



Thinkers' Personalities: On Individual Differences in the Processes of Sense Making

Arie W. Kruglanski & Anna Sheveland

Psychologically speaking, humans share two defining attributes, one cognitive and the other social. The cognitive attribute refers to the sense-making process in which people continually engage. The social element refers to the collective nature of sense making and its grounding in collective world views and shared realities. Jointly, the cognitive and the social elements define the field of study known as social cognition, which over the last century has made substantial contributions to understanding how people think, judge, and ultimately produce intelligible action (Fiske, 1992).

Like the broader discipline of social psychology of which it is part, the social cognition domain has traditionally emphasized the situation and deemphasized personality and individual differences as the determinants of people's sense-making activity. The large preponderance of social cognition studies have used experimental designs in which participants are randomly assigned to conditions and the relevant variable is manipulated in the laboratory. In this category fall the various priming studies, where the construct of interest is activated in the participants' minds by the experimenter (for a review, see Förster & Liberman, 2007); the cognitive load studies (e.g., see Gilbert, 1989), in which a person's cognitive capacity is situationally restricted; person perception or persuasion studies, where the information given to participants is manipulated in the experimental setting; or meta-cognitive research (for a review,

see Petty, Brinol, Tormala, & Wegener, 2007), where people's inferences about their cognitive states are systematically varied.

Indeed, occasionally, social psychologists have implied that individual differences are of lesser theoretical importance than are situations, and have treated such differences as noise or "error variance" whose main function resides in serving as a statistical backdrop against which the ubiquitous "power of the situation" may be assessed. The situational emphasis in social psychology can be traced to Kurt Lewin's (1939) ahistorical approach and his theorizing about the mental representation of one's momentary "life space," and the field of forces impinging on the individual's psyche in specific circumstances. The juxtaposition of the person and the situation was echoed by developments in the field of personality, spearheaded by Walter Mischel's (1968) skepticism about the cross-situational predictive ability of personality factors, leading him to conclude that "with the possible exception of intelligence, highly generalized behavioral consistencies have not been demonstrated, and the concept of personality traits as broad response predispositions is thus untenable" (p. 146). Decades later, Ross and Nisbett (1991) voiced a similar indictment of personality research, arguing that "a half-century of research has taught us that in most [...] novel situations, one cannot predict with any accuracy how particular people will respond [...] using information about an individual's personal dispositions" (p. 2).



Subsequent developments, however, mitigated the “wholesale” rejection of the individual differences program. In a well-known paper, Bem and Allen (1974) argued that people differ in their degree of trans-situational consistency, and hence that it should be possible to predict “some of the people some of the time.” And Edward Jones (1998) stated that both factions of the situationism–dispositionism debate accept the premise that the person and the situational context interact to determine individuals’ behavior. Where social and personality researchers have historically, and continue to, differ concerns which of the two components of the person–situation interaction is emphasized. The notion of individual differences was interpreted in cognitive terms (rather than rejected out of hand) by Mischel and Shoda (1995), who assumed that people may differ in “if–then” action rules to which they subscribe. Such individual differences in relatively stable action schemata account for differences between individuals across situations.

In the domain of personality research, the trait approach has been revived and appears to be thriving. In a recent chapter, Funder and Fast (2010) state that despite the long decades of analysis and criticism, the study of personality these days is alive and well. There is general consensus in the field that the Big Five personality factors (Costa & McCrae, 1992) constitute the major dimensions of personality and, as Funder (1994) summarized it 16 years ago, “...*there is something integral to human psychology that maintains its behavioral effectiveness over long periods of time. We could call that personality*” (p. 125).

PERSONALITY AND SITUATION AS DETERMINANTS OF PSYCHOLOGICAL STATES

In the present chapter we take a yet different approach to the personality–situation issue. We consider both as separate determinants of psychological states that ultimately drive behavior. Individual differences have behavioral consequences if they operationally define stable psychological constructs that are relevant to behavior, and so do situations. This view echoes Higgins’ (2008) conception of personality “as simply one source of variability in the functioning of psychological principles that also vary across momentary situations” (p. 612). That is, contrary to the conceptualization of personality and situation factors as qualitatively distinct, we see them as sharing a core similarity in constituting ways of thinking and operationalizing psychological variables. An important upshot of this approach is that

the very same psychological constructs could be embodied (or operationalized) via a dimension of a stable individual difference as well as by a transient situation. In the former case, the behavior of interest might be stable across relevant situations, whereas in the latter case, the same behavior would be situationally specific.

