constructed by averaging all three person-mean centered items (α = .83).

Data Analyses

The hypotheses were examined using multilevel mixed effects linear regression in SPSS (version 27.0) generalized linear mixed models procedure due to the hierarchical structure of the data in which events (Level 1) were nested within participants (Level 2). Multilevel modelling (MLM) was chosen as it accounts for the non-independence of events (i.e., events being reported by the same participant), thereby producing more precise estimates and is conceptually more appropriate than single-level modelling (Chan, 2005). The use of multilevel analyses was justified because the intraclass correlation (ICC) for the null

model without predictors was 0.07. This informed us that 93% of the variance can be attributed to events while the rest of the 7% can be attributed to participants.

The dependent variable (DV) of interest is the change in situational meaning from Phase 2 to Phase 3. The change in meaning was calculated by subtracting the meaning score in Phase 2 from the meaning score in Phase 3. This DV will henceforth be referred to as Δ Meaning. A positive Δ Meaning implies that meaning has increased while a negative Δ Meaning implies that meaning has decreased.

Results

Data Screening

Before screening, there were 1972 cases (level 1) nested within 128 participants (level 2). Cases were removed for the following reasons. 38 of them were associated with the five participants who failed to complete at least seven out of eight Phase 2 surveys, 16 belonged to the participant who failed two out of three attention checks and 6 did not contain any event as participants reported that nothing else happened that day. After screening, the final sample consisted of 1912 cases nested within 122 participants.

Main Analysis

Table 1 provides a summary of the descriptive statistics and correlations among key variables. To examine within-person relationships, all variables were centered on the mean for each participant prior to analysis. Thus, within-person correlations assess relationships between variables among events (i.e., within each person) while between-person correlations assess relationships between the average rating of each person. At the within-person level, Phase 2 meaning was positively correlated with Phase 3 meaning, $r(1910) = .57$, $p < .001$, demonstrating that situational meaning of events was relatively stable between the two time

points. That is, an event perceived as meaningful in Phase 2 tended to be perceived as meaningful in Phase 3. This relationship is stronger at the between-person level, $r(120) = .76$, $p < .001$, which indicates that people who tend to perceive more meaning in Phase 2 also tend to experience more meaning in Phase 3.

At the within-person level, Phase 2 meaning is positively correlated with Phase 2 coherence, purpose, and mattering (*r*'s ranged from .31 to .61, $p < .001$). Likewise, Phase 3 meaning is positively correlated with Phase 3 coherence, purpose, and mattering (*r*'s ranged from .36 to .58, $p < .001$). These relationships were similar at the between-person level. Taken together, these patterns are consistent with the notion that meaning is made up of three facets.

To determine the overall change in meaning from Phase 2 to Phase 3, a paired t-test was conducted comparing the average meaning of events at the two time points. Results indicated that meaning ratings were significantly lower in Phase 3 ($M = 3.57$, $SD = 1.38$) than in Phase 2 ($M = 3.74$, $SD = 1.54$), $t(1911) = -5.40$, $p < .001$, $d = -0.12$. However, these results do not account for nesting within persons; thus, further analyses will be conducted.

At the within-person level, lesson learning was positively correlated with Δ Meaning, $r(1910) = .15$, $p < .001$, implying that events that taught more lessons tend to be associated with more meaning, providing preliminary evidence in support for Hypothesis 2. This relationship is similar at the between-person level, $r(120) = .29$, $p < .001$, implying that people who tended to learn from their events also perceived them as more meaningful on average.

MLM was used to test all the hypotheses and Phase 2 meaning was included as a control for the subsequent analyses as it was likely to influence the DVs of lesson learning and Δ Meaning. The analyses were then repeated with an additional set of covariates to ensure the robustness of the effects.

As a manipulation check, I examined whether positive events reported by participants resulted in more positive affect (PA) and negative events resulted in more negative affect (NA). To do so, an overall PA score was constructed by averaging several emotional experience items such as “happy”, “good”, “determined”, “inspired”, and “calm” while an overall NA score included items such as “sad”, “bad”, “disappointed”, and “agitated”. The effects of valence on PA and NA were tested separately. First, valence was coded as a dummy variable (Positive = 1, Negative = 0) and entered as a predictor of PA. Results revealed that there was a positive effect of valence on PA (b = 8.970, SE = .224, 95% CI = [8.527, 9.414], $p < .001$). Then, valence was entered as a predictor of NA. Results revealed that there was a negative effect of valence on NA (b = - 6.875, SE = .212, 95% CI = [-7.294, -6.456], $p < .001$). These result patterns are consistent with expectations.

Hypothesis 1 is that upward CFT increases the meaningfulness of events. To test Hypothesis 1, condition was coded as a dummy variable (Upward CFT = 1, Control = 0) and entered as the predictor of Δ Meaning. Results reveal that, on average, the meaning of events that were simply recalled (control condition) declined over time (b = -.203, SE = .052, 95% CI = [-.307, -.100], $p < .001$) and the effect of upward CFT on Δ Meaning was not significant (b = .078, SE = .056, 95% CI = [-.033, .189], p = .169). This indicated that generating upward counterfactuals does not enhance meaning in general and Hypothesis 1 was not supported.

Hypothesis 2 is that lesson learning from past events is positively associated with the meaning of those events. To test Hypothesis 2, lesson learning scores were person-mean centered and entered as the predictor of Δ Meaning. Results revealed that, on average, meaning declined (b = -.164, SE = .044, 95% CI = [-.252, -.077], $p < .001$) but there was a significant positive effect of lesson learning on Δ Meaning (b = .214, SE = .033, 95% CI = [.150, .279], $p < .001$). This meant that lesson learning was positively associated with meaning, hence Hypothesis 2 was supported. Considering both the intercept and the effect of

lesson learning, these results suggest that on average, the meaningfulness of events declined, but that lesson learning reduced the decline in meaning. In other words, lesson learning helped to preserve the meaningfulness of events over time.

Hypothesis 3 is that upward CFT has an indirect effect on situational meaning through lesson learning. To test Hypothesis 3, a multi-step approach was adopted. First, the effect of upward CFT on lesson learning was estimated (*path-a*). Results revealed that there was a significant positive effect of upward CFT on lesson learning (b = .308, SE = .051, 95% CI = [.207, .409], $p < .001$), which meant that generating upward CFTs resulted in more lessons learnt. Next, the effect of lesson learning on Δ Meaning (*path-b*) was estimated controlling for the effect of upward CFT. Results revealed that there was a significant positive effect of lesson learning on Δ Meaning (b = .218, SE = .033, 95% CI = [.152, .283], $p < .001$), which suggested that lessons learnt translated to more meaning experienced.

Multilevel mediation analysis was conducted to test the indirect effect of upward CFT on Δ Meaning using Rockwood and Hayes' (2017) macro, MLmed, which follows the approach detailed in Zhang et al. (2009) and Preacher et al. (2010). MLmed estimates the within- and between-person effects in one model and uses Monte Carlo estimation to test the indirect effects. Results revealed a significant positive within-person indirect effect of upward CFT on Δ Meaning through lesson learning (b = .044, SE = .014, 95% CI = [.018, .074], p = .002) but the between-person indirect effect was not significant (b = -.021, SE = .533, 95% CI = [-1.115, 1.069], p = .968). Furthermore, the within-person (b = .033, SE = .065, 95% CI = [-.096, .162], p = .615) and between-person (b = .457, SE = 1.729, 95% CI = [-2.963, 3.876], p = .792) direct effects of upward CFT on Δ Meaning through lesson learning were not significant. This indicated that an increase in lessons learnt brought about by generating upward counterfactuals explained all the variation in meaning at the event-level, thus Hypothesis 3 was supported.

