The Real-Time Cognitive Value of Eating Kale, Helping, and Doing Something Special: “Concurrent Experience Evaluation” (CEE), Its Drivers and Moderators, and Research Directions

Itamar Simonson

Stanford Graduate School of Business
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After reviewing prior work regarding components of experience value, I present the concept of “Concurrent Experience Evaluation” (CEE), which expands the prior focus on experienced pain and pleasure in response to a stimulus/event. Specifically, the value of an experience is also determined by the concurrent (during-the-experience) cognitive assessment of the event relative to the person’s associated goal progress/regression. CEE can account for during-the-experience and subsequent choices that people make. Examples of CEE include cognitive evaluations that enhance the experience value such as “good for me” (while eating kale), “I’m getting my money’s worth” (while using a new camera), and “I’m having a cultural experience” (while visiting a museum), or detract from the experience such as “I shouldn’t be doing this” (while smoking or overeating) and “should have chosen the other line” (while waiting at the supermarket checkout). Although prior research has examined hedonic experiences and their context (e.g., being with friends, commuting, colonoscopy) as well as what else the mind may process during an experience (e.g., wandering, thinking of past and future decisions), the concurrent value derived from the cognitive evaluation of the goal implications of an experience has not been identified as a separate experience value component. I examine and illustrate the CEE concept, its determinants, moderators, and implications, as well as its distinctive characteristics as compared with other value perspectives and during-the-experience mental processes. Integrating the CEE framework with prior research regarding experience evaluations, I outline a program for future CEE research.

Keywords Behavioral decision theory; Decision making; Economic psychology; Hedonic and experiential consumption; Judgment; Meta-cognition and metacognitive experience; Preference and choice

Before examining the meaning, characteristics, and moderators of CEE, I present a review of prior work regarding experience value, with a focus on real-time P&P. The topics included in the review have typically been discussed in separate literatures, perhaps because, aside from being in the mind during an experience, they are conceptually and topically distinct.

The concurrent value derived from cognitive evaluations of the goal implications of an experience has not previously been identified as a separate experience value component. In addition to enhancing our understanding of experience value, such an analysis can account for during-the-experience and subsequent choices that may not be understood without consideration of CEE. Integrating the CEE analysis with prior research regarding experience evaluations...
and concurrent cognitive processes, I outline a program for future CEE research.

Elements of Experience Value

The Meanings of Value

When considering “experience value,” an initial question is what the term value means. A wide range of answers have been offered. Higgins (2006, 2007) provided a comprehensive review of the different uses of “value.” As he wrote (2007, p. 454): “To understand why people do what they do, why they feel what they feel, psychologists need to know what matters to them, what they want and don’t want. A central concept concerned with “mattering” and “wanting” is value.” Higgins went on to identify five viewpoints on value: (2007, p. 454) “Five major viewpoints on where value comes from are reviewed: value from need satisfaction, value from shared beliefs about what is desirable, value from actual self-relations on end states, value from evaluative inference, and value from experience.”

Although none of these value meanings refer specifically to the value that is derived from a during-the-experience comparison of what people experience and their goals, “value from evaluative inference” is most closely related to CEE. As Higgins (2007) points out in reference to value in general (rather than experience-concurrent specifically), “The value created from monitoring discrepancies or congruencies in relation to end states does not require an inference to create value. An actual self-congruency with ideals and oughts is good. An actual self-discrepancy with ideals and oughts is bad.” Such comparisons highlight the role of self-goals when evaluating experiences and value.

Value from evaluative inference is influenced by context and one’s frame of reference in relation to whatever standards are available and salient (e.g., Higgins, Strauman, & Klein, 1986). It may also vary based on framing and context (e.g., Kahneman & Miller, 1986; Kahneman & Tversky, 1984; Simonson & Tversky, 1992). The discussion below builds on the notion of value from evaluative inference to motivate the concept and characteristics of CEE.

Value from actual self-relation to end states reflects the notion that approaching desired ends and avoiding undesired ends creates positive value (e.g., Carver & Scheier, 1981, 1990). Consistent with this viewpoint of value, there is a great deal of evidence that congruencies have positive value and discrepancies have negative value (e.g., James, 1890). This point of view is related to the notion of during-the-experience comparisons of what is transpiring to the person’s goals (i.e., CEE). There is also evidence that favorable social comparisons create positive value, whereas unfavorable comparisons to others create negative value (e.g., Tesser, Millar, & Moore, 1988).

Value as Experience: The Pleasure and the Pain

Pain and pleasure have been the focus of much research about the meaning and measurement of value/utility from experience (see, e.g., Higgins, 2006; Kahneman, Diener, & Schwarz, 1999). Kahneman, Wakker, and Sarin (1997) introduce their view of experience utility (EU) as follows (p. 375):

The concept of utility has carried two quite different meanings in its long history. As Bentham [1789] used it, utility refers to pleasure and pain, the “sovereign masters” that “point out what we ought to do, as well as determine what we shall do.” This usage was retained in the economic writings of the nineteenth century, but it was gradually replaced by a different interpretation (Stigler 1950). In current economics and in decision theory, the utility of outcomes and attributes refers to their weight in decisions: utility is inferred from observed choices and is in turn used to explain these choices. To distinguish the two notions, we shall refer to Bentham’s concept as experienced utility and to the modern usage as decision utility.

Thus, the currently accepted conceptualization of experience value/utility has maintained its old Benthamian meaning—pain and pleasure, that is, the during-the-experience hedonic experience. This conceptualization assumes that P&P, broadly defined, is the only real-time (during the experience) source of value. Kahneman (1999) further suggested that a bottom-up moment-by-moment hedonic value is an objective measure of happiness and well-being.

Kahneman (1994), Kahneman et al. (1997) highlighted the contrast between decision utility (DU)—the weight assigned to outcomes and attributes when decisions are made—and EU as well as other utility concepts—predicted utility (PU) and retrospective (or remembered) utility (RU). A great deal of research has been conducted since then about various aspects of these utility concepts, their drivers, measurement, and the correspondence, or lack thereof, among them (e.g., Schwarz & Xu, 2011).

P&P is derived not just from the objective properties of the object/experience (e.g., the taste of kale), but also from the goals and needs of the person. The discussion of CEE expands this notion and...
separates P&P from the cognitive value derived from a comparison between the experience and the consumer’s goals, which is largely independent of the hedonic experience (though the two are related and may interact, as discussed subsequently).

For both pleasure and pain, a distinction has been made between the “body” or sensory experience and the mind and associated emotional experience. Kubovy (1999, p. 134) described this distinction as it applies to pleasure using the experience of enjoying food:

“Imagine you’re ending a magnificent meal with good friends at Troisgros with the celebrated jeu de pommes—Granny Smith apple tarts, topped with caramelized confectioners’ sugar and covered with a sauce of warmed acacia honey, calvados and lemon juice (Lang 1988, 31) accompanied by Coteau du Layon (Loire) sweet chenin blanc. Now remove the elements that made this a marvelous experience, except for the food. You eat the same desert alone at home, on your everyday dishes, without having anticipated the delectable food or wine. What you have lost are pleasures of the mind. I do not wish to imply that you have lost all the pleasures of the mind or that the pleasures that remain are just pleasures of the body.”

Eich, Brodkin, Reeves, and Chawla (1999, p. 155) described a parallel distinction made with respect to pain:

“Pain is not just a stimulus that is transmitted over specific pathways but rather a complex perception, the nature of which depends not only on the intensity of the stimulus but on the situation in which it is experienced and, most importantly, on the affective or emotional state of the individual. Pain is to somatic stimulation as beauty is to a visual stimulus. It is a very subjective experience.” Thus, both pleasure and pain encompass more than the physical sensory component, with perceptions and context playing important roles. However, prior research has not paid much attention to P&P as they relate to one’s goals.

Measures of (Hedonic) Experienced Value

A great deal of research has examined alternative measures of utility and well-being (e.g., Kahneman et al., 1997; Schwarz, Kahneman, & Jing, 2009). As Kahneman et al. (1997) stated (pp. 379–380): “The view that hedonic states cannot be measured because they are private events is widely held but incorrect. The measurement of subjective experiences and the determination of the functions that relate subjective variables to features of present and past stimuli are topics in the well-established field of psychophysical research (e.g., Stevens, 1975). The loudness of a noise and the felt temperature of a limb are no less subjective than pleasure and pain. The main argument for considering these experiences measurable is that the functions that relate subjective intensity to physical variables are qualitatively similar for different people.”

Kahneman and colleagues went on to contrast different utility concepts (see Table 1). In addition to distinguishing experienced utility (EU) and decision utility (DU) as well as predicted utility (PU), the comparison between EU and remembered utility (RU) has been the subject of many studies. These investigations contrasted an arguably objective EU measure, namely, a continuous record of instant (moment-by-moment) utility, with retrospective experience utility (e.g., Fredrickson & Kahneman, 1993; Kahneman (2000a; chapter 37); Kahneman et al., 1997).