THE PRESENT CHAPTER

In this chapter, we review individual differences in variables affecting the socio-cognitive process, presently treated as the process of sense-making and knowledge construction. Consistent with the discussion above, for the most part the individual factors we will consider would have been discussed previously in terms of their situational manifestations, or could have been so considered, as they refer to psychological constructs that can vary both by person and by situation. As a preview of what is to come, we first discuss the knowledge construction process as it has been portrayed in our lay epistemic theory (Kruglanski, 1989, 2004). We use this theory as an organizing framework for discussing individual difference variables in various categories as they relate to theoretically identified factors affecting knowledge formation.

Specifically, we discuss the role of lay theories in knowledge formation – specifically, lay theories concerning the nature of evidence, the essence of human attributes (i.e., entity vs incremental theories), and the deservedness of outcomes (i.e., the *belief in a just world* and the *Protestant work ethic*). We then review motivational factors relevant to knowledge formation, including the need for cognition, the need for cognitive closure, preference for consistency, and regulatory focus (i.e., promotion and prevention) and regulatory mode (i.e., locomotion and assessment) conceptions. Next, our discussion of cognitive ability factors will center on individual differences in working memory capacity, ability to achieve structure, cognitive complexity, and schematicity. We also discuss the interrelations among the foregoing three classes of factors.

THE PROCESS OF KNOWLEDGE FORMATION: HOW DO WE “KNOW” WHAT WE “KNOW”

The process of knowledge formation is ubiquitous, and reflected in all forms of social (and, non-social) reasoning and judgment. Kruglanski’s (1989) lay epistemic theory and subsequent work building upon it (e.g., Erb et al., 2003; Kruglanski

& Gigerenzer, 2011) outline a general theoretical framework that explicates this process and that serves as a framework for our subsequent discussion of individual differences in social cognition.

Kruglanski and colleagues (e.g., Kruglanski, 1989, 2004; Kruglanski & Gigerenzer, 2011; Kruglanski & Sleeth-Keppler, 2007) have proposed that, at bottom, all human “knowledge” (treated as subjective beliefs on various topics) is formed in fundamentally the same way: by reasoning syllogistically from evidence to conclusion. More specifically, knowledge is derived from relevant information via the utilization of if–then inference rules. In terminology of syllogistic reasoning, these inference rules constitute the major premises (of the “if X then Y” variety), where X is some manner of evidence and Y is the conclusion to be drawn on the basis of that evidence. For example, one might subscribe to the inference rule that “if a person is a doctor, then he or she is intelligent.” Learning that a new neighbor is a cardiovascular surgeon would, thus, serve to inform and facilitate the judgment that she is bright.

Three important points can be illustrated with this example. First, a key component of the knowledge formation process is not simply the utilization of inference rules (i.e., major premises), but also the recognition that some new information given in the situation affirms the antecedent condition of the rule, and hence constitutes evidence (e.g., “this person is a cardiovascular surgeon”). This latter contribution to the knowledge formation processes constitutes, in syllogistic terms, the minor premise.

Second, as alluded to, not all individuals subscribe to the same inference rules. Consequently, different individuals may draw highly divergent conclusions from the same salient piece of information, or cue. For instance, whereas Person A might believe that all doctors are intelligent, Person B may hold a more context-specific inference rule regarding doctors, believing that this applies only to those who have earned degrees from prestigious universities. Thus, for Person B, knowledge of the new neighbor’s occupation would not be sufficient to enable a judgment about her intelligence; instead, judgment would need to be reserved until more information (i.e., what institution the physician earned her degree from) was available. Moreover, Person C might hold no inference rule at all relating the profession of medical doctor to intelligence. For him, learning that the new neighbor is a surgeon would not prompt the formation of a judgment along the attribute dimension of intelligence.