Hypothesis 4 is that the effect of upward CFT on lesson learning is moderated by event valence. To test Hypothesis 4, upward CFT, valence, and their interaction term were entered as predictors of lesson learning. Valence was coded as a dummy variable (Positive = 1, Negative = 0). As seen in Table 2, there was a significant positive effect of upward CFT on lesson learning (b = .496, SE = .072, 95% CI = [.354, .639], p < .001), a significant negative effect of valence on lesson learning (b = -.191, SE = .083, 95% CI = [-.356, -.027], p = .023) and a significant interaction between upward CFT and valence (b = -.373, SE = .097, 95% CI = [-.565, -.182], p < .001). Simple slope analyses were conducted to examine the interaction pattern. Results revealed that there was a significant positive effect of upward CFT on lesson learning from negative events (b = .496, z = 6.895, p < .001), which meant that using upward CFTs to process negative events encouraged lesson learning (supporting H4a). As predicted, however, there was no significant effect observed for upward CFT on lesson learning from positive events (b = .123, z = 1.821, p = .069), which suggested that it was futile to generate upward CFTs for positive events as doing so did not lead to more lesson learning (supporting H4b). In other words, upward CFT was effective in promoting lessons only for negative events. The relationship between upward CFT and lesson learning for negative and positive events is shown in Figure 3.

As support was found for both Hypothesis 4 (that effects of upward CFT on lesson learning are moderated by valence) and Hypothesis 3 (that lesson learning mediates the effect of upward CFT on Δ Meaning), the possibility of moderated mediation exists. That is, the pathway of "upward CFT → lesson learning → meaning" could be stronger for negative (versus positive) events. I first examined whether valence moderated the effect of upward CFT on meaning. Upward CFT, valence, and their interaction term were entered as predictors of Δ Meaning. As seen in Table 3, there were significant effects of upward CFT (b = .304, SE = .080, 95% CI = [.145, .462], p < .001), valence (b = .466, SE = .085, 95% CI = [.298, .635],

$p < .001$) and their interaction ($b = -.445$, $SE = .101$, 95% CI = [-.645, -.246], $p < .001$). Simple slope analyses were conducted to examine the interaction pattern. Results revealed that the positive effect of upward CFT on the Δ Meaning of negative events was significant ($b = .304$, $z = 3.791$, $p < .001$), which implied that processing negative events using upward CFTs led to more meaning than if the events were simply recalled. However, it is important to note that the simple intercept of Δ Meaning was still negative ($b = -.439$, $z = -6.865$, $p < .001$), indicating that on average, meaning of events declined over time. Thus, the positive slope for upward CFT implies that upward CFT preserved rather than enhanced meaning. The negative effect of upward CFT on the Δ Meaning of positive events was also significant ($b = -.142$, $z = -2.030$, $p = .042$), which indicated that using upward CFT on positive events actually led to a decline in meaning. The relationship between upward CFT and Δ Meaning for negative and positive events can be seen in Figure 4. Notably, upward CFT slowed the decline of meaning for negative events. In contrast, upward CFT decreased the meaning of positive events. On a whole, these results show that the effect of upward CFT on Δ Meaning was dependent on valence.

To test for moderated mediation, multilevel mediation analyses using MLmed were conducted separately for negative (Figure 5) and positive events (Figure 6) as MLmed is unable to handle level-1 moderators (i.e., in our case, valence). For both models, upward CFT was entered as the predictor, lesson learning was the mediator and Δ Meaning was the outcome variable. For negative events, the between-person indirect effect was not significant ($b = -.298$, $SE = .692$, 95% CI [-1.735, 1.059], $p = .667$) while the within-person indirect effect was positive and significant ($b = .062$, $SE = .030$, 95% CI [.008, .122], $p = .035$). For positive events, neither the between-person indirect effect ($b = -.065$, $SE = .239$, 95% CI [-.656, .372], $p = .787$) nor the within-person indirect effect were significant ($b = .011$, $SE = .035$, 95% CI [-.057, .081], $p = .753$). Taken together, these meant that there was support

for moderated mediation where lesson learning mediated the relationship between upward CFT and Δ Meaning but this mediation pathway applied to negative events only. Consistent with the previous analyses conducted for Hypothesis 3, it seemed that lessons learnt from upward counterfactuals accounted for the changes in meaning at the event-level, but interestingly, this held only for negative events. All in all, generating upward CFTs preserved meaning over time because it facilitated the lesson learning process for negative but not positive events.

Hypothesis 5 is that the effect of upward CFT on lesson learning is moderated by individuals' growth theory. To test Hypothesis 5, analyses were conducted separately for growth theory of intelligence and general growth theory. In both models, upward CFT, growth theory, and their interaction term were entered as predictors of lesson learning.

For growth theory of intelligence, results revealed that upward CFT had a significant positive effect on lesson learning (b = .308, SE = .051, 95% CI = [.207, .409], p < .001) but the effect of growth theory of intelligence (b = .080, SE = .066, 95% CI = [-.050, .210], p = .223) along with the interaction between upward CFT and growth theory of intelligence (b = -.031, SE = .044, 95% CI = [-.119, .056], p = .477) were not significant.

For general growth theory, results also revealed that upward CFT had a significant positive effect on lesson learning (b = .308, SE = .051, 95% CI = [.206, .409], p < .001) but the effect of general growth theory (b = -.007, SE = .073, 95% CI = [-.152, .137], p = .921) as well as with the interaction between upward CFT and general growth theory were not significant (b = .020, SE = .049, 95% CI = [-.077, .117], p = .684). Thus, Hypothesis 5 was not supported. These findings imply that fixed theorists were no more likely to learn from the upward CFTs generated as compared with growth theorists.

Given the distinct patterns for negative and positive events, a three-way interaction between valence, upward CFT and growth theory was also tested. To do so, valence, upward

CFT, growth theory as well as all their interaction terms were entered as predictors of lesson learning. However, results revealed that the three-way interaction was not significant for either growth theory of intelligence (b = -.073, SE = .067, 95% CI = [-.205, .059], p = .278) or general growth theory (b = -.016, SE = .075, 95% CI = [-.162, .130], p = .832).

For all the above analyses, further controlling for self-esteem, search for meaning, and maximizing tendencies did not change the results.

Supplementary Analysis

One of the most intriguing results to emerge from the data from this paper is that engaging in upward CFT after positive events reduced their meaningfulness. To investigate further, I tested whether the results would remain after controlling for lesson learning and found that the interaction between valence and upward CFT was still significant after controlling for lesson learning (b = -.361, SE = .097, 95% CI = [-.553, -.169], p < .001). Simple slopes analyses were conducted to examine the interaction pattern. As reported earlier, the positive effect of upward CFT on the Δ Meaning of negative events (b = .181, z = 2.307, p = .021) as well as the negative effect of upward CFT on the Δ Meaning of positive events (b = -.180, z = -2.740, p = .006) was still significant. It is therefore likely that there was an alternative mechanism for the decline in meaning of positive events. In other words, there should be another mediator besides lesson learning. The relationship between upward CFT and Δ Meaning, controlling for lesson learning, for negative and positive events can be seen in Figure 7.