Kahneman motivated his moment-by-moment approach as follows (p. 681):

Like total utility, objective happiness is a moment-based concept, which is operationalized exclusively by measures of the affective state of individuals at particular moments in time. In this essential respect, objective happiness differs from standard measures of subjective well-being, which are memory-based and require the subject to report a global evaluation of the

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<th>Table 1</th>
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<td>Concurrent Experience Evaluation (“CEE”): The value associated with the concurrent (during-the-experience) assessment of an event relative to the person’s goal progress/regression.</td>
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<td>Experienced utility: The level of pleasure or pain that an individual is (actually) experiencing (Kahneman, 1994, 2000a, 2000b; Kahneman &amp; Sugden, 2005).</td>
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<td>Decision utility: A representation of preferences, where the concept of preference is understood in terms of choice; a person’s preferences are the mental entities that explain the choices and are revealed in those choices (Kahneman, 1994, 2000a, 2000b; Kahneman &amp; Sugden, 2005).</td>
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<td>Remembered utility: A memory-based measure of experienced utility, which is based on retrospective assessments of episodes/experiences (Kahneman, 2000a, 2000b).</td>
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<td>Predicted utility: Beliefs/estimates of future experienced utility (Kahneman, 2000a, 2000b).</td>
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recent past. The term “objective” is used because the judgment of happiness is made according to objective rules. The ultimate data for the judgment are, of course, subjective experiences. In the special conditions of the clinic or laboratory it is sometimes possible to obtain continuous or almost continuous reports of experienced utility from patients or experimental subjects. Continuous measures are of course impractical for the measurement of objective happiness over a period of time. Sampling techniques must be used to obtain a set of values of moment-utility that adequately represents the intended population of individuals, times and occasions.

Thus, Kahneman and colleagues (e.g., Fredrickson & Kahneman, 1993) used an “affect meter” to record participants’ feelings, for example, while watching movie clips. By subsequently comparing the moment-by-moment affect with retrospective evaluations, they documented “duration neglect” and the disproportional impact on RU of the peak experience and the end note (referred to as the “peak-and-end rule”). It is noteworthy that the reliance on an integral of moment-by-moment affect and the assumption that duration neglect happens and represents an error has been challenged (e.g., Ariely & Loewenstein, 2000).

Furthermore, even for short experiences, assessing and accurately reporting moment-by-moment affect raise challenges and may be susceptible to various biases. Such measures require a person to know and be able and willing to articulate or express in some form the current P&P and, in many studies, convert it to higher level assessments such as affect and happiness scales. But the initial assumption was that there is no better measure of EU than the integral of the moment-by-moment experience, which means that the average experience is the best measure and all moments should be about equally weighted.

Alternative EU measures were subsequently introduced, including “experience sampling” and the “Day Reconstruction” method (e.g., Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004a, 2004b; Kahneman & Sugden, 2005; Miron-Shatz, Stone, & Kahneman, 2009). The Experience Sampling Method was described as follows (e.g., Kahneman & Krueger, 2006, p. 9):

The Experience Sampling Method was developed to collect information on people’s reported feelings in real time in natural settings during selected moments of the day (Csikszentmihalyi 1990; Stone and Shiffman 1994). Participants in experience sampling studies may carry a handheld computer that prompts them several times during the course of the day (or days) to answer a set of questions. Participants are shown several menus, on which they indicate their physical location, the activities in which they were engaged just before they were prompted with the survey questions, and the people with whom they were interacting. Respondents also report their current subjective experience by indicating the extent to which they feel the presence or absence of various feelings, such as feeling angry, happy, tired, and impatient. Positive emotions are highly intercorrelated, while the correlations among negative emotions (like being angry or depressed) are also positive but lower.

Wirtz, Kruger, Napa, and Diener (2003) used an experience sampling methodology by asking students on spring break seven times each day to rate different aspects (e.g., “I’m satisfied with this vacation”) on a 7-point scale. The average rating was used as the measure of EU. Similar to other studies, the findings have typically shown that the measured EU has little, if any, effect on retrospective evaluations and on future preferences.

The Day Reconstruction method (e.g., Krueger et al., 2009; see also Stone et al., 2006) has also been studied and shown to provide rather accurate approximation of the experienced emotions. Schwarz et al. (2009) reviewed research pertaining to this methodology, presenting evidence that affective experiences are often available for introspection. This research has focused primarily on the recreation of emotions rather than cognitions.

Weidman and Dunn (2016) measured “momentary and afterglow happiness” (associated with a purchased experience of a material good) by asking respondents at the end of the day to remember usage/experience occasions; they then rated their happiness during the occasion. At the conclusion of the study, respondents rated the contribution of the experience/material possession to their happiness. In that study, it was unclear what exactly was being measured, and whether even the “momentary or afterglow happiness” (as remembered) represent EU or RU. Miron-Shatz et al. (2009) used the day reconstruction method to show memory-experience gaps with respect to both pleasant and unpleasant episodes, especially the latter.

Beyond particular experiences, researchers have developed measures of subjective well-being such as
based on how people spend their time (e.g., Krueger et al., 2009), ratings of thoughts and feelings (e.g., Dolan & Metcalfe, 2012), and facial expressions such as smiling or laughing. Krueger et al. (2009, p. 11) defined the U-Index measure as “the percent of time that someone spends in an unpleasant state.”

Overall, like measures of other utility concepts, including DU, the available EU measures are associated with different advantages and limitations. Not surprisingly, none of them, including moment-by-moment affect meter, can be said to capture or recreate the one “correct and true” EU. But through the use of multiple measures, one can form rather accurate assessment of the hedonic experience and to examine the impact of specific variables (e.g., experience trends) on the resulting P&P.

Other Cognitions Processed During an Experience

The above discussion of influences on value assessment during an experience is certainly not meant to encompass all cognitions that occur during an experience. In general, we can distinguish among:

1. Thinking during the experience—Any intrusive thought can change affect, cognition, and motivation in ways unrelated to the core feature of interest (say, the taste of food).
2. Thinking about the experience while having it —If such thoughts involve goal comparisons, such thoughts are referred to here as CEEs.
3. Thinking about a future experiences.
4. Thinking about past experiences—Such thoughts may include CEEs, but without affecting the experience in situ.
5. Unrelated thoughts that are not related to the experience.

The last category includes, for example, what Schooler and his colleagues called “Mind wandering,” which may also occur during an experience (for a review, see Schooler et al., 2011). Smallwood and Schooler (2006, p. 696) explained this phenomenon as follows: “We all experience our minds drifting away from a task toward unrelated inner thoughts, fantasies, feelings, and other musings.” They also point out that mind wandering shares similarities with “executive control” (Abstract): “Evidence suggests that mind wandering shares many similarities with traditional notions of executive control. When mind wandering occurs, the executive components of attention appear to shift away from the primary task, leading to failures in task performance and superficial representations of the external environment. One challenge for incorporating mind wandering into standard executive models is that it often occurs in the absence of explicit intention—a hallmark of controlled processing. However, mind wandering, like other goal-related processes, can be engaged without explicit awareness; thus, mind wandering can be seen as a goal-driven process, albeit one that is not directed toward the primary task.” Although the concept of mind wandering is quite different from the concept of CEE discussed next, they both share similarities with executive control, with CEE representing a second-order analysis of the experience’s goal implications.

CEE is distinct and more narrow than the concepts of metacognition and fluency as they relate, for example, to perceived or experienced ease or difficulty of generating a response or evaluating a brand (e.g., Schwarz, 2004). In particular, CEE (defined above) is not about cognitive strategies or observations of reactions to one’s cognitive processes. For example, while dining at a disappointing restaurant, a consumer may experience (real time) regret about the restaurant choice given the gap between the expected and actual experience, which exacerbates the bad food’s “pain.” Failures of self-control, such as overdrinking or eating unhealthy things may similarly generate real-time negative thoughts (“I’m breaking my promise”), which are evaluative but not metacognitive thoughts.

Other concepts pertaining to mindful and mindless cognitive processes have been discussed in the literature, but they are all distinct from the CEE concept. In their meta-analysis of the literature regarding introspection (also referred to as “meta-awareness”), Overgaard and Serensen (2004, p. 77) explained: “It is only when the subject directs attention not towards the object as such but towards the very state of being conscious of the object that he or she is introspective.” Although engaging in CEEs can be viewed as introspective, it is not determined or defined by being conscious of an object, act, or event. Schooler (2002, Abstract) distinguished different forms of consciousness, as he summarized: “A distinction is drawn between nonconscious (unexperienced), conscious (experienced), and meta-conscious (re-represented) mental processes. There is evidence for two types of dissociations between consciousness and meta-consciousness, the latter being defined as the intermittent explicit re-representation of the contents of consciousness.” This definition of meta-consciousness makes it clear that it is different in many ways from CEE. Among other things, meta-consciousness has no evaluative (good/bad) component and instead deals with a type of consciousness.
Another potentially related concept is self-signaling (Bodner & Prelec, 2002), which was defined as follows: “A self-signaling action is an action chosen partly to secure good news about one’s traits or abilities, even when the action has no causal impact on these traits and abilities.” Thus, Bodner and Prelec proposed that people derive value from actions to create good news about the self. For example, a talented chess player may join a tournament where she has a high likelihood of performing well. In addition, CEE is related to concepts that have been used in the study of decision making. For example, viewing shopping as an experience and assuming a bargain affects the experience, the concept of transaction utility (Thaler, 1985) can be seen as reflecting CEE.