The third point is that stereotypes, a major topic of interest to social cognition researchers, may be thought of as inference rules in which the individual’s social category (e.g., gender, age, race or profession) constitute the antecedent term and

the properties assumed to be tied to the category – the consequent. For instance, the stereotype of professors as absent minded can be expressed as a major premise whereby “if X is a professor, then X is absent minded.” Although not all inference rules are stereotypes, stereotypes represent a class of inference rules of great social import and, thus, a concrete example of the relevance of the present conceptualization of the knowledge formation process to the social realm.

BEYOND SUBJECTIVE LOGIC: FACTORS OF MOTIVATION AND ABILITY IN KNOWLEDGE FORMATION

Although, ultimately, the formation of knowledge is carried out via subjective logic, its application in specific contexts may depend on the individuals’ cognitive motivation and abilities. We consider these in turn.

Motivation

The process of knowledge formation involves the retrieval (activation) from memory of the pertinent inference rules (major premises), as well as gleaned from the ambient environment of information relevant to the rules (minor premises). This process may vary in difficulty across circumstances. Inference rules may vary in their strength, or the degree (or likelihood) that the antecedent X is believed to imply the consequent Y. For example, whereas one individual may believe that going more than 10 miles per hour over the speed limit is very likely to get you ticketed, another may believe such an outcome is far less likely to result from speeding of that magnitude. Furthermore, some inference rules may be more readily retrievable (e.g., more accessible) than others, and individuals may vary in their readiness to persist in the rule retrieval process in order to optimize their judgmental outcomes (i.e., to find the most reliable judgmental rule in the situation). Such readiness may depend on individuals’ degree of epistemic motivation: i.e., motivations relevant to the formation of knowledge. Some epistemic motivations are non-directional in that they do not bias the judgmental process toward the contents of any particular conclusion. The need for accuracy is non-directional, as is the need for cognitive closure (Kruglanski, 2004), or the need for cognition (Cacioppo & Petty, 1982). Other motivations are directional: the need for self-enhancement (e.g., Dunning, 1999; Kunda, 1990; Kunda & Sinclair, 1999; Murray & Holmes, 1999) is known

to bias judgments toward esteem-enhancing judgments; the need for control, toward judgments implying control, etc.

In all cases, the epistemic motivation affects the extent and selectivity of information processing en route to a judgment. For instance, a strong motivation for cognitive closure would arrest information processing on an early judgment, whereas a strong accuracy motivation would prolong the elaboration process and induce an extensive evaluation of numerous possibilities. A strong need for esteem would cut the process short where an esteem-promoting judgment was afforded, and would prolong the process where an esteem-undermining judgment seemed suggested, etc. (for discussions, see Kruglanski, 1980, 2004; Kruglanski, Pierro, Mannetti, & DeGrada, 2006; Kruglanski & Webster, 1986).

Cognitive capacity

The amount of effort individuals are prepared to invest in judgmentally relevant information processing should also depend on their attentional capacity: i.e., on the amount of cognitive resources they can bring to bear on the judgment-forming activity. Situationally, cognitive capacity is determined by concurrent cognitive tasks in which the individual is engaged (defining the amount of load imposed on this individual's cognitive system), and it is also affected by prior capacity-depleting activities (Baumeister et al., 2002; Kruglanski, 1989), or the place in the circadian cycle at which individuals find themselves (Pierro & Kruglanski, 2008). The extent of an individual's cognitive capacity should affect the amount of effort the individual is likely to invest in information processing. The lesser the capacity, the sooner the individual would be inclined to bring the elaboration process to a close and proceed to crystallize a firm judgment. Often, restricted cognitive capacity (stemming from an imposition of cognitive load, for example) may exert its effects through arousal of a motivation for cognitive closure – which, in turn, may curtail information processing as mentioned above. For instance, reduction of cognitive capacity via time pressure, noise, alcoholic intoxication, or a nadir in one's circadian cycle has been found to limit individuals' extent of information processing and increase the tendency to form judgments quickly, and on the basis of limited information (Kruglanski, 2004).