In addition to studying the effect upward CFT has on everyday events, I also tested whether upward CFT could influence meaning in life more generally. As such, an independent samples t-test was conducted to compare the meaning in life ratings of those who processed the first eight events using upward CFT with those who recalled the events

factually. Results revealed that meaning in life ratings were did not differ between individuals who processed the events using upward CFT (M = 4.96, SD = 1.04) and those who recalled the events factually (M = 4.68, SD = 0.95), $t(120) = 1.56$, $p = .121$, $d = .28$. This meant that upward CFT did not have a positive effect on meaning in life as a whole, even after controlling for search for meaning, self-esteem and maximizing tendencies.

Apart from examining the effect of upward CFT on meaning, I also tested whether the results would be the same for the respective facets (i.e., coherence, purpose, and mattering). For H1, although the effect of upward CFT on Δ Meaning was not significant, there were significant positive effects found for all three facets. For H2, the significant positive effect of lesson learning on Δ Meaning was found for overall meaning as well as all three facets. Remarkably, the mediation (H3) and moderated mediation results were similar for overall meaning and all the facets, hence providing further support for these processes.

General Discussion

The present paper investigated the effects of upward CFT on everyday meaning and the possible factors involved in this process. In particular, I examined the factors associated with the event itself (i.e., whether the event was positive or negative) and the individual (i.e., whether the individual was more of growth or fixed theorist).

This study has found that event meaningfulness generally declined over a three-week period and there was no main effect of upward CFT on meaning (contrary to H1). Nevertheless, engaging in upward CFT often enabled individuals to learn from their everyday experiences (supporting H2) and it was these lessons learnt that explained the meaningfulness of everyday events over time (supporting H3). However, it was only beneficial to process negative events using upward CFTs as doing so allowed individuals to treat their negative experiences as learning opportunities for the future (supporting H4a) and, as a result, preserve

the meaningfulness of those events over time. In contrast, it was detrimental to do the same for positive events because it did not lead to lesson learning (supporting H4b) and on average, upward CFT reduced the meaning of positive events over time. Put differently, there was support for a moderated mediation model in which the learning facilitated by upward CFT accounted for everyday meaning but only for negative events. Further, growth theorists were no more likely than fixed theorists to benefit from upward CFTs and learn from their everyday experiences (contrary to H5). These findings are elaborated on in subsequent paragraphs.

Why did generating upward CFT reduce the meaning of positive events?

One interesting finding from this paper is that generating upward CFT after positive events reduced their meaningfulness. Further analyses also revealed that controlling for lesson learning did not change the result pattern. These suggest that the decline in meaning of positive events was not through lesson learning and there is an alternative mechanism.

A possible mechanism could be that generating upward CFT trivializes the meaning of positive events due to the contrast effect when comparing to even better alternatives. Contrast effect occurs when a factual outcome is judged worse in the presence of a salient better alternative (Roese, 1997). This was evident in a previous study where students became less satisfied with their choice of academic major after comparing it to a more desirable major (Leach & Patall, 2013). Satisfaction and meaning are highly correlated with one another (Tov & Lee, 2016). It is therefore plausible that comparing what actually happened during those positive events with potentially better alternatives, diminishes the perceived meaning of those positive events. By way of illustration, several participants reported completing work assignments on time as a positive event but if only they had been more productive, then they might have finished the work earlier. As such, completing an

assignment on time now pales in comparison with completing it earlier, potentially compromising the former's meaningfulness. Hence, upward CFT could have reduced the meaning of positive events because it requires individuals to think about an even better alternative and doing so might reduce the perceived value of the event. To date, few studies have explored the links between upward CFT and meaning of positive events. Therefore, further studies are needed to test the proposed mechanism.

Why did growth theorists not learn more lessons from upward CFT?

Past research has suggested that growth theorists are more likely than fixed theorists to find lessons in their experiences (Bernecker & Job, 2019; Dweck, 1999; Moser et al., 2011). I hypothesized that a similar pattern of lesson learning would emerge when individuals process everyday events using upward CFT. However, results show that growth theorists were just as likely to learn lessons from everyday events as fixed theorists, even when valence was considered.

An explanation could be that it is simply impossible to repeatedly learn something from every life experience. Thus, even if growth theorists are more likely, than fixed theorists, to view many events as learning opportunities, doing so (e.g., by generating upward CFT) may require too much cognitive effort. It may be that people choose to ignore most everyday experiences and learn from a select few rather than all those experiences. This is consistent with Fiske and Taylor's (1984) cognitive miser theory which posits that people often prefer to use less cognitive resources when solving problems. The specific events that people want to learn from can depend on the growth theory domain such as intelligence, personality, or moral character (Dweck, 1999) that they give precedence to. For instance, an individual who cares about intelligence might be more inclined to learn from achievement related events (e.g., examinations, interviews) whereas an individual who prioritizes having a

likeable personality could look to learn from social events (e.g., networking sessions, dates). Thus, growth theorists may not learn more than fixed theorists from everyday events despite engaging in upward CFT as the events may not always be relevant to their domain of interest. Consequently, they are less motivated to learn lessons from such everyday events.

In addition, fixed theorists may still feel that they learn lessons from upward CFTs, but rather than learning how to improve, they learn which situations, tasks, or behaviors to avoid. A past study found that students' growth mindset was positively associated with positive, effort-based strategies such as working harder for a class in the future as compared with negative, effort-avoidant strategies such as not taking a similar class next time (Blackwell et al., 2007). Fixed theorists may exhibit the reverse pattern, generating upward CFTs that are avoidant such as "If only I did *not* take this class, then I would not have received a bad grade". Overall, this meant that fixed and growth theorists could have simply differed in the specific content of lessons learnt as opposed to the extent of lesson learning or how valuable the lessons are.

Implications

The findings from this study make several contributions to the current literature. Firstly, this paper clarifies how CFT affects situational meaning. Prior to this study, this relationship has only been explicitly investigated by Kray et al. (2010). In that study, meaning was only measured at a single time point and events examined (i.e., major events) were likely to be meaningful at the outset. One interpretation of the meaning-enhancing effects found in Kray et al. could be that CFT, found to be predominantly downward CFT, only illuminates the meaning of major past events, rather than to influence their meaningfulness. This paper improved on that by using a diary design, tracking the same events and individuals, to examine whether CFT was able to enhance meaning over time.

Results found that *upward* CFT was not able to enhance meaning of events but rather, preserved meaning of negative events and reduced the meaning of positive events.