Furthermore, the voluminous literature regarding self-regulation and self-control (see, for example, Baumeister, Vohs, Aaker, & Garbinsky, 2013; Myrseth & Fishbach, 2009) deals with questions that are relevant to but are clearly different from CEE. This broad area, however, offers some explanations as to why CEE thoughts often play an important role during experience.

Finally, the CEE concept is closely linked to experience-concurrent emotions. The vast literature on emotions and their relations with cognition and appraisals is beyond the scope of the present research (see, e.g., Lazarus, 1991; Parkinson, 2001; Zajonc, 1984). But CEEs do represent cognitive appraisals that will often generate emotions during the experience. For example, the real-time thought that one is being helpful or overeating can affect the concurrent joy/sadness.

**Features of Concurrent Experience Evaluations**

As defined above, “ Concurrent Experience Evaluation” (CEE) refers to a concurrent (during-the-experience) assessment of an ongoing experience relative to a person’s associated goal progress/regression. As suggested above, CEE can be seen as a component of the overall experience value. One experience, such as a meal, a party, or an even longer experience such as an illness, often includes multiple component events and corresponding CEEs, which may or may not pertain to the same topic and goals (e.g., health, fun, culture). Other experiences, such as being vaccinated or a rollercoaster ride, may be too short and/or too intense for any CEE.

Examples of CEEs include cognitive evaluations that review the experience favorably such as “good for me” (while eating kale), “I’m getting my money’s worth” (while using a new camera), and “I’m having a cultural experience” (while visiting a museum), or detract from the experience such as “I shouldn’t be doing this” (while smoking or overeating) and “I should have chosen the other line” (while waiting under time pressure at a slower-than-expected supermarket checkout line). By contrast, value based solely on the stimulus pain and pleasure, such as “it tastes good” or “the book is boring,” reflects encoding of an experience’s attribute value without the additional step of concurrently evaluating its goal implications.

As indicated, CEE builds on but is different from other constructs and literatures. In addition to the constructs discussed earlier, CEE is related to the broader topics of self-awareness (e.g., Duval & Wicklund, 1972; Silvia & Duval, 2001) as well as to work on self-directed attention (e.g., Scheier, Charles Carver, & Gibbons, 1979). Duval and Wicklund (p. 2) explained self-awareness as follows: “When attention is directed inward and the individual’s consciousness is focused on himself, he is the object of his own consciousness—hence ‘objective’ self-awareness.” However, although consistent with the notion that people often assess ongoing experiences in terms of goal progress/regression, self-awareness does not offer specific insights pertaining to CEE. Given the central role of goals and the monitoring of goal progress for the current analysis, these topics are reviewed next.

**CEE and Goal Reference Points**

Goals are often conceptualized as cognitive constructs that are focused on some future state and that have a regulatory power over behavior (see, e.g., Elliot & Fryer, 1979). The literature on goals, goal pursuit, achievement, self-regulation, and related topics is voluminous and will not be reviewed here. The literature, including the consumer research goal literature, also presents various examples of the value derived from goal progress. That is, consumers often monitor their experiences and actions in real time and derive (dis)satisfaction from not/doing what they want and/or should be doing or experiencing (for a review, see e.g., Fishbach & Dhar, 2005; Fishbach & Ferguson, 2007; Huang, Zhang, & Broniarczyk, 2012; Kivetz, Urminsky, & Zheng, 2006). Related concepts include, for example, self-regulation (e.g., Muraven & Baumeister, 2000), habits (e.g., Neal, Wood, & Drolet, 2013), intrinsic versus extrinsic motivation (Deci, Koestner, & Ryan, 1999), self esteem, and executive control (Kane et al., 2007). They all suggest that people often monitor how well they are doing and derive...
positive or negative value from these thoughts. That is, beyond merely encoding experiences, people often evaluate, implicitly or explicitly, their experiences in real time and derive dis/utility from such thoughts and their correspondence to goals and preferences.

Goals are not limited to hedonic goals, and eudaimonic goals also play a key role and can account for actions and life experiences where people complete an experience despite a great deal of pain. In general, the so-called eudaimonism view (e.g., Ryff, 1989; Waterman, 1993) is based on the belief that well-being consists of fulfilling or realizing one’s daimon or true nature. Eudaimonic goals may play a role before, during, and after the experience. For example, Loewenstein (1999) discussed the various goals and motives that may explain the willingness of mountain climbers to endure great miseries to achieve their goal of reaching the peak. Similarly, Bodner and Prelec (2002) proposed that people derive value from actions to create good news about the self. For example, a talented chess player may join a tournament where she has a high likelihood of performing well, and this sense of achievement is likely to be present also during the tournament. Building on the self-signaling concept, Dhar and Wertnebroch (2012) demonstrate that the mere fact that one resists temptation is a beneficial self-signal of one’s willpower.

Goal conflict refers to the degree to which individuals feel that their multiple goals are incompatible (Locke, Smith, Erez, Chah, & Schaffer, 1994). For example, the goal of losing weight often involves a conflict between the desire for enjoyment and for weight loss (e.g., Stroebe, Mensink, Aarts, Schut, & Kruglanski, 2008). The focus in this literature is on the conflict and factors that promote one goal over another. The goal conflict literature has also examined, especially in group and organizational settings, the impact of conflict on task commitment and performance (e.g., Jehn & Mannix, 2001). CEE is distinct from goal conflict, although goal conflict may continue to be experienced during goal progress, after decisions are made (e.g., Locke et al., 1994). Thus, although goal conflict is one of the potential antecedents of CEE, the focus of that literature is on conflict and its consequences, rather than the concurrent comparison between the experience and one’s goals. Furthermore, CEE and goal conflict often have little in common. For example, visiting a wonder of the world allows the person to put a checkmark next to the goal of visiting all “wonders of the world”—a CEE thought that refers to a goal or an achievement that does not involve any conflict.

In addition to goal conflict, researchers have examined the role of and interplay between conscious and unconscious processes associated with goal pursuit (e.g., Ferguson & Cone, 2013). Thus, some CEE thoughts might be seen as consciously keeping track in real time of goal progress. However, although relevant to CEE, this line of research is about goal pursuit rather than about the value derived from real-time tracking of an experience in terms of goal progress/regression. In general, one might expect assessments of goal progress/regression to be ongoing, including and especially during the experience. That is, it is during the experience that progress/regression is most salient (Huang & Zhang, 2011). Moreover, during an experience, consumers can often make course correction, such as balancing the unhealthy appetizer with a healthier entrée (see, e.g., Dhar & Simonson, 1999).

A great deal of research (for a review, see Harkin et al., 2016) has examined the impact of goal progress monitoring. These studies reported the effect of an intervention on the frequency of progress monitoring (essentially a manipulation check) and subsequent goal attainment. A key finding is that progress monitoring had larger effects on goal attainment when the outcomes were reported or made public, and when the information was physically recorded. In the context of the present research, this literature suggests that stimulating goal monitoring may also affect the extent, timing, and perhaps the content of CEE. These issues are discussed subsequently.

**Distinguishing CEE and Hedonic Experiences**

Although CEE interacts with pain and pleasure (as discussed below), it has little in common with the meaning and normal use of pain and pleasure. P&P typically reflects the direct impact on the senses of present as well as past and anticipated stimuli (e.g., the taste of food, the sound of music, the pleasure/boredom of a book, and the pleasure of sex). For example, having a good time in the company of close friends or at a family event is an instance of P&P. Such pleasure often involves specific sensory reactions, but physical sensory response is not a requirement and does not define P&P and its duration. CEE occurs when the person concurrently compares the experience with existing or ad hoc goals. Thus, CEE involves a second-order cognitive assessment that may be taking place during the experience.

As indicated, mere encoding of the level of pain and pleasure (e.g., “I’m eating a chocolate that
tastes good, "the movie is boring") is not CEE. But P&P may trigger CEE, such as when a person’s concurrent thought regarding the correspondence between the pain or pleasure of eating (e.g., a tasty as well as healthy dark chocolate) and goal satisfaction represents CEE. More generally, people may evaluate, in many cases consciously and even explicitly, their experiences in real time and derive positive or negative value from achieving or undermining their goals. For example, consumers sometimes explicitly refer to CEE during an experience, such as “Always wanted to . . . and I’m finally doing it.” Consumers also use terms that link the P&P experience and its CEE implications; for example, terms such as “guilty pleasures” and “savoring the moment” provide concurrent interpretations and “analyses” of a P&P experience in reference to goal dis/satisfaction. As discussed further next, P&P and CEE may be complements, substitutes, or independent of each other. For example, during a rollercoaster ride, the sensory experience may not leave enough cognitive capacity and time (during the ride, rather than before or after) for CEE (e.g., “I hate rides, but my son asked me to”).