Cognitive ability

Distinct from cognitive capacity, which primarily has to do with the amount of attentional resources

at the individual's disposal, is the individual's ability to generate inference rules in a given domain and to detect information pertinent to those rules. In part, such ability may have to do with individuals' degree of expertise or sophistication in the domain, with the experts possessing a richer, more differentiated, and complex "arsenal" of available knowledge than the novices. In turn, the complexity of one's cognitive representations may determine one's facility with respect to informational elaboration and the ease of generating and applying inferential rules on a given topic.

As an interim summary, the lay epistemic theory posits a universal process through which knowledge is derived via the identification of "evidence" (the minor premise) pluggable into specific inference rules (the major premise) and the joint utilization of those premises toward the drawing of conclusions. Although this process is assumed to be fundamentally equivalent across individuals and judgments of different kinds, the content of the inference rules adhered to, and hence the determination of what constitutes evidence, can vary greatly inter-individually as well as situationally. Specifically, different rules can be primed, hence made accessible, in different situational contexts, and different individuals may have different rules chronically accessible to them (Higgins, 1996).

The utilization of inference rules in specific contexts may require considerable effort on the part of individuals. The readiness to expend the effort, in turn, depends on the magnitude of epistemic motivation that individuals bring to the knowledge formation context, and the cognitive capacity that they can apply to the knowledge formation process. Again, the motivational magnitude as well as type may be determined situationally and also vary across individuals, representing dimensions of individual differences.

In what follows, we use the foregoing organizational scheme suggested by the lay epistemic theory to review major individual difference variables in social cognition. We first review factors relevant to the inferential rules and application of the syllogistic logic in judgment formation. Subsequently, we review individual differences in cognitive ability and motivation.

INDIVIDUAL DIFFERENCES IN INFERENTIAL RULES: THE CONCEPT OF LAY THEORIES

People form new knowledge by applying their understandings of how different things hang together, and what the implicational relations are

among categories of events. In the preceding pages, we characterized those perceived relations as inferential rules of an “if-then” form. More traditionally in social cognition, such conceptual linkages in people’s minds have been characterized as lay theories. The notion of lay theories goes back to Heider’s (1958) “common-sense psychology” and his view of the average person as a naïve scientist, who actively works to make sense out of his world. To that end, people were assumed to construct “naïve theories” about how objects in their social world are related.

As discussed earlier, lay theories comprise inference rules; they function by providing individuals with expectations that help them interpret and make judgments about information they encounter in their social worlds. Because lay theories constitute beliefs about (implicational) relations between categories, they may differ considerably among cultures, groups, and individuals. Some lay theories have attracted more theoretical and empirical attention from psychological scientists than others. Below, we review lay theories related, respectively, to the nature of personal attributes, the deservedness of outcomes, and to ascriptions of epistemic authority.

The nature of personal attributes

Dweck and her colleagues (e.g., Dweck, 1999; Dweck, Hong, & Chiu, 1993; Dweck & Leggett, 1988; Hong, Chiu, & Dweck, 1995) have investigated individual differences in lay theories concerning the nature of personal attributes. Specifically, they have explored individual variability in assumptions about the fixedness of human attributes; these were assumed to be rooted in two competing lay theories, *entity theory* and *incremental theory*. Whereas entity theorists view human attributes as stable across times and contexts, incremental theorists view human traits as malleable and capable of changing as a function of learning.

Endorsement of entity versus incremental theories has implications for judgments about the self as well as others. Compared to incremental theorists, entity theorists are more prone to attribute personal academic failures and setbacks to their own intellectual inferiority (Henderson & Dweck, 1990). Relatedly, entity and incremental theorists differ in their responses to failure: incremental theorists are more likely to report that, in the face of failure, they would adopt new strategies or increase their level of effort, compared to entity theorists (Zhao & Dweck, 1994, cited in Dweck, 1999).