Secondly, this paper distinguishes the importance of valence in the CFT-meaning relationship for major vs everyday events. While Kray et al. (2010) found that CFT enhanced meaning regardless of valence, this paper found that valence was an important moderating factor. Upward CFT facilitated lesson learning only for negative events and it was through those lessons learned that meaning was preserved. Mediators established by both papers provide an insight as to why this might be the case. For Kray et al. (2010), benefit-finding mediated the CFT-meaning relationship conceivably because positive outcomes could arise from major events regardless of valence. Even highly traumatic negative events such as illness, bereavement, and sexual assault have been shown to lead to positive outcomes (for a review see, Park & Helgeson, 2006). It stands to reason that negative and positive major event could be as likely to positively impact one's life and imagining the absence of those events would trigger the meaning-maintenance mechanism. This paper, however, found that lesson learning mediated the CFT-meaning relationship for everyday events. Arguably, lesson learning is a specific type of benefit-finding that is more pertinent to negative rather than positive events. After all, lessons learnt from negative events are more valuable than those from positive events as they allow individuals to avoid making similar mistakes in the future. All in all, this suggests that the role of valence in the CFT-meaning relationship depends on whether the experience is a major event or a daily event. This distinction lays the groundwork for future CFT-meaning research.

Given that valence is a crucial moderator in the CFT-meaning relationship, an interesting avenue for future research is to study the effects of upward CFT on ambivalent events, which are events to which people have both positive and negative feelings. To illustrate, falling sick is mostly negative but being able to rest at home is a positive aspect of

that experience. Another example would be that completing an assignment is largely positive but that could have required some sacrifices (e.g., missing a party, having to work for long hours). One possibility is that upward CFT has no overall effect on the meaning of ambivalent events because the effects for the positive and negative aspects offset each other. The other possibility is that upward CFT mainly enhances the meaning of ambivalent events as upward CFT may naturally only operate on the negative aspects of that experience. In this scenario, upward CFT would have a positive effect on the meaning of the negative aspects while the positive aspects (and corresponding PA) further enhance meaning (King et al., 2006; Steger et al., 2006; Tov & Lee, 2016). Further empirical work is required to test either possibility.

Thirdly, this paper sheds light on the value of upward CFT. The findings presented here corroborates the functional theory of CFT (Epstude & Roese, 2008) which maintains that CFT is not always dysfunctional, it can be helpful under specific circumstances. In this case, while downward CFT may be more relevant for major events, upward CFT seems to be more appropriate for making meaning out of everyday (negative) events. This is useful as everyday events occur relatively more frequently than major events. Future research can provide greater insight into other circumstances that may benefit from upward CFT. For example, researchers could investigate if certain types of everyday events might benefit most from upward CFT.

The findings from this paper also have numerous practical implications. The most constructive practical use of upward CFT is for intervention purposes. For one, since CFT already occurs quite frequently on a daily basis (Summerville & Roese, 2008), this study, while preliminary, could be the first step in harnessing upward CFT as a useful and accessible tool to preserve a sense of meaning in events. In addition, upward CFT could make it easier for individuals to derive meaning from events as it involves a comparison process that helps

individuals realize the implications of an event. This could be more effective than just vaguely asking individuals to make meaning out of events. Apart from that, upward CFT can potentially help individuals cope with negative events by allowing them to appreciate them as valuable lesson learning opportunities. This is crucial because negative events are almost inevitable and reframing these experiences could prove beneficial. Overall, these suggest that upward CFT is a promising intervention tool that awaits further research. For example, future studies could analyze whether upward CFT is more suited for certain individuals or how to best mitigate possible negative consequences of engaging in upward CFT.

On top of that, individuals should also be advised against generating upward CFTs for positive events as doing so is detrimental for meaning. Fortunately, this rarely occurs as upward CFTs usually arise from negative events rather than positive ones. However, the question of how CFTs can be applied to positive events remains unanswered at present. Past research has only examined *major* positive events and thus, can only offer limited insights into this issue. Previous studies found that generating downward CFTs is beneficial for positive events as thinking about the absence of that event improves affective states, even more than thinking about its presence (Heintzelman et al., 2013; Koo et al., 2008). Yet, as argued in this paper, such positive outcomes from downward CFTs could have been due to the meaning-maintenance mechanism as those positive events were major ones and likely to have been meaningful. This meaning-maintenance mechanism is, however, unlikely to apply to everyday positive events because they have varying perceived meaningfulness. To develop a full picture of how CFT can be applied to positive events in general, researchers ought to consider that different CFT-meaning mechanisms could be in operation for major and everyday positive events. In other words, *downward* CFTs could still be instrumental for everyday positive events but through another mechanism other than meaning-maintenance. For example, a possible mechanism could involve the affective function of downward CFTs

(Epstude & Roese, 2008). That is, the downward comparison from recognizing that a worse outcome could have been possible often results in a sense of relief. This could potentially influence situational meaning of past events as positive affective experiences have been linked to meaning judgments (King et al., 2006; Tov & Lee, 2016). Alternatively, alleviating NA from events might facilitate meaning-making efforts rather than hinder it. If so, then it could be that downward CFTs are favorable for positive events whereas upward CFTs are useful for negative events.

Limitations

This study is not without its limitations. First, the study could be underpowered to test all the hypotheses, particularly the moderated mediation hypothesis. To address this, more than the minimum of 90 participants were recruited but the sample size may still have been too low to detect the moderating effects of between-person variables.

Second, the sample predominantly consisted of females. Even so, as noted by Roese and Summerville (2005), sex differences are largely absent from the CFT literature (e.g., Chen et al., 2006; Landman & Manis, 1992) unless it involves romantic relationships (Roese et al., 2006). Since most of the events reported by participants were not specific to romantic relationships, this oversampling of female participants is unlikely to be problematic. That said, future research should strive to obtain more representative samples to eliminate any potential biases.

Third, given the time lag between Phases 2 and 3, some participants might have already learned a lesson or made meaning from the events, thereby weakening the effect of the CFT manipulation. Given that searching for meaning is one of the processes by which people learn their lessons or derive meaning, it is possible that those with a higher propensity to search for meaning are also the ones that fall into this group. For that reason, participants'

search-for-meaning scores obtained in Phase 1 were included as a control. Future research should consider examining whether those with the tendency to search for meaning are indeed those who are more likely to learn lessons or make meaning from events.

Fourth, lesson learning was not measured in Phase 2, hence unable to be included as a control in the analyses. However, assessing the mediator first can risk artificially making it more salient, therefore inflating the probability that it statistically influences subsequent variables (i.e., situational meaning). Future research should investigate if the lesson learning items used in this paper would have really led to more lessons learnt and eventually more meanings made.

Lastly, situational meaning was only measured using one item. As a result, it may have been more susceptible to random measurement errors such as interpretation issues by the participant. While this is a prevalent concern for studies using single items to measure constructs, the results for overall meaning were largely consistent with that of the meaning facets (i.e., coherence, purpose, and mattering). This implies that this could be less of a problem in this paper as all these items are presumably measuring a similar construct. Nonetheless, future research should minimize such issues by developing multiple-item scales to measure situational meaning or requiring participants to elaborate on the reasons for their meaning ratings to ascertain whether they were interpreting the question similarly.

Conclusion

The present paper sought to investigate the relationship between CFT and situational meaning of everyday events, specifically the mechanism and the factors that influence this process. To that end, the present paper found that upward CFT contributes to meaningfulness of an event through lesson learning, and this effect of upward CFT on meaning was evident

for negative events. However, there was no evidence that individuals' growth theory moderated the effects.