A concept that bears some similarity to CEE is what Mayer and Gaschke (1988) called “meta-experience.” In their study of the “meta-experience of mood,” they distinguished between (Abstract) “the direct experience of the mood and a meta-level of experience that consists of thoughts and feelings about the mood.” Concurrent observation of experiences and related behaviors may also affect perceptions of that person’s tendencies and performance. In particular, while not defined based on comparisons to goals, self-perception theory (Bem, 1972) may also be seen as the concurrent inferences that people draw from observations of their own behavior regarding their attitudes and beliefs.

While CEE and hedonic experiences are different and separable, they do interact in ways that depend on the particular experience. These interactions are discussed below. The order of hedonic components and CEEs during an experience depends on the type of experience, the context, and other idiosyncratic characteristics. In some cases, P&P is the trigger of CEE, such as when the exceptional pleasure of visiting a lesser known museum triggers corresponding CEE (e.g., an unexpected pleasure or a learning experience). But in other cases, such as when ordering a very unhealthy dish or entering a renowned museum, CEE may be processed before P&P. And there are many cases where either P&P or CEE occur but not both. A consumer may enjoy reading a book without relating the experience to any specific goals. Or a person may read an okay book just because it is relevant to her work. But P&P and CEE are often not independent, and it is important to examine the relation between these two key experience components.

As indicated, the P&P component is often the direct reaction to or impact of the stimuli (e.g., food, music, cold symptoms). The CEE component, on the other hand, is derived from the person’s concurrent positive and/or negative thoughts and associated emotions, observations, or analyses pertaining to the correspondence between one’s goals and having the experience. However, in many cases, the two components are simultaneously determined, with one component contingent on the other. For example, the CEE associated from figuring out the point of a New Yorker cartoon is often necessary to allow that person to potentially enjoy the cartoon. In some cases, their valence is negatively correlated, as may be implied by terms such as “guilty pleasures” and “virtuous pain.”

### Shared and Unique Features of CEE Compared to Pre- and Postexperience Utility Perspectives (DU, PU, and RU)

As indicated earlier, a great deal of research has examined and demonstrated the disconnect between (hedonic) EU and DU/RU (e.g., Fredrickson & Kahneman, 1993; Wirtz et al., 2003; see also Schwarz & Xu, 2011). That research was focused on hedonic experience utility/value. By and large, the conclusion has been that, while DU, PU, and RU are similar in many cases, EU is quite different and has a low correlation with the other utility types (see Table 1 for definition of concepts). A question that arises is whether CEE corresponds more closely than EU to pre-experience and postexperience utility perspectives (i.e., DU, PU, and RU).

To reiterate, CEE has distinctive features that are unlike any of the other utility/value concepts. In particular, the other concepts are focused on and represent the value of the option being considered or experienced. CEE, on the other hand, shifts the focus to the value of during-the-experience (cognitive) comparisons between the experience and the person’s goals. Thus, for example, whereas during-the-experience salient context effects (e.g., the food that others in the group eat at the restaurant) and the consumer’s mindset are unlikely to be anticipated before the experience and often are not
remembered after the experience, they can play an important role and affect CEE (see next discussion of context effects on CEE).

But CEE is more similar than P&P to the pre- and postexperience utility perspectives on a number of dimensions. First, because CEE is derived from a comparison between what is transpiring and the consumer’s goals, which typically also underlie DU, one would expect CEE to correspond more closely to DU than the hedonic, more absolute EU (e.g., the unpleasant sensory experience of putting a hand in cold water). Moreover, unlike EU/P&P, DU, PU, RU, and CEE often involve the same reference points, which suggests that CEE will similarly correspond to these concepts than P&P. For example, the memory of a visit to Antarctica is likely to correspond to the value (while being there) derived from achieving that lifelong goal; any associated discomfort is likely to be forgotten. Of course, experiences may not go according to plan, which generates gaps between DU/PU/RU versus CEE, such as when a visit to a tourist destination is not enjoyable but is later remembered fondly and reported to others as a “must.”

In general, DU, PU, and RU are different from EU (or P&P) on at least three key dimensions: (a) the building blocks (or attributes) that generate each utility, (b) the prominent dimensions of EU compared to the other utility perspectives, and (c) the degree to which these utilities involve absolute versus relative judgments. As discussed next, these dimensions of dissimilarity between EU, on the one hand, and DU/PU/RU, on the other hand, do not generally apply to CEE. Consequently, CEE is expected to correspond more closely to DU, PU, and RU than to P&P, notwithstanding the fact that P&P and CEE both occur during the same experience.

Attribute-structure and measures: DU/PU/RU and CEE versus P&P

Option utilities have usually been analyzed in terms of their attributes and values (e.g., the service, food quality, and décor of a restaurant). Although other factors such as affect and unconscious influences often play an important role, considered attributes tend to exert greater influence on articulated, measured evaluations and choices (e.g., Simonson, 2005). However, the various utility perspectives differ with respect to the degree to which they can be reduced to defined attributes. DU is typically the most structured because: (a) making decisions tends to be easier if the options are analyzed in terms of attributes, weights, and values (e.g., Bettman & Kakkar, 1977), and (b) to assist decision makers (e.g., on Amazon), options are often described in terms of mostly shared attributes. PU and RU are less likely to be arranged according to defined attributes than DU, because they are focused more on outcomes and less on decision inputs. However, PU is often inspired by DU, and RU is often structured and evaluated so as to enable a systematic evaluation of the experience.

Pain and pleasure, on the other hand, tend to be focused on sensory aspects of a real time, often extended experience. Such experiences are unlikely to be structured or be evaluated in an [attribute × values] matrix structure. For example, the sensory experience of a good chocolate cake tends to be in the same currency as decisions to choose the cake or the remembered evaluations of the cake. Considering that a common structure across utility indicators promotes correspondence among them, the structural and content differences between EU and all of the other utility perspectives is one contributor to the observed low correspondence among them.

In the case of CEE, considered goals not/being achieved are the attributes that drive CEEs. For example, although not as complex, structured, and systematic as DU often is, a concurrent evaluation of a meal may consist of real-time processing of the health, pleasure, and uniqueness of the meal experience. In that regard, CEE tends to be determined by factors that are amenable to structure and are similar to those that drove the choice in the first place (e.g., the choice of a vegan restaurant or the museum) and what may be remembered from the experience (i.e., RU).

The impact of non/overlapping prominent dimensions

A related contributor to the low correspondence between P&P and the other value perspectives, including CEE, is the often limited overlap between dimensions that are prominent when decisions are made and when experiences are remembered versus the factors that affect hedonic experiences. Some experience characteristics are considered and are prominent both when decisions are made and during experience (e.g., commute time). For example, the specs of a smartphone camera, such as having a dual camera, superior resolution, and a particular zoom, are often decision drivers that may be as prominent during experience as they are when decisions are made. Also, even unconscious decision influences such as the asymmetric dominance effect (e.g., Huber, Payne, & Puto, 1982) can influence the perceived experience (e.g., Yoon & Simonson, 2008).
However, some key features, especially features of not yet experienced products, novelty items, and features that appear cool or unique may loom large when decisions are made but often end up playing limited if any role during experience (e.g., Meyer, Zhao, & Han, 2008). Also, reasons for and against an option often play an important role when choices are made (e.g., Shafir, Simonson, & Tversky, 1993; Wilson & Schooler, 1991), but end up playing a much smaller, if any, role during experiences. In particular, quality cues that affect DU, such as user reviews, prices, and country-of-origin, tend to be less prominent and play limited if any role during experience.

By contrast, mood and transient experiential elements such as a good joke, an awkward moment during a conversation, and making an interesting observation are likely to be hedonically prominent but may not be reflected in DU, PU, RU, or CEE, depending on whether they were expected and remembered. That is, certain aspects that are prominent during an experience are often not taken into consideration when decisions are made and experiences are remembered. Thus, another factor that limits the correspondence between P&P and other utilities relates to the differences among the utility perspectives with respect to the prominent attributes and influences.

In other words, using what can be referred to as experience prominence (EP), some attributes are prominent, receive attention, and are monitored during the experience, such as the bad/good taste of food. Some of these high EP aspects are also prominent when decisions are made and experiences are predicted and remembered. But DU, PU, RU, as well as CEE are often driven by low EP aspects, such as the bargain purchase price. Similarly, when purchase/decision criteria are in conflict (e.g., looking for a house that is secluded yet just a short walk from downtown), the criterion that drives the decision (e.g., the house is secluded) may end up having much less impact on the day-to-day house satisfaction than the criterion that was foregone.

Unlike P&P, CEE drivers tend to be derived from prominent, predictable, and remembered attributes that can be assessed based on one’s goals, such as feeling virtuous about a volunteer activity or feeling good/bad about the kale appetizer. Thus, there is often a substantial overlap in terms of the attributes that loom large when decisions are made and experiences are predicted and remembered and those that effect real-time assessments of the satisfaction with experiences (i.e., CEEs).