Compared to incremental theorists, entity theorists tend to draw stronger trait inferences from others’ behavior, anticipate greater consistency in trait-relevant behavior across situations, and are more confident in behavioral predictions based on information about a person’s traits (Chiu, Hong, & Dweck, 1997). The tendency of entity theorists to place greater emphasis on the role of stable traits in explaining behavior has been explored also in the context of judgments of guilt and innocence. In this context, Gervy, Chiu, Hong, and Dweck (1999) found that among participants who were asked to render a verdict in a fictitious murder trial, potentially trait-relevant information (e.g., the defendant’s attire at the time of the murder, intended to provide information about the defendant’s respectability, or lack thereof) had a substantially greater impact on the judgments of entity theorists relative to those of incremental theorists. Finally, entity theorists also appear to endorse ethnic stereotypes (of Blacks, Asians, Caucasians, Hispanics, and Jews) to a significantly greater extent than incremental theorists, despite comparable knowledge about the content of widely-held societal stereotypes associated with those groups (Levy, Stroessner, & Dweck, 1998).

The deservedness of outcomes

Belief in a just world

The just-world hypothesis (Lerner, 1965) states that “individuals have a need to believe that they live in a world where people generally get what they deserve” (Lerner & Miller, 1978, p. 1030), which allows them to see world as stable and orderly and, thus, predictable. One of the earliest tests of this hypothesis was conducted by Lerner and Simmons (1966). In this experiment, female participants watched a young woman participate in a “learning experiment” in which she was given electric shocks for every mistake she made (i.e., a negative reinforcement condition). In the next session, some participants were given the chance to vote to have the “victim” placed in an alternative positive reinforcement condition, in which she would be given money for correct answers rather than shocks for incorrect ones. Other participants were not given this opportunity to restore “justice.” When later asked to evaluate the victim’s attractiveness, participants in the unresolved injustice condition rated her less favorably (i.e., derogated her more) than participants who were able to place her in the positive reinforcement condition and learned that, in fact, the switch had been made. That is, when participants were confronted with an unresolved situation of injustice (an innocent person suffering), they appeared to

cognitively resolve it by devaluing the victim, thus making her fate more palatable. Participants for whom justice had been restored already, however, exhibited no such tendency.

Although early studies on the just-world hypothesis demonstrated that people generally have a need to view the world as one in which outcomes are just, the extent to which individuals subscribe to this view (i.e., their belief in a just world; Lerner, 1980) varies. Next, we will discuss some of the phenomena associated with individual differences in just-world belief (for a more extensive review, see Dalbert, 2009).

Consistent with Lerner and Simmons' early findings regarding victim derogation, evidence suggests that individuals with stronger just-world beliefs are more likely to blame rape victims (Sakalli-Uğurlu, Sila Yalçın, & Glick, 2007) and report that AIDS sufferers deserve their illness (Glennon & Joseph, 1993) compared to individuals with weaker just-world beliefs. The belief in a just world also appears to increase one's susceptibility to the halo effect. Specifically, in a study exploring the relationship between the belief in a just world and physical attractiveness stereotyping, participants with stronger beliefs in a just world rated an attractive male as possessing more socially desirable personality qualities and as more likely to have better life outcomes than an unattractive male (Dion & Dion, 1987).

In addition to perceiving greater congruence between the personal qualities and outcomes of others, individuals with stronger just-world beliefs also appear to view their own outcomes as more just (Dalbert, 2009). For example, Dalbert and Filke (2007) found that among male inmates at a German prison, those with strong just-world beliefs viewed their personal experiences and circumstances related to their imprisonment (e.g., the legal proceedings that resulted in their incarceration, their treatment by prison officials) as more just than inmates without strong just-world beliefs. Finally, in keeping with the general just-world notion that bad things happen to bad people and good things to good people, the belief in a just world appears to be negatively associated with perceptions of personal risk (Hafer, Bogaert, & McMullen, 2001), and positively associated with a sense of obligation to reciprocate a good deed (Edlund, Sagarin, & Johnson, 2007). (Dalbert, 2009).

Protestant work ethic

The Protestant work ethic (Weber, 1905/1958) centers on the belief that success is the reward for hard work, whereas poor outcomes reflect insufficient effort, and represent, therefore, just deserts.

Accordingly, individuals who strongly endorse the Protestant work ethic tend to view people as more responsible for their own outcomes (Christopher & Schlenker, 2005). For example, participants with a strong Protestant work ethic belief are more prone to make internal attributions for unemployment and are more opposed to welfare payments (Furnham, 1982). The association between the Protestant work ethic and a strong belief in people's personal responsibility for outcomes also explains Katz and Hass' (1988) finding that endorsement of the Protestant work ethic is positively associated with racial prejudice.

