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Chapter 7

CURIOSITY AND METACOGNITION

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ABSTRACT

Curiosity is the intrinsic desire for new knowledge that motivates information seeking behavior. Recent research suggests that metacognitive judgments about the extent to which one knows something influences whether curiosity is aroused, curiosity's phenomenology, the intensity of curiosity states, and curiosity's motivational impact on information seeking behavior. Tip-of-the-tongue judgments arouse curiosity aimed at the reduction of cognitive conflict, stimulate more intense state curiosity, and motivate more information seeking behavior, whereas Don't Know judgments are associated with feelings of interest, activate lower levels of state curiosity and motivate less information seeking behavior. Directions for future research on curiosity and metacognition are discussed.

CURIOSITY AND METACOGNITION

Curiosity is the intrinsic desire for new information that motivates seeking out and acquiring knowledge (Berlyne, 1949; 1960; Litman, 2005; Loewenstein, 1994). Behaviorally, curiosity is expressed through differential tendencies to seek diverse forms of knowledge, such as ideas and facts (Litman & Spielberger, 2003), sensory stimulation (Collins, Litman, & Spielberger, 2004), adventurous or thrilling experiences (Zuckerman, 1994; Litman, Collins, & Spielberger, 2005), and personal information about others (Litman & Pezzo, 2004; Litman & Pezzo, 2007; Renner, 2006; Singer & Antrobus, 1963). Like its expression, the phenomenological experience of curiosity also varies between individuals, and can involve positive feelings associated with the stimulation of interest, as well as unpleasant states of

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tension or frustration due to uncertainty (Litman, 2005; Litman & Jimerson, 2004; Litman & Silvia, 2006; Litman, 2008). Individual differences in both the expression and experience of curiosity are hypothesized to influence the intensity of emotional-motivational curiosity states across a range of situations (Spielberger & Starr, 1994).

While individual differences are important in shaping curiosity's behavioral expression and phenomenological experience, the *activation* of curiosity is generally attributed to stimuli (e.g., questions, pictures, or events) characterized as *novel*, *complex*, or *ambiguous* (Berlyne, 1954; 1955; 1957; 1958). These three terms describe situations in which we may recognize that information is missing, and discover a discrepancy between what we know and wish to know (Berlyne, 1950; 1954; 1960; 1966; Litman, Hutchins, & Russon, 2005; Loewenstein, 1994). Therefore, the primary purpose of curiosity is to motivate individuals to seek information capable of resolving discrepancies in their knowledge (Dember, 1960; Loewenstein, 1994; Keller, Schneider, & Henderson, 1994).

However, the stimulus conditions (i.e., novelty, complexity, etc.) that point to knowledge-discrepancies are not really properties of stimuli *per se.* This is because the extent to which something is relatively "new" or "complex" will depend entirely on the past experiences and knowledge of the individual perceiver (Dember, 1960; Lowenstein, 1994). Therefore, a consideration of the processes that underlie the identification of discrepancies in one's knowledge will be central to understanding how curiosity is aroused.

Discrepancy Identification and Metacognition

Identifying knowledge-discrepancies involves the evaluation of differences between that which is known and unknown. Loewenstein (1994) reasoned that we identify discrepancies by forming metacognitive judgments about the contents of our memory. Such judgments give rise to distinctive phenomenological states associated with varying degrees of perceived "knowing". One possible judgment is that no information is missing (i.e., no discrepancy), which generates a rapid *I know it* (K) experience (Maril, Simons, Mitchell, Schwartz, & Schacter, 2003; Maril, Wagner, & Schacter, 2001; Maril, Simons, Weaver, & Schacter, 2005). Other times, after searching our memory we may conclude that we do not have the desired information, and therefore experience a *Don't Know* (DK) state. Like K states, decisions about DK experiences also tend to be made quite rapidly (Glucksburg & McCloskey, 1981; Maril et al, 2001; 2003; 2005; Kholers & Palef, 1976). Both K and DK states are generally found to correspond with the actual contents of our memory, indicating that we are able to make fairly accurate judgments about whether or not we have retrieved targeted information sucessfully[7] (Bacon, Danion, Kauffmann-Muller, Schelstraete, Bruant, Sellal, & Grange, 1998; Glucksberg & McCloskey, 1981; Koriat & Lieblich, 1974; Kohlers & Palef, 1976; 1998; Maril et al, 2001; 2003; 2005; Murdock & Duffy, 1972).

Sometimes we may determine that we have the targeted information in memory even though we cannot seem to successfully retrieve it -- a metacognitive judgment that creates a *feeling-of-knowing* (FOK; Hart, 1965; Brown, & McNeill, 1966). FOK states appear to result from the partial activation of a desired target or the retrieval of semantic associates.

7 However, the correspondence is imperfect. For a discussion on the dissociation between feelings of knowing and actual knowing see Koriat (1998).