Differences among utility/value perspectives on the absolute–relative continuum

A third, related cause of the limited correspondence between P&P and the other utility perspectives has to do with another basic difference between P&P and the other concepts—reference points and relative judgments are often less prominent during hedonic experiences. Specifically, although the saying that “everything is relative” holds to some degree in most evaluations and judgments, P&P evaluations tend to be more absolute, in large part because the reference points are usually less salient while the experience is taking place. For example, while watching an engaging movie, that movie tends to occupy the senses. Similarly, while riding a rollercoaster or when experiencing pain, the absolute P&P is dominant. By contrast, context is prominent and is often explicitly considered when choices are made. It tends to be less prominent when predicting or remembering an experience, but reference points tend to be more salient than during that experience.

To step back, I previously highlighted the distinction between absolute and relative evaluations and argued that the inability to meaningfully interpret and use absolute values can account for most documented violations of utility maximization (Simonson, 2008, pp. 157–161):}

because people are typically absolute value challenged, whereas they are inclined to and quite good at making consistent and coherent relative judgments, they naturally gravitate to the latter, using the most accessible reference points. . . . the BDT case for preference construction involves one primary principle: The challenge of evaluating meaningfully absolute attribute values causes people to gravitate to available relative judgments.

The degree to which a judgment or choice involves absolute or relative evaluations lies on a continuum and depends on various factors such as the task and the measures. For example, a matching-based preference elicitation procedure (e.g., Tversky, Sattath, & Slovic, 1988) may be comparable in its relative nature to a strength of preference measure, and both of them involve more relative and less absolute judgments than choice (see also Carmon & Simonson, 1998). Choice, in turn, is more relative and less absolute than ratings of individual options.
Similarly, choosing and then eating the kale appetizer because it helps achieve a health goal is a relative judgment that can and has already been judged relative to other, presumably less healthy food options. More generally, aside from P&P, all other forms of utility, including CEE, are largely relative and anchored in concurrent or previously made comparisons. Predictions of utility are likely to be based on the focal options, such as the expected enjoyment of visiting Yellowstone Park. But such predictions are also comparative in nature and lack the “distraction” of an actual experience. The same applies to RU, because remembered utility is strongly influenced by reference experiences and the pre-experience expectations.

Thus, although reference points are likely to impact felt pain and pleasure, experiences are often distractions that limit the tendency to cognitively compare. While reading a captivating book, for example, the person is often glued to what happens on each page and is unlikely to simultaneously engage in comparisons to other books or entertainment options, though such comparisons and evaluations can occur later. Thus, the experiences being rated tend to be more absolute (e.g., “feels good” or “is fascinating”), with specific comparisons, if any, playing a minor role. As discussed next, this conclusion depends on the characteristics of the experience; for example, a scary but short rollercoaster experience is absolute in real time, whereas visits to some museums leave time and cognitive capacity for comparisons.

**Conclusion**

Overall, while CEE is often different and influenced by experience-specific events and context, it is more likely than P&P to correspond to and correlate with decision, predicted, and retrospective utility. In particular, beside the fact that goals affect both decisions and experience evaluations, a number of factors account for the discrepancy between EU (i.e., P&P) and other utility concepts; these differences apply to a lesser degree to CEE.

A research question that arises is whether concepts employed in the study DU and RU are applicable to CEE. In particular, a great deal of research has examined decision rules. Decision rules (also referred to as choice strategies or heuristics) have been divided into compensatory and heuristic (e.g., Bettman, Johnson, & Payne, 1991), such as the weighted additive and lexicographic rules. Rules have also been identified with respect to retrospective experience evaluations, such as the reliance on peak and end and comparisons of attribute value expectations with actual experiences.

Are there decision rules, strategies, or heuristics that can be similarly used to structure and determine overall CEE? The previously studied decision and evaluation rules do not appear to apply. First, whether an experience is characterized by dominant P&P and limited CEE (e.g., an intense rollercoaster ride; losing a loved-one) or limited P&P and extensive CEE (e.g., while struggling to follow an instruction to “never give up” or “be strong”), handling the task rarely calls for a systematic strategy. Furthermore, although CEE tends to be the outcome of a top-down process (e.g., largely driven by goals and principles), whereas P&P involves more of a bottom-up process (e.g., the taste of food), they are not easily structured around attributes. Rules may also not be needed because CEEs are often categorical rather than continuous. Many experience such as eating a healthy dish may be classified as good, bad, or neutral, so no complex rules are needed.

**A Research Agenda for Exploring the Antecedents, Prominence, Content, and Moderators of CEEs: Questions and Tentative Predictions**

**Introduction**

It is one thing to identify the hedonic value of a delicious ice cream, and it is quite a different thing to consider the value or CEE associated with “finally being at that ice cream parlor that everyone has been talking about” or the thought that one is in the midst of telling or listening to a long, bad joke. The assessment of a new ice cream flavor is often automatic—consumed ice cream normally has a prominent taste that receives at least some attention. By contrast, the evaluation of an experience relative to one’s goals is a second-order cognition that may/not occur.

Some experiences do not elicit any or just minimal CEE. For example, routine, repetitive, and mindless experiences may not elicit any CEE, although a daily jog, for example, may generate some CEE day after day. Other experiences, such as highly anticipated experiences or experiences that violate prior commitments, are likely to produce intense CEE and feature prominently during the experience. Some experiences extend over time and, correspondingly, CEE may be elicited by different experience components. For example, moving to live in or near downtown in order to be in walking
distance from many good restaurants can produce an extended stream of CEEs that are activated each time that the person takes advantage of the proximity to restaurants.

The relative weight and characteristics of CEE depend on various factors discussed next. Despite being “second-order” (i.e., requiring a comparison of the stimulus to a stored and/or observed reference point), CEE may be more intense and prominent during the experience than nondistinctive experienced pain and pleasure. For example, CEE may represent the most prominent part of a visit to a “must-see” place or event that is not particularly interesting, enjoyable, or noteworthy in “first-order” respects (e.g., the view from the mountain top). Furthermore, while pain and pleasure are often ambiguous as shown by various framing and placebo effect studies (e.g., Levin & Gaeth, 1988; Turner, Deyo, Loeser, Von Korff, & Fordyce, 1994), real-time thoughts about experiences do not usually require subjective judgments—all that is needed for CEE may be to know what is taking place and whether it is un/desirable relative to accessible reference points (e.g., Feldman & Lynch, 1988).

Being a new concept and a different way to think about experience value, there is much that we do not know about the antecedents, moderators, and impact of CEEs. Because CEE is defined as occurring during the experience and often co-occurring alongside and possibly as a reflection of the hedonic experience, questions arise as to the time patterns of the two experience value components and their interactions. For example, is the CEE experienced while helping at the soup kitchen more pronounced just at the start or at the end of that experience, during particular episodes of the experience, or when the hedonic value is particularly prominent? Identifying research questions regarding CEEs and exploring possible answers is an important first step. The main goal of the discussion presented next is to begin this process and suggest initial, still untested hypotheses pertaining to different aspects of CEE.

In general, CEE is driven by processes that occur before the experience, during the experience, as well as anticipated experience events and outcomes. We can divide the determinants of CEE and corresponding research questions into five main categories, which are discussed next: (a) Pre-experience factors, (b) Experience context effects, (c) Interactions between CEE and P&P, (d) Mindset and individual differences, and (e) Macro CEE influencers.

Table 2 presents a sample of the potential CEE moderators and determinants discussed next.

**Pre-Experience Influences on CEE**

Context, mood, and other effects occurring during an experience notwithstanding, in most cases CEEs reflect and may even rehash thoughts and goals that preceded the experience. For example, the thought that getting exercise and eating kale are healthy is likely to have affected the experience’s choice in the first place, continuing into the experience. Similarly, although the sunk cost effect has typically been treated as a decision influence, the sunk cost effect may influence thoughts that occur to a person during an experience (e.g., positive CEE while finally getting to use one’s gym membership or a not-so-essential gadget).

However, while some decision influences persist during a subsequent experience, others do not. For example, placebo effects aside, quality cues such as average user reviews are unlikely to play a significant role during an experience. That is, one would not expect a consumer to think while using a toaster: “I’m using a toaster that received 4.5 stars on Amazon.” The following research questions focus on the correspondence between predecision considerations and subsequent CEEs.

**What factors determine the correspondence between pre-experience processes and CEE?**

A question that arises pertains to the factors that determine the correspondence between pre-experience decision processes and CEEs. In particular, what factors distinguish those predecision considerations that continue to affect and be contrasted with goals during the experience from those that do not or are much less salient during the experience? A straightforward answer appears to be that the correspondence between pre-experience and during-the-experience evaluations is enhanced to the extent that the salient features of the experience that pertain to the person’s goals reflect key predecision considerations. Furthermore, such during-the-experience cognitive processes are more pronounced if the decision is responsible for the salient experience’s costs and benefits. For example, a bad-tasting kale appetizer and a tough 10k run are likely to elicit the predecision considerations and relevant goals that led to the experience.