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Table 1

Descriptive Statistics and Intercorrelations

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Phase 2 Meaning	3.74	1.54	-	.57**	-.55**	.31**	.24**	-.08**	.61**	.42**	-.26**	.52**	.37**	-.20**	.15**
2. Phase 3 Meaning	3.57	1.38	.76**	-	.37**	.21**	.36**	.13**	.47**	.58**	.04	.40**	.50**	.04	.32**
3. Δ Meaning	-0.17	1.36	-.14	.53**	-	-.14**	.09**	.21**	-.21**	.12**	.34**	-.18**	.08**	.27**	.15**
4. Phase 2 Coherence	4.79	1.09	.32**	.27**	-.01	-	.46**	-.55**	.46**	.31**	-.20**	.45**	.31**	-.19**	.10**
5. Phase 3 Coherence	4.69	1.04	.24**	.28**	.12	.80**	-	.49**	.29**	.52**	.18**	.30**	.52**	.17**	.29**
6. Δ Coherence	-0.10	1.11	-.02	.11	.21*	-.01	.59**	-	-.18**	.19**	.37**	-.16**	.18**	.35**	.17**
7. Phase 2 Purpose	4.23	1.42	.70**	.62**	.02	.52**	.37**	-.08	-	.50**	-.60**	.69**	.43**	-.33**	.20**
8. Phase 3 Purpose	4.38	1.23	.54**	.65**	.28**	.50**	.55**	.25**	.72**	-	.39**	.46**	.73**	.20**	.37**
9. Δ Purpose	0.15	1.33	-.15	.11	.36**	.03	.29**	.45**	-.28**	.46**	-	-.31**	.22**	.54**	.13**
10. Phase 2 Mattering	4.49	1.35	.60**	.51**	.00	.56**	.45**	-.01	.76**	.61**	-.13	-	.52**	-.58**	.18**
11. Phase 3 Mattering	4.55	1.21	.52**	.56**	.18*	.49**	.57**	.30**	.57**	.79**	.36**	.73**	-	.40**	.34**
12. Δ Mattering	0.06	1.26	-.05	.13	.25**	-.04	.23**	.44**	-.18	.32**	.68**	-.26**	.47**	-	.14**
13. Lesson Learning	4.06	1.16	.43**	.55**	.29**	.30**	.33**	.15	.49**	.56**	.15	.40**	.45**	.12	-

Note. $N = 122$ participants (1912 daily responses). Means and SDs were computed across all daily responses (without centering). Correlations *below* the diagonal are on average participant values, reflecting between-person results. Correlations *above* the diagonal are on person-centered

variables, reflecting within-person results. Δ variable (i.e., meaning, coherence, purpose, and mattering) = change in variable from Phase 2 to Phase 3.

*$p < .05$, **$p < .01$

Table 2

Effects of Valence and Upward CFT on Lesson Learning

Predictors	b	SE	p
Intercept	4.009	0.082	<.001
Valence	-0.191	0.083	.023
UCF	0.496	0.072	<.001
UCF x Valence	-0.373	0.097	<.001
Random Effects (Between-Person)			
1) Intercept	0.637	0.107	<.001
2) Valence Slope	0.398	0.109	<.001
3) UCF Slope	0.279	0.081	<.001
Cov(1, 2)	-0.127	0.083	0.124
Cov(1, 3)	-0.286	0.078	<.001
Cov(2, 3)	0.159	0.071	0.026
Residual (Within-Person)	0.682	0.026	<.001

Note. UCF = Upward counterfactual thinking. UCF was coded as 0 = control, 1 = UCF. Valence was coded as 0 = negative, 1 = positive.

Table 3

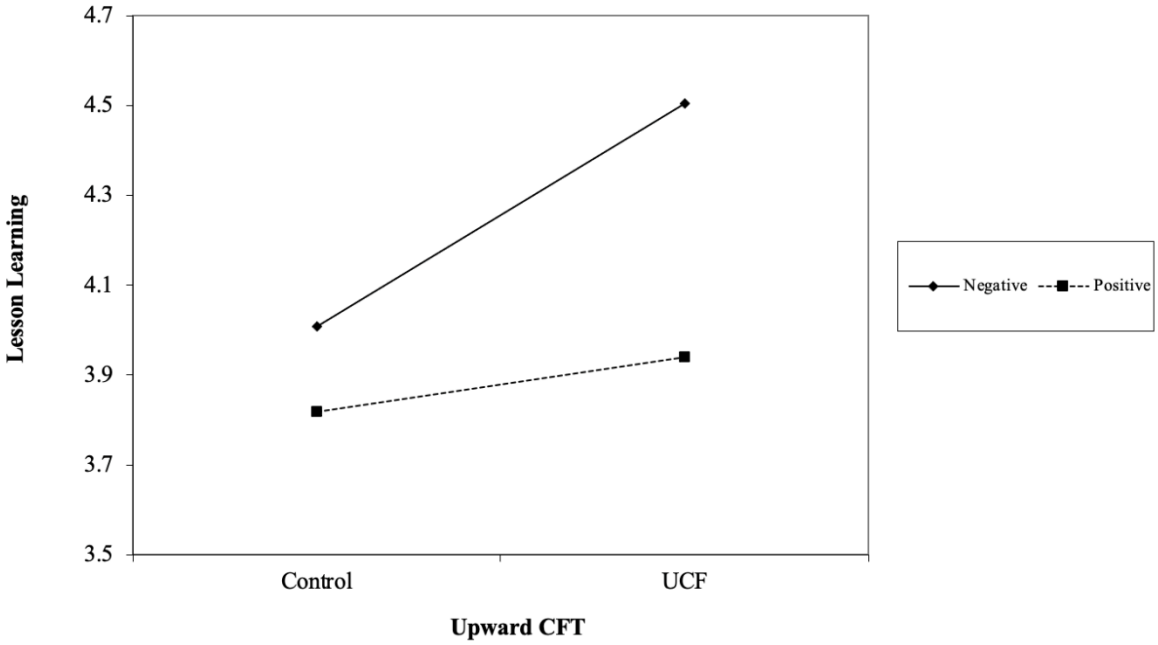
Effects of Valence and Upward CFT on Δ Meaning

Predictors	b	SE	p
Intercept	-0.439	0.064	<.001
Valence	0.466	0.085	<.001
UCF	0.304	0.080	<.001
UCF x Valence	-0.445	0.101	<.001
Random Effects (Between-Person)			
1) Intercept	0.238	0.066	<.001
2) Valence Slope	0.296	0.118	0.012
3) UCF Slope	0.325	0.102	0.001
Cov(1, 2)	-0.089	0.071	0.213
Cov(1, 3)	-0.127	0.066	0.054
Cov(2, 3)	0.099	0.081	0.223
Residual (Within-Person)	0.869	0.034	<.001

Note. Δ Meaning = change in meaning from Phase 2 to Phase 3. Upward CFT was coded as 0 = control, 1 = UCF; UCF = Upward counterfactual thinking. Valence was coded as 0 = negative, 1 = positive