Of present interest, the Protestant work ethic does not appear to hold the same meaning for everyone. Whereas for White Americans, endorsement of this ethic generally serves to justify inequality, for Black and Latino Americans it assumes a more egalitarian meaning, suggesting that all members of society can achieve success (Levy, Ramirez, & Vellila, 2005, as cited in Levy, Chiu, & Hong, 2006). Moreover, there also appear to be age differences among White Americans, in that 10 and 15-year-olds are more likely to emphasize the egalitarian meaning, whereas older individuals tend to extract the inequality justifier meaning (Levy, West, Ramirez, & Karafantis, 2006).

Ascriptions of epistemic authority

Contrasted against Dweck's incremental and entitative theories, and Protestant work ethic and just-world beliefs, an altogether different type of lay theory concerns more generally what sources individuals turn to for information. Individuals differ in theories they hold about reliable sources of information: i.e., about whom or what constitutes a trusted epistemic authority (Kruglanski, 1989; Kruglanski et al., 2005). As do other lay theories, epistemic authority beliefs constitute "if-then" assertions about the validity attachable to given sources (i.e., "if Source X made statement Y, then statement Y is valid"). Epistemic authorities can be specific – for example, teachers, parents, religious authorities, government officials, and celebrities can constitute epistemic authorities for some individuals, and so can an individual's own self (referring to a self-ascribed epistemic authority). Epistemic authorities can be general, consisting not of a single person or entity (e.g., the *New York Times*) but a category or class such as an occupation, level of seniority, or level of education. An epistemic authority may be relied upon for guidance in numerous areas of a person's life, or may be influential only in a limited number of domains or even a single domain (e.g., a plumber or a dentist would likely be trusted as authorities in their

own areas of specialization) (Kruglanski et al., 2005).

Individuals differ in the degree to which they ascribe epistemic authority to different sources. For some people, religious leaders (e.g., the Pope) may serve as important epistemic authorities, whereas, for others, religious leaders may wield little epistemic authority. Such individual differences in the distribution of ascribed epistemic authority across various sources are assumed to arise from different socialization histories (Kruglanski et al., 2005), and have important implications for differences in people's judgments in similar situations.

Not surprisingly, individuals appear to rely on information from dominant epistemic authorities to a greater extent than on information from less-trusted sources. For example, Bar (1999; cited in Kruglanski et al., 2005) found that participants sought out information from dominant epistemic authorities first, spent more time examining this information than information from other sources, and were more confident in judgments they made based upon recommendations from these dominant epistemic authorities.

The self can also serve as an important epistemic authority. Accordingly, individuals with higher self-ascribed epistemic authority in a particular domain tend to seek out less external information in that domain. Moreover, this tendency is moderated by the need for cognitive closure, such that among individuals with a low self-ascribed epistemic authority in the specific domain of interest, the higher the need for cognitive closure, the stronger their tendency to seek out external information, whereas among individuals with a high self-ascribed epistemic authority, the higher their need for closure, the lower their tendency to seek out external information (Pierro & Mannetti, 2004; cited in Kruglanski et al., 2005). Individuals with higher self-ascribed epistemic authority are also better at discriminating between information that is relevant versus irrelevant to their decision (ibid.), and appear to learn more from personal experience, presumably because they place more trust in their own interpretations of their experiences, treating these as valid sources of evidence.

INDIVIDUAL DIFFERENCES IN COGNITIVE ABILITY AND COMPLEXITY

Having covered individual differences manifested in the content of lay theories, we now turn to a second class of individual difference factors – cognitive ability (i.e., working memory capacity

and ability to achieve structure) and cognitive sophistication (i.e., a person's cognitive complexity, schematicity, and expertise in a domain) – that affect the sense-making process. These dimensions of individual differences affect the most basic levels of information processing and are, therefore, highly consequential for a variety of socio-cognitive processes and outcomes.