These examples also suggest that the extremity of the experience, which pertains to the consumer’s goals, often enhances the link between predecision
cognitions and the motives that led to the experience. That is, extreme experiences are more likely to elicit thoughts about the uniqueness of the experience that go beyond processing the experienced music or movie.

Consistent with prior work, the goal implications of negative discrepancies between expectations and experiences are likely to be more pronounced than positive discrepancies (e.g., Kanouse, 1984; Ofir & Simonson, 2007). In addition, the magnitude of the discrepancy between what motivated the decision (e.g., attending a lecture about an interesting subject) and the actual experience is likely to affect the link between predecision processes and CEE; that is, larger gaps (or disconfirmation) and un/pleasant surprises are more likely to elicit during-the-experience CEEs than experiences that match expectations.

Other factors are likely to moderate the correspondence between predecision processes and subsequent CEEs, including the level of encoding of daily experiences (often using recall measures), differences between active and passive exploration, and resulting degrees of experience encoding (see, e.g., Plancher, Barra, Orrols, & Piolino, 2012). Thus, when viewing scenery, people may encode the beauty of what they see and the decision to drive to that place or may continue with their journey without making a note of the valence or even what exactly they saw, and they may or may not interpret what happens during the experience relative to what was expected or hoped for.

CEE is often not monolithic and may involve conflicting thoughts due to conflicting prior motives. For example, the notion of hyperopic self-control (Keinan & Kivetz, 2008; Kivetz & Simonson, 2002) indicates that people often become addicted to spending on necessities while depriving themselves of pleasures they arguably deserve. However, the desire to have more fun in life and the satisfaction with having fun while it happens may also be present. In such cases, CEE ambivalence may arise, with conflicting CEE forces playing a role during the experience.

Finally, as indicated, habits and well-rehearsed decisions, may influence decisions without receiving much attention and without eliciting CEE. For example, a past choice to be vegan for the sake of the environment can play an important role when choosing food and restaurant, without any further processing of goal implications while eating (vegan food).
What CEE aspects are likely to influence the value of experiences despite not being considered before the experience?

In general, the prominence of CEEs is likely to correspond to their prominence during the decision, at least initially. A consumer who is very concerned about his recent weight gain and is determined to lose weight will likely continue, at least during part of the experience, to agonize while enjoying (or not) a rich cheesecake. But the prominence of a reason or a goal before the experience is often not the only or main driver of its prominence during the experience.

Some CEEs that were not considered when the decision was made may be triggered during the experience, and those that were considered when the decision was made may be forgotten or overtaken by the experience. Furthermore, some experiential aspects are inherently more prominent and attention grabbing than others. For example, a consumer may choose to see a play over a movie because plays are more cultural feeling than others. For example, a consumer who is very concerned about his recent weight gain and is determined to lose weight will likely continue, at least during part of the experience, to agonize while enjoying (or not) a rich cheesecake. But the prominence of a reason or a goal before the experience is often not the only or main driver of its prominence during the experience.

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CEE Influences that Influence CEE

CEE may often be influenced by the experience context effects, broadly defined. For example, a consumer who made his default choice of skipping dessert may question his healthy habit when the person next to him orders the tempting chocolate soufflé. And a person who eats a lamb chop at a reception may experience positive CEE after passing on the opportunity to eat a piece of cake. Resisting temptations more generally can be a source of favorable CEE (e.g., Dhar & Wertensbroch, 2012). Similarly, when a cashier at the supermarket checkout is asking a shopper whether he is willing to donate the credit due to him for bringing his own shopping bag, CEE associated with the goal of being a good person may be triggered. These are just a few of the many everyday contextual influences on CEE.

More generally, context and social comparisons often trigger CEEs, including evaluations that played no role and could not be anticipated when the decision to have the experience was made. The context may also impact the valence of CEE, such as when the experienced P&P is much better or worse than expected (e.g., “I’m wasting my time and will be late for my next meeting”). Thus, the context and experience characteristics may determine which of the stored repertoire of CEEs are elicited as well as their valence.

For example, the salience of CEE and its valence depend on the other options that are available during the experience, which are often unpredictable. That is, similar in some respects to choice context effects such as asymmetric dominance and compromise, CEEs and their valence may depend on the other considered alternatives and social comparisons. Riding bikes may not feel as positive when most others in the park are jogging, though seeing others who merely walk slowly may make biking feel healthy.

We can also consider context characteristics that reflect the structure and sequence of the experience. In particular, when an extended experience consists of a number of events and corresponding CEEEs, the order and trend of events/CEEEs can affect the overall CEE. Consider, for example, a dinner that consists of multiple courses. It has been shown that eating an unhealthy appetizer, for example, tends to enhance the likelihood that generally health-conscious consumers would eat a healthier entrée and perhaps skip the dessert (e.g., Dhar & Simonson, 1999). This research focused on the sequence of choices, but it is reasonable to expect that these choices correspond to the sequence of CEE thoughts. Although prior research suggests a preference for improving sequences (e.g., Loewenstein & Prelec, 1993; Ross & Simonson, 1991; Varey & Kahneman, 1992), that trend preference may not apply to a sequence of CEEEs.

Experiences that consist of a series of subexperiences and corresponding CEEEs also raise the possibility of within-experience regret or rejoice that affect subsequent decisions and resulting CEEEs. For example, when one feels that he has recently been “on good behavior,” the within-experience regret of a chocolate dessert may be diminished (i.e., a CEE licensing effect).

Finally, both CEE and P&P may be triggered interpersonally, due to someone else’s observed experience. Suppose, for example, that a driver observes another driver being stopped by highway patrol for speeding. The observing driver may feel the pain and the associated CEE (e.g., “Just my bad luck”) of the speeding driver and possibly adjust driving accordingly.
Moderators of the Interactions Between CEE and P&P

In addition to predecision and context factors, CEEs are expected to interact with the other during the experience events, namely P&P. Pertinent research questions are discussed next.

The interaction between the intensity (or “Volume”) of P&P and of CEE

The two key experience value components, P&P and CEE, may or may not be triggered by the same experience. Thus, for example, routine exercise or consuming a run-of-the-meal daily cereal may not generate or register any observations regarding pain or pleasure, yet it may have significance for one’s goals. Similarly, the experience of having a common cold can be quite miserable and involve various unpleasant, even painful, nagging symptoms. However, given previous cold experiences and the fact that others have also had that experience, it is less likely to elicit intense CEE. In fact, the miseries of a cold may limit cognitive capacity and inhibit CEEs.

But intense P&P can also trigger CEE, such as when visiting a once-in-a-lifetime, out-of-the-way place or having painful but necessary surgery. Similarly, dining at the best restaurant may generate both intense P&P and CEE, on both the positive (great taste) and negative sides (the pain of paying and feeling poorer for that). In some cases, people have control over one or both components. For example, I know some people who prefer to be fully awake during colonoscopy, because they want to learn in real time and keep some control in case it is needed.

As indicated, CEEs and P&P are often independently determined. For example, when engaging in a cultural, boring activity or visiting a hard-to-get-to tourist destination, the two components may be independent and merely happen at the same time. And while running a marathon, a person may occasionally check progress and timing against the relevant interim goals, independent of the sensory experience of sweat and fatigue. One would expect the two experience value components to be more closely related when one component is the driver of the other, the cost of the other, or the silver-lining. For example, the good taste of a rich ice cream (i.e., the P&P component) may also highlight its CEE cost (e.g., “Tastes great, but I’m trying to lose weight”).

Furthermore, the content and duration of CEEs are often influenced by P&P. For example, when experiencing extended pain, such as having to finish eating a bad-tasting cake or completing a project involving an extended and unpleasant physical task, the corresponding CEEs may be generated by and needed to sustain the effort and complete the task, and these evaluations may thus remain active for the experience’s duration. Conversely, while implementing long-term goals, such as the desire to participate in more charity work or lose weight, CEEs (e.g., “but it’s good for me”) are less likely to be continuously salient during an experience.

When do CEEs and P&P compete for cognitive resources and when does one component promote the other?

Because P&P and CEE take place during an experience, they may compete for cognitive resources, but the opposite may also occur with one stimulating the other. For example, an extreme P&P experience may trigger CEEs and expand the resources allocated to such cognitions. Thus, whereas a bizarre David Lynch movie/series may stimulate CEEs about the virtue of the experience (“I am enjoying Mulholland Drive even though I don’t follow the story”), a very tragic, tear-y movie may have the opposite (i.e., CEE interference) effect.

In some situations, people may intentionally try to block CEEs, as is the case with successful mindfulness meditation sessions that involves focusing on what is happening in the present moment while trying to block comparisons or consideration of goals. Similarly, alcohol or drug consumption can diminish unpleasant CEEs while intensifying or masking P&P. By contrast, a desire to eat (healthy) kale can make the taste of kale better (or worse), and the hope to have a memorable experience at the Grand Canyon or a museum can make the associated P&P or disappointment more intense.