Figure 3

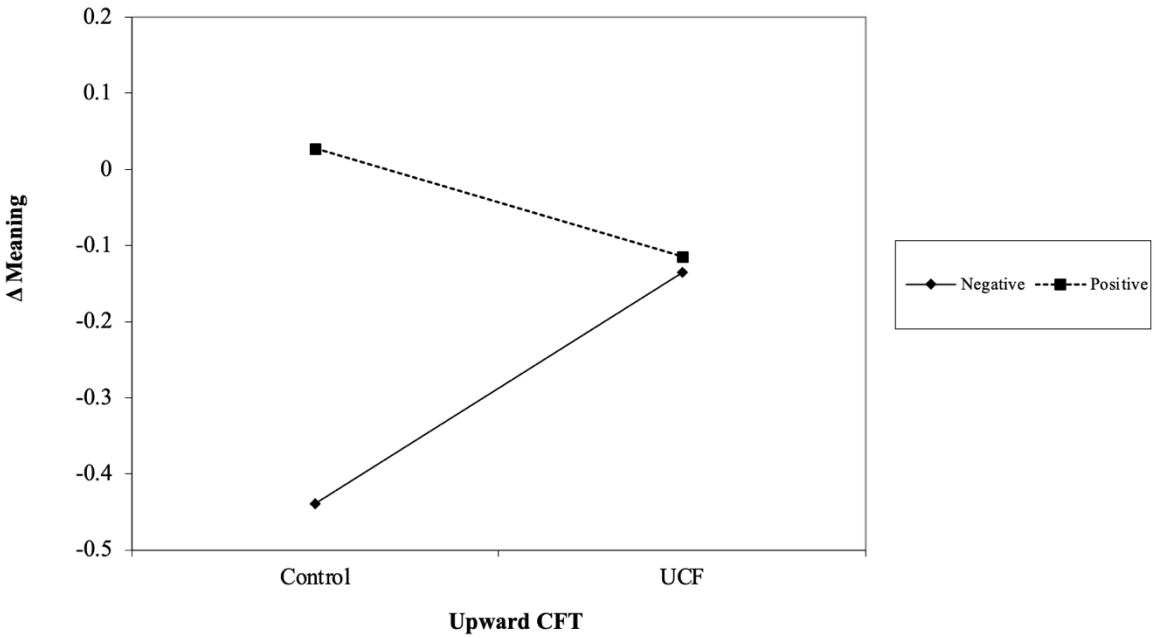
Simple slopes analysis of the effect of Upward CFT on Lesson Learning for Negative and Positive events



Note. Slopes were significant for negative events (b = .496, z = 6.895, p < .001) but not positive events (b = .123, z = 1.821, p = .069). Upward CFT was coded as 0 = control, 1 = UCF; UCF = Upward counterfactual thinking.

Figure 4

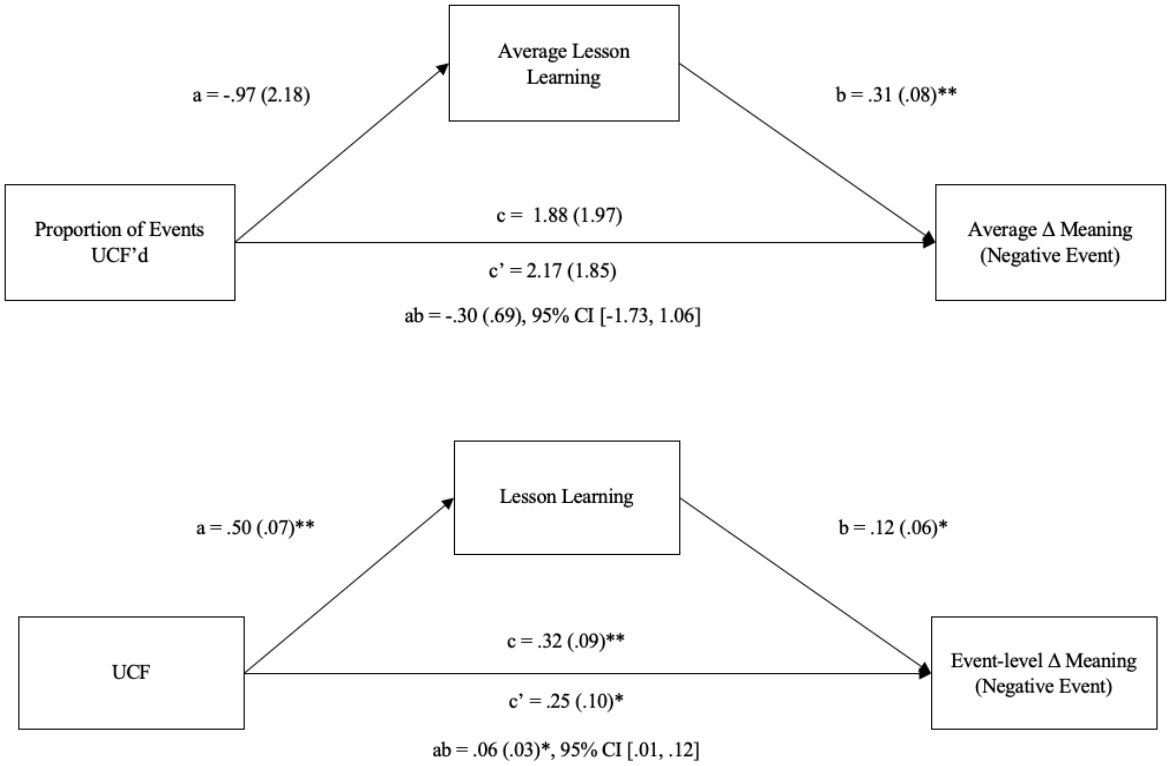
Simple slopes analysis of the effect of upward CFT on Δ Meaning for Negative and Positive events



Note. Slopes were significant for both negative (b = .304, z = 3.791, p = .0002) and positive events (b = -.142, z = -2.030, p = .042). Δ Meaning = change in meaning from Phase 2 to Phase 3; Upward CFT was coded as 0 = control, 1 = UCF; UCF = Upward counterfactual thinking.

Figure 5

Multilevel mediation model for Negative events with Lesson Learning as mediation for Δ Meaning