When P&P and CEE compete for cognitive resources, one might expect the former to have the advantage in most situations, because it is a first-order response to the experience and is usually automatically encoded, with no need for evaluation relative to internally stored reference points such as goals. However, in many cases, P&P is unremarkable and indistinguishable from previous experiences (“another pizza”), whereas the associated CEE (“this is where pizza was invented”) may be distinctive and evaluation-provoking. For some experiences, although not directly linked, the same processes apply to both P&P and CEEs. Thus, the intensity of both P&P and CEE is likely to satiate and decline with repetition, during an experience.
and with repeated experiences. For example, the second visit to the Grand Canyon is likely to produce less pleasure and less pronounced CEE than the first visit.

What factors that underlie the (during the experience) time pattern of CEE and P&P?

Generalizing about the during-the-experience time pattern of P&P and CEE is challenging, because there are too many idiosyncratic factors in play. For example, one might hypothesize that CEE is relatively more prominent earlier than later in the experience, such as when entering a museum or taking the first bite of a healthy dish. However, while a CEE may be quickly processed and completed early on, it may remain in the background at lower intensity throughout the experience or become more salient due, for example, to some inflection points or highlights during the experience.

Similar in some respects to ongoing cognitive appraisals that generate emotions (e.g., Lazarus, 1991), we can assume that consumers, whether deliberately or not, monitor experiences for their significance, with the intensity of monitoring varying based on factors such as novelty, expectations, and experience type. In probabilistic terms, encoded experiential elements that pertain to the person’s goals and/or values are more likely to generate CEEs. We can also think about the “volume” or intensity of generated CEE, which may vary from being a fleeting, quickly forgotten evaluation to a high involvement, lasting, and prominent evaluation that can affect the ongoing experience and subsequent decisions (e.g., the choice of a dessert). Furthermore, we can evaluate and study possible sequences of CEEs within an extended experience. For example, suppose the appetizer is healthy, which triggers a prominent favorable evaluation relative to the consumer’s health goals, will a subsequent healthy entrée trigger a similar CEE or perhaps the first CEE already settled and ended any further consideration of the healthiness of the meal?

With respect to hedonic sequence of events during an experience (e.g., a movie), as noted above, Kahneman (1994) argued for a benchmark that treats all temporal components of an experience the same using what is akin to the experience’s integral. He wrote (1994, p. 28):

> There are strong normative intuitions about the correct way to combine utilities of a continuous series of experiences into a global evaluation. A principle of temporal integration has considerable appeal: the utility of an episode extended over time is the integral of momentary hedonic value over the duration of the episode.

The integral rule is less suitable for CEEs than for P&P. In particular, whereas hedonic experiences can arguably be reduced to a common denominator (pleasure/pain), that often does not apply to CEE. In particular, with multiple relevant goal benchmarks (e.g., health, taste, savings) that may differ in meaning, relevance, and weight and that play different roles during a given experience, an experience integral is not informative and will not capture the overall CEE for the experience.

While both P&P and CEE often derive from the same experiences, they differ in content, valence, and intensity over the experience. CEE tends to be more categorical (e.g., positive/negative), whereas P&P is more absolute or continuous, though not constant (e.g., the peak-and-end rule; see Frederickson & Kahneman, 1993). Also, because CEEs are more categorical, they are likely to be less scope sensitive than P&P and less likely to exhibit violations of dominance than hedonic experiences; thus, for example, adding a less unhealthy dessert (compared to the very unhealthy entrée) is unlikely to enhance the overall perceived healthiness of the meal.

To the extent that a consumer expects extreme pain or pleasure before the experience, attention will focus on the actual P&P early on to determine the actual pain or pleasure; once resolved, the monitoring of P&P is likely to be less salient. In general, once the CEEs have been consumed and/or the P&P experience valence has been determined, the salience of both can be expected to decline, especially the CEE component. For example, taste and thoughts about the unique restaurant experience may be most intense during the first part of the meal, unless there is an inflection point at some point during the experience (e.g., “the best dessert,” “mind-blowing” avant-garde music at the conclusion of a concert).

But both CEEs and P&P may take different “turns” during an experience, and it is unlikely that one rule generally prevails (such as comparable to peak-and-end in the case of retrospective evaluations). To get back to the kale example, consider a possible experience of eating a kale salad: (a) while starting to eat the salad, the consumer thinks about the benefit of eating kale and about the kale salad’s taste; (b) assume the taste is determined to be mediocre and clearly inferior to the taste of the
appeal of the idiosyncratic content of the experience. For example, a person may have the belief that power training is healthy, in which case that belief and related CEE thoughts can enhance the weight training experience in a predictable way. The pain and symptoms of power training, such as effort and back pain on a given day, is often less predictable and varies during the experience.

**Mindset Influences on CEEs**

In addition to experience context effects, CEE prominence and content are likely to be influenced by the consumer’s mindset. For example, in some situations consumers embark on an experience with a hedonic purpose, namely, the intent and expectation to enjoy and feel happy during the experience. Consistent with known psychological phenomena such as dissonance and the sunk cost effect, after investing in a house near a lake or at a place that is just a short walk from the beach, a consumer is preconditioned to think about the expected benefit/goal each time that it is realized. In a similar fashion, when volunteering to perform a boring, tedious task because it benefits a valued cause, the person is likely to be in a CEE mindset before (i.e., more likely to contrast what transpires with related goals), during, and after the experience. Experience mindset can also be influenced by recent salient events. For example, in the age of MeToo and much discussion about im/proper behavior and social interaction, there is a heightened likelihood of pertinent thoughts reflecting the person’s monitoring of his or her behavior.

In all of these examples, the CEE-driving mindset is linked to predecision processes or events. In other situations, CEE as well as P&P may be influenced by the consumer’s more general life events and phases. For example, sex tends to be associated with pleasure (its P&P component) and may also be associated in some cases (during the experience) with the satisfaction of “doing it.” The during-the-experience prominence of the latter component may change over one’s (and a couple’s) life and follow a U-pattern, with more pronounced CEE at a young age as well as at an old age, and lower during the middle period.

Another important mindset factor that is likely to influence whether and what CEEs come to mind during an experience has to do with the benchmarks for the evaluations, namely, the salience of the relevant goals. For example, consistent with the goal gradient hypothesis (Kivetz et al., 2006), a goal is more salient and more likely to trigger CEEs when the consumer is close to reaching a particular
threshold (e.g., the level needed to receive a loyalty program reward). Similarly, the same mental accounting operations that apply when decisions are made are likely to affect the experience’s mindset (e.g., Kahneman & Tversky, 1984; Thaler, 1985). That is, the CEE associated with losing/gaining on an investment is as susceptible to mental accounting influences before the investment is made and while owning and experiencing the gain/loss.

Furthermore, the propensity to experience CEE is likely to depend on the level of self-control and having the cognitive capacity for such second-order cognitions. For example, after having a few drinks, under cognitive load, or under time pressure, it is reasonable to expect that CEs diminish and play a less important role during the rest of the experience. Finally, mood may also affect CEE. A positive mood may promote, for example, concurrent thoughts about inferior counterfactuals, whereas a negative mood may exacerbate the tendency to belabor the errors that led to a bad experience.

Individual Differences that May Moderate the Prominence and Content of CEE

People are likely to differ with respect to their CEE proneness as well as the types of CEs they are most susceptible to. That is, the content, valence, and intensity of CEs are likely to be influenced by idiosyncratic characteristics and reflect the individual’s beliefs, obsessions, values, principles, character, and tastes. For example, CEE may play a bigger role for maximizers than for satisficers (Schwartz et al., 2002), for high self-monitors than for low self-monitors (Snyder & Gangestad, 1986), and perhaps for those who are high in terms of private self-consciousness (Fenigstein, Scheier, & Buss, 1975), because such individuals are more likely to monitor and analyze in real-time experiences and assess their goal implications. Also, some people may agonize over sunk cost, wasting money, and the consumption of unhealthy things, whereas other people rarely have such thoughts during experiences. Similarly, people prone to regret and strict self-control are also more likely to monitor their real-time goal progress and engage in CEs and interim assessments during the experience. Thus, the tendency to engage in CEs and their intensity during the experience are likely to vary across people, just as other tendencies to think and analyze certain aspects vary across people (e.g., Cacioppo & Petty, 1982).

Other candidate individual differences that may moderate propensity for CEs include goal orientation, a tendency to evaluate (Jarvis & Petty, 1996), the person’s values, and having a low construal versus high construal orientation. Also, people who tend to be hypochondriac may be more inclined to experience certain kinds of CEs (e.g., compare current consumption with health goals), whereas fatalistic people may be less susceptible to such comparisons. It is unclear whether being religious makes people less or more likely to evaluate their experiences in real time by comparing them to goals. On the one hand, religious individuals may feel that they should follow the rules, but such behavior has likely become habitual or automatic and therefore less likely to require any further real-time thinking. Finally, CEE propensity may be more pronounced in individualistic cultures.

Beyond Individual Experiences and Differences: Macro Trends/Events that Influence CEE

At a more macrolevel, today’s environment, with the Internet and social media playing a big part in many people’s minds and lives, our exposure to what other people do, their judgments, and what we may want to not/do or should/not do is much greater than in the pre-Internet and social media age. That is, although we have always been exposed to friends, family, and other people such as during social interactions, on TV, or in the classroom, today’s volume, breadth, and access to such information is much greater and is just a click away.