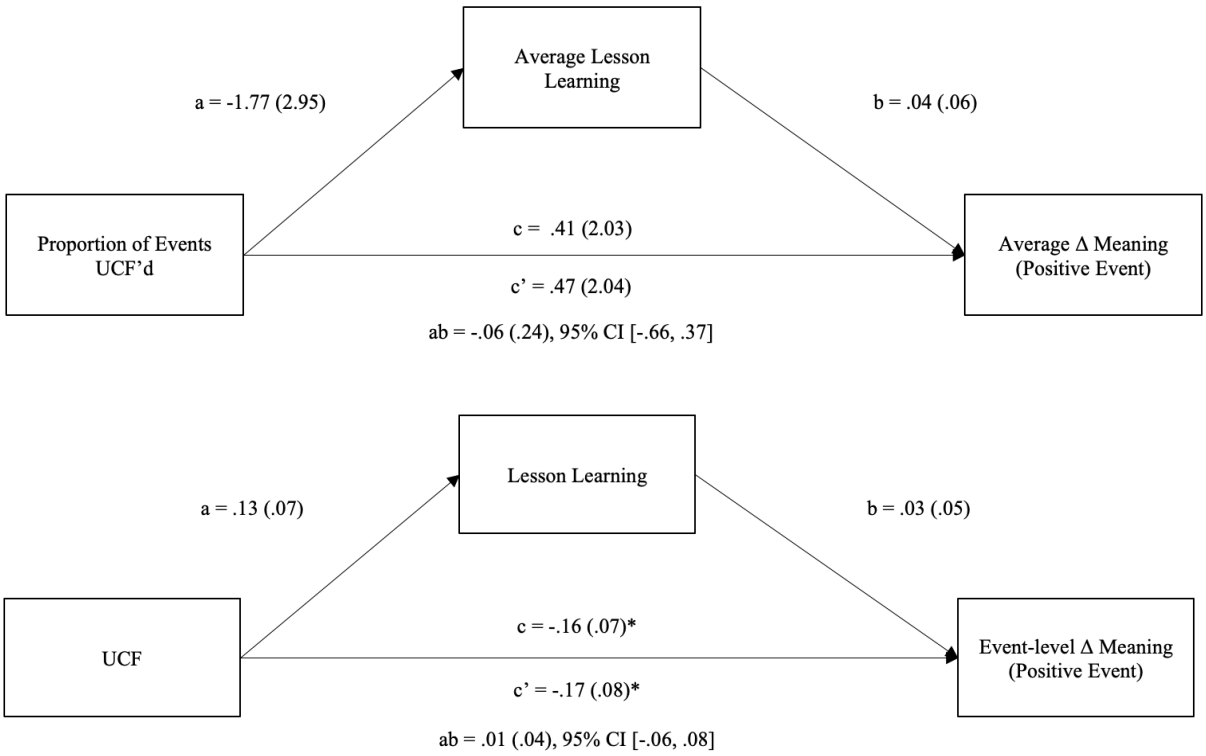


Note. Δ Meaning = change in meaning from Phase 2 to Phase 3; UCF = Upward counterfactual thinking; UCF'd refers to processing events using upward counterfactual thinking. The figure at the top represents the relationship at level 2 (i.e., between-person) while the one at the bottom represents the relationship at level 1 (i.e., within-person). To separate the predictive effects for each level of analysis, UCF and lesson learning were group-mean centered. ab, c' and c reflect indirect effects; direct and total effects, respectively. All values represent unstandardized regression coefficients with standard errors in parentheses.

*$p < .05$; **$p < .01$.

Figure 6

Multilevel mediation model for Positive events with Lesson Learning as mediation for Δ Meaning

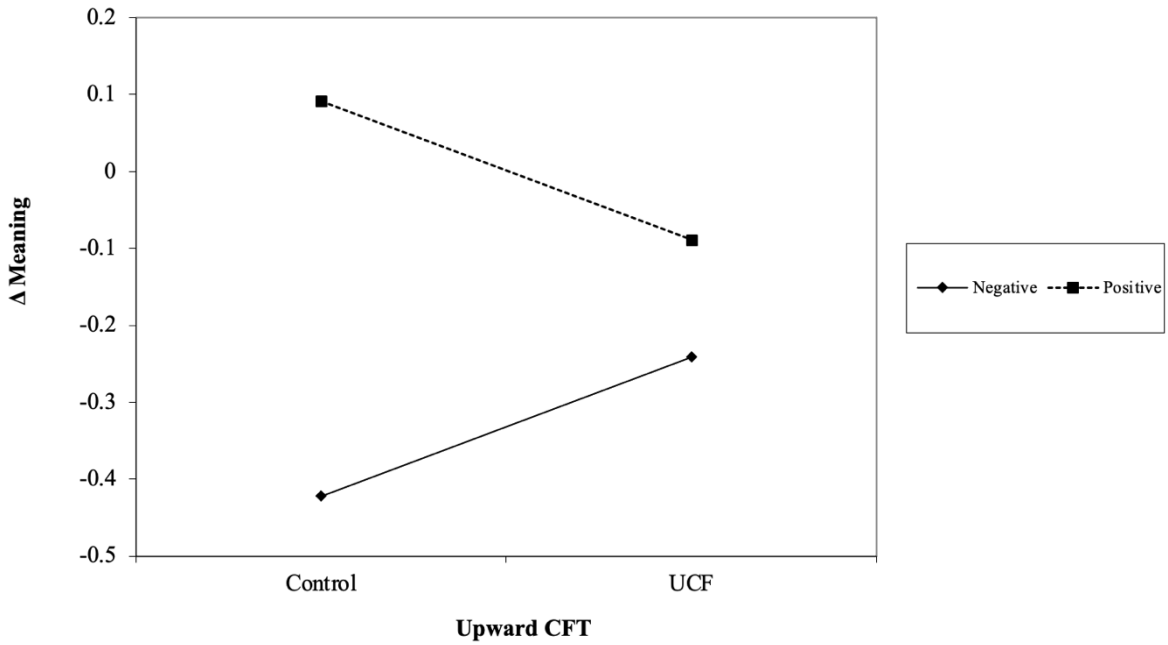


Note. Δ Meaning = change in meaning from Phase 2 to Phase 3; UCF = Upward counterfactual thinking; UCF'd refers to processing events using upward counterfactual thinking. The figure at the top represents the relationship at level 2 (i.e., between-person) while the one at the bottom represents the relationship at level 1 (i.e., within-person). To separate the predictive effects for each level of analysis, UCF and lesson learning were group-mean centered. ab, c' and c reflect indirect effects; direct and total effects, respectively. All values represent unstandardized regression coefficients with standard errors in parentheses.

*$p < .05$; **$p < .01$.

Figure 7

Simple slopes analysis of the effect of Upward CFT on Δ Meaning, controlling for Lesson Learning, for Negative and Positive events



Note. Slopes were significant for both negative (b = .181, z = 2.307, p = .021) and positive events (b = -.180, z = -2.740, p = .006). Δ Meaning = change in meaning from Phase 2 to Phase 3; UCF = Upward counterfactual thinking. UCF was coded as 0 = control, 1 = UCF.

Appendix A

Manipulation of Upward CFT

For Control Condition:

[EVENT IS DISPLAYED HERE]

For the following event, **try to remember what happened as vividly as possible**.

Write down exactly what happened, when it happened, who was involved, what YOU were thinking and feeling, what happened right before and right after the incident occurred, or any other factual aspects of the incident that you can recall.

[INSERT TEXT BOX]

For Upward Counterfactual Thinking Condition (Adapted from Rim & Summerville, 2014):

[EVENT IS DISPLAYED HERE]

People often think about how the past might have been **BETTER**. YOU might have acted differently, and subsequent events might then have unfolded in a different way, such that things would have turned out *better* than they actually did.

For instance, if you saw the event "*got a sunburn*",

- you might think, "If I hadn't spent too much time in the sun, then I wouldn't have gotten a sunburn" *OR*
- you might think "If I had put on sunscreen, then I wouldn't have gotten a sunburn".

For the following event, **try to imagine what YOU could have done (or NOT done) to make the event turn out better**. In the space below, write down specifically how YOU might have acted differently and how this could have changed the outcome of the event.

When writing, please use an "if...then…" structure if possible

[INSERT TEXT BOX]

Appendix B

Implicit Theories

Using the scale below, please indicate the extent to which you agree or disagree with each of the following statements. There are no right or wrong answers. We are interested in your ideas.

Selected Items from Theories of Intelligence Scale (Dweck, 1999)

1. You have a certain amount of intelligence, and you can't really do much to change it
2. Your intelligence is something about you that you can't change very much
3. To be honest, you can't really change how intelligent you are
4. You can learn new things, but you can't really change your basic intelligence

Selected Items from "Kind of Person" Implicit Theory (Dweck, 1999)

5. The kind of person you are, is something very basic about you and it can't be changed very much.
6. You can do things differently, but the important parts of who you are can't really be changed.
7. As much as I hate to admit it, you can't teach an old dog new tricks. You can't really change your deepest attributes.
8. You are a certain kind of person, and there is not much that can be done to really change that.

1 = strongly agree, 2 = agree, 3 = mostly agree, 4 = mostly disagree, 5 = disagree, 6 = strongly disagree

Appendix C

Maximizing Tendencies

Please indicate how strongly you agree or disagree with each statement.

Maximization goal of choosing the best (Dalal et al., 2015)

1. I never settle for second best.
2. I don't like having to settle for good enough.
3. No matter what I do, I have the highest standards for myself.

Maximization strategy of alternative search (adapted from Turner et al., 2012 and Weinhardt et al., 2012)

4. When I watch online videos or movies, I often scan through the available options even while attempting to watch one program.
5. I spend time wondering if other alternatives might be better after buying what I want.

1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree

Appendix D

Self-Esteem

Self-Esteem Scale (Rosenberg, 1965)

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

1. I feel that I'm a person of worth, at least on an equal plane with others.*
2. I feel that I have a number of good qualities.*
3. All in all, I am inclined to feel that I am a failure.
4. I am able to do things as well as most other people.*
5. I feel I do not have much to be proud of.
6. I take a positive attitude toward myself.*
7. On the whole, I am satisfied with myself.*
8. I wish I could have more respect for myself.
9. I certainly feel useless at times.
10. At times I think I am no good at all.

1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree

*Reverse-coded items

Appendix E

Meaning in Life

Meaning in Life Questionnaire (MLQ; Steger et al., 2006)

Please take a moment to think about what makes your life feel important to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below.

Presence of Meaning in Life

1. I understand my life's meaning.
2. My life has a clear sense of purpose.
3. I have a good sense of what makes my life meaningful.
4. I have discovered a satisfying life purpose.
5. My life has no clear purpose.*

Search for Meaning in Life

6. I am looking for something that makes my life feel meaningful.
7. I am always looking to find my life's purpose.
8. I am always searching for something that makes my life feel significant.
9. I am seeking a purpose or mission for my life.
10. I am searching for meaning in my life.

1 = absolutely untrue, 2 = mostly untrue, 3 = somewhat untrue, 4 = can't say true or false, 5 = somewhat true, 6 = mostly true, 7 = absolutely true

*Reverse-coded item

Appendix F

Meaning in Life

Multidimensional Meaning in Life Scale (Costin & Vignoles, 2020)

Using the scale, please indicate your current feelings by selecting how much you agree or disagree with the following statements:

Meaning in Life

1. My life as a whole has meaning.
2. My entire existence is full of meaning.
3. My life is meaningless.*
4. My existence is empty of meaning*.

Coherence

5. I can make sense of the things that happen in my life.
6. Looking at my life as a whole, things seem clear to me.
7. I can't make sense of events in my life.*
8. My life feels like a sequence of unconnected events.*

Purpose

9. I have a good sense of what I am trying to accomplish in life.
10. I have certain life goals that compel me to keep going.
11. I don't know what I am trying to accomplish in life.*
12. I don't have compelling life goals that keep me going.*

Mattering

13. Whether my life ever existed matters even in the grand scheme of the universe.
14. Even considering how big the universe is, I can say that my life matters.
15. My existence is not significant in the grand scheme of things.*
16. Given the vastness of the universe, my life does not matter.*

1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 = agree, 7 = strongly agree

*Reverse-coded item

Appendix G

Event Listing and Event Intensity

Event Listing Instructions:

In the following sections, you will be asked to write one **positive** event and one **negative** event that happened to you today.

What you type should help you remember what happened when answering questions in later parts of this study. You may also be asked about these events in Phase 3 (around 2 weeks later), therefore...

- Type as many words as necessary to remind you of exactly what was going on.
- Be as specific as necessary to recall this **EXACT event**, especially if this event often reoccurs.
    - E.g., instead of "Had lunch with friends" you might write "Had lunch with friends at Mall ABC on 6 July" as it is more specific, hence more likely to be accurately recalled.

Positive Event Prompt:

1. What is one *positive* event that happened to you today?

[INSERT TEXT BOX]

2. Please rate how positive/negative you consider the following event.

[EVENT IS DISPLAYED HERE]

1 = extremely negative, 2 = moderately negative, 3 = slightly negative, 4 = slightly positive, 5 = moderately positive, 6 = extremely positive

Negative Event Prompt:

1. What is one *negative* event that happened to you today?

[INSERT TEXT BOX]

2. Please rate how positive/negative you consider the following event.

[EVENT IS DISPLAYED HERE]

1 = extremely negative, 2 = moderately negative, 3 = slightly negative, 4 = slightly positive, 5 = moderately positive, 6 = extremely positive

Appendix H

Situational Meaning

[EVENT IS DISPLAYED HERE]

1. How meaningful is this event to you personally?

1 = not at all
2 = very slightly meaningful
3 = slightly meaningful
4 = meaningful
5 = very meaningful
6 = extremely meaningful

Using the scale, please indicate your current feelings by selecting how much you agree or disagree with the following statements:

1. I am able to make sense of this event (e.g., what happened and why)
2. What I did or experienced during this event served an important purpose.
3. I feel that my presence in the situation mattered.

1 = strongly disagree, 2 = disagree, 3 = mostly disagree, 4 = mostly agree, 5 = agree, 6 = strongly agree

Appendix I

Occurrence of Similar Situation

Definition of Similar Situations:

We often encounter similar situations in life. These situations can result in either positive or negative outcomes.

For example,

- A student might get an A on an exam (positive outcome) or fail the exam (negative outcome). Here, the situation could be "taking a test."
- A dinner with friends could involve good conversations (positive outcome) or tense arguments (negative outcome). Here, the situation could be "dinner with friends" or "spending time with friends."

How you define a situation is entirely up to you.

1. For the event you reported, how often have you encountered a similar "situation" **in the past** (regardless of whether the outcome is good or bad)?

1 = never, 2 = very rarely, 3 = rarely, 4 = occasionally, 5 = frequently, 6 = very frequently

2. For the event you reported, how likely are you to encounter a similar "situation" **in the future** (regardless of whether the outcome is good or bad)?

1 = very unlikely, 2 = unlikely, 3 = slightly unlikely, 4 = about 50/50, 5 = slightly likely, 6 = likely, 7 = very likely

Appendix J

Emotional Experience

Emotion Items (sampled from PANAS; Watson et al., 1988, SPANE; Diener et al., 2010; Self-Discrepancy Theory; Higgins, 1987)

To what extent did this event make you feel…

1. Happy
2. Sad
3. Good
4. Bad
5. Determined
6. Inspired
7. Disappointed
8. Agitated
9. Calm

1 = not at all, 2 = slightly, 3 = moderately, 4 = quite a bit, 5 = extremely

Appendix K

Lesson Learning

Lesson Learning Items (Based on the definition from McLean & Thorne, 2003)

[Repeat Definition of Similar Situations from Appendix I]

Please indicate the degree to which you agree with this statement.

1. I have learned from this event.
2. If a similar situation occurs again in the future, I will change how I deal with it.
3. If a similar situation occurs again in the future, I am better equipped to deal with it.

1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = slightly agree, 5 = agree, 6 = strongly agree