Thus, the salience of comparisons and social standards is expected to enhance the likelihood and prominence of such goal benchmarks also during experiences, thereby promoting CEs (for a related discussion in the context of happiness judgments, see Strack, Schwarz, Chassein, Kern, & Wagner, 1990). By contrast, the explosion of easily accessed information about others’ opinions, preferences, and experiences has likely had more limited impact on the hedonic (P&P) experiences. For example, reading favorable reviews about a new biography of Frederick Douglass is more likely to enhance the goal satisfaction associated with learning new things about the man and his period than to enhance the pleasure or pain of reading this lengthy (well-written) biography. Finally, developments in the macro-environment (e.g., new movements) may expand the CEE repertoire and generate CEE-rich choices and corresponding experiences, such as concurrent evaluations of staying at home or embarking on a risky trip to the supermarket during a pandemic.
Studying CEEs: Measurement Approaches and Challenges

The above discussion identified a variety of potential CEE moderators and directions for research. Several of these research questions call for measuring CEEs during a given experience. In this final section I discuss some approaches that might be used for measuring and analyzing CEEs in real time as well as before or after an experience.

When Might Top-Down Categorical Measures Effectively Estimate CEEs?

In some cases, measuring CEE is simple. If CEE consists of a stable, predictable, habitual evaluation that occurs during a given experience, then CEE can be rather accurately predicted and reconstructed. For example, if each time a person eats broccoli or goes to the gym, a similar CEE is triggered, then the consumer is likely to anticipate and report it after (or during) the experience. Furthermore, because CEE is often categorical and less nuanced and variable than many P&P experiences (such as the P&P associated with different segments of a movie), it may be easier to predict and recall it by simply listing activities and events and retrieving the likely associated CEE. Even if the experience is composed of different segments (e.g., a multicourse meal at a restaurant, climbing a mountain over several days), each component is likely to be easier to classify and accurately report, as compared with continuous, harder to discern hedonic experiences.

However, given the various contextual, mindset, and personal influences on CEE, generic reports based on the nature of the experience will often be inaccurate and based on retrieved categories that may not apply to the specific experience being studied. Furthermore, some CEE changes may be more predictable and retrievable than others. For example, while a consumer may realize that the 100th jog triggers less (or no) CEE thoughts compared with the first few jogs, a consumer may mispredict or overestimate satiation (e.g., Kahneman & Snell, 1990).

Assessing the accuracy of CEE self-reports is likely to be challenging. Though often used in psychological research and other domains, an aid-to-question (i.e., multiple-choice) format tends to be suggestive and may produce reports of thoughts that may not have occurred without the questions. For example, asking a person in real time a question such as, “To what extent your museum visit today is enhancing your familiarity with abstract art?” will produce answers, whether or not the consumer engaged/s in such an evaluation about the subject in the museum. The challenge of measuring experiences is not unique to CEE and also applies to the prediction of pleasure and pain (e.g., Frederick & Loewenstein, 1999). Thus, despite the often categorical, top-down nature of CEE, changes due to goal progress, satiation, adaptation, experience variations, and contextual influences are unlikely to be captured using point blank, “aided” measures.

Are Measures Used to Estimate P&P Suitable for CEE?

As described above, the P&P measures that have received the most attention include moment-by-moment measures, the Day Reconstruction Method, and Experience Sampling. The resulting P&P estimates often consist of ratings of episodes on scale items such as “happy,” “friendly,” “tense,” and “angry.” These ratings-based measures seem less suitable to CEE than P&P. While ratings of happiness and exhaustion at the beginning and end of a marathon can capture how one feels at the moment, CEE consists of second-order cognitions (e.g., how one feels during the marathon about progress so far), is often not continuous, and may be characterized by short evaluation bursts.

Instead of experience ratings, one might rely on thought protocols and/or postexperience reports. Addressing the reliance on self-reports more generally, Schwarz (2012) pointed out their advantages and potential limitations:

When we want to know what people think, feel, and do, we ask them. This reliance on self-reports is based on the tacit assumption that people know their thoughts, feelings, and behaviors and can report on them “with candor and accuracy,” as Angus Campbell (1981), a pioneer of survey research, put it. From this perspective, problems arise when the research situation discourages candor and accuracy, when the questions are ambiguous and difficult to understand, or when the task exceeds participants’ knowledge and the limits of memory. A large methodological literature addresses these concerns and what to do about them (for reviews see Bradburn, Sudman, & Wansink, 2004; Sudman, Bradburn, & Schwarz, 1996; Tourangeau, Rips, & Rasinski, 2000). The lessons learned from this work highlight that many self-report problems can be attenuated by asking questions in close temporal proximity to the event of interest.
Doing so constrains the multiple meanings of questions, reduces memory and estimation problems, and facilitates access to episodic detail, all of which can improve self-report.

Additional Methodological Approaches

It is possible that asking people what they think or thought about during an experience, starting with broad open-ended measures (e.g., “what, if anything, were you thinking about while eating your food?”), followed by gradually more directed questions (e.g., “What, if anything, were you thinking about while eating the kale appetizer?” “To what extent you felt that the meal was healthy?”), may be a viable approach for measuring CEE; but this approach as well has significant limitations. Think-aloud protocols were primarily used to track decision processes without having to rely on post-decision explanations (e.g., Bettman & Park, 1980; Ericsson & Simon, 1980; Payne, 1976; Simonson, 1989). Putting aside the debate about their accuracy, obtrusiveness, and issues related to thought coding (not to mention the labor/time intensive nature of the analysis), thinking aloud may reinforce the tendency to focus on what the subject perceives to be expected in such descriptions. For example, if consumers are asked to report any thoughts that occur to them while jogging or eating a cheese cake, the reported pain and pleasure as well as any CEEs may reflect prior beliefs about effort and taste more than the current, spontaneously triggered real-time thoughts involving goal comparisons. Similarly, while watching a theater play, expressed thoughts will naturally focus on what is most salient—that is, what transpires on the stage and related evaluations such as about the acting. Even if the consumer feels that she is having a cultural experience or that the experience is boring and not worth the time or ticket price, such thoughts are unlikely to be volunteered following the experience due, for example, to social desirability considerations.

Relatedly, reporting certain CEEs may go against conversational norms. For example, when asked about the experience of eating a new kind of vegan hamburger, the natural focus is on the assessment of the taste or texture, whereas it may appear irrelevant, inappropriate, and potentially socially undesirable to report CEEs that are more revealing about the self. More generally, because CEEs are often private and protected, they may not be reported, unless the task instructions suggest or call for mentioning such thoughts (which may raise concerns about obtrusive, demand-driven measures).

Whether or not retrospective reports are precise representations of the real-time experience evaluations, assuming they are measured soon after the experience and not overly leading, they can often provide relevant information about what actually transpired as well as what the respondent perceives as likely evaluations based on prior beliefs and intentions. Thus, while recognizing the contamination due to expectations, preconceptions, and self-presentation, such retrospective reports may provide additional insight about actual CEEs.

Predicted CEEs may be reasonably accurate, but only to the extent that certain experiences tend to consistently generate certain CEEs. Retrospective CEE reports may potentially go beyond predicted evaluations relative to goals and represent the actual CEEs. To estimate the degree to which such retrospective reports reflect actual CEEs, one can compare them with predicted CEEs, while manipulating the CEE content. For example, features of the ordered food items may be manipulated so as to make them appear more or less CEE-inducing (e.g., a slice of cheesecake with or without frosting). And a soup kitchen may (or not) prominently display posters thanking the volunteers for their contribution. The researcher can then test the impact, if any, of the CEE-inducing manipulations on the obtained CEE reports.

To the extent that social desirability and impression management limit the ability of direct questions and ratings to capture the real-time CEEs, observers who know the person may provide additional insights. Prior research suggests that both actors and observers tend to have certain biases, such as over-emphasizing factors related to the person versus the situation (see, e.g., Storms, 1973). Yet having multiple sources may actually be an advantage by offering a more complete CEE record from different perspectives, including the observer’s point of view that may be less susceptible to self-presentation considerations.

Finally, as already indicated, when the main sources of P&P and CEE are transparent and accessible, prospective and retrospective reports may rather accurately capture the true experience. At the conclusion of a restaurant meal, for example, a consumer can retrieve the hedonic experience associated with each course. In addition, the consumer may be able to retrieve and rate their CEEs as they relate to health.

In conclusion, the fact that CEEs are often categorical, top-down, and repetitive makes them easier
than P&P to predict and recall. This, however, also makes them less adaptive, precise, and diagnostic with respect to change and CEE variations within a given experience category. If CEE measures merely reflect expectations associated with a given experience type, then the value of measuring CEEs is limited. Despite these potential challenges, CEEs should be considered for a more complete account of experiences and deserve further study.

References


Indicators Research, 93, 7–19. https://doi.org/10.1007/s11205-008-9415-4


Stigler, G. J. (1950). Several papers noted in Google Scholar.