Cognitive ability

Working memory capacity

Working memory capacity has been defined as “the capacity for controlled, sustained attention in the face of interference or distraction” (Engle, Kane, & Tuholski, 1999, p. 104). Although working memory can be assessed in a variety of ways (see, e.g., Oberauer, 2005), it is typically measured using “span” tasks that require participants to remember information (e.g., numbers) presented to them during a complex secondary processing task. In these conditions, an individual's working memory capacity is assessed in terms of the number of correctly recalled memory items. For example, the operation span task (Turner & Engle, 1989) has participants perform a string of arithmetic operations – e.g., $(6 \times 2) - 3 = 10$ (yes/no) – each of which is paired with a word (e.g., “Fish”) that serves as the memory item the participant must later recall. Individual differences in cognitive capacity have particularly consequential implications where requirements for controlled, elaborative processing are high (see also, Barrett, Tugade, & Engle, 2004).

As can be expected, individuals' working memory capacity may vary across situational circumstances. Individuals preoccupied with various concerns may have a more limited capacity at their disposal than others not similarly encumbered. Alert individuals may have greater working memory capacity than these people when drowsy, mentally fatigued or at the nadir of their circadian cycle. Of greater present interest are stable individual differences in working memory capacity. One phenomenon where this has been demonstrated is the suppression of unwanted thoughts. The “white bear” effect (Wegner, Schneider, Carter, & White, 1987) describes a phenomenon wherein asking participants to suppress thoughts of a particular kind (in this case, a white bear) actually leads to increased accessibility of the construct. Utilizing this classic paradigm, Brewin and Beaton (2002) showed that, compared to participants with low working memory capacity, those with a high stable degree of such capacity were significantly better able to suppress thoughts of a white bear when instructed to do so. The superior

ability of individuals with higher working memory capacity to suppress unwanted thoughts has important implications for mental well-being, as higher working memory capacity is apparently related to the suppression of anxious autobiographical memories (Geraerts, Merckelbach, Jelicic, & Habets, 2007) and of other unwanted thoughts of various kinds (Brewin & Smart, 2005).

Apart from keeping unwanted thoughts from entering consciousness, working memory capacity may enable keeping desired thoughts active in consciousness; this conclusion was suggested by McVay and Kane's (2009) finding that working memory capacity is negatively related to goal neglect. Specifically, participants with lower working memory capacity experienced a greater number of goal-neglect failures on a sustained attention to response task, and this relationship was partially mediated by mind-wandering (i.e., a reduced ability to control conscious thought).

Individual differences in working memory capacity are also associated with variation in the recall of memories. Specifically, lower working memory capacity is associated with overgeneralized autobiographical memory – i.e., a greater number of categorical autobiographical memories relative to specific autobiographical memories (Ros, Latorre, & Serrano, 2010) – as well as with false-memory recall (Gerrie & Garry, 2007; Jaschinski & Wentura, 2002). This latter finding holds important implications for real-world situations such as court cases involving eyewitness testimony (Jaschinski & Wentura, 2002).

Individual differences in working memory capacity also appear to affect people's ability to bias their judgments in a motivationally desirable direction, as illustrated by a study by Chen (2009). Participants in their research were University of Maryland (UMD) students who received information about a series of track and field competitions between Duke and UMD. This information, if considered carefully, ultimately favored Duke. However, its sheer processing (i.e., the sheer comprehension of the facts) required considerable capacity, so that little capacity was left for effecting the motivational distortion. As a consequence, individuals with high working memory capacity were able to bend the facts in their desirable direction and concluded that UMD was the winner after all. In contrast, individuals with low working memory capacity did not have a sufficient cognitive ability to distort the information and thus reached the (correct!) conclusion that UMD was inferior to Duke across a greater number of different athletic events.

Individual differences in working memory capacity may also affect moral judgments. Moore, Clark, and Kane (2008) presented participants

with variants of the classic moral dilemma of killing one person to save several others. Participants read a series of vignettes in which they were to imagine themselves as the protagonist confronting a tough moral choice and were asked, for each scenario, to judge the appropriateness of sacrificing the life of one person to save the lives of multiple others. The vignettes differed from each other in (a) whether the act of killing was impersonal (e.g., activating a system that eliminates oxygen from a hall in a burning building) or personal (e.g., using the body of an injured man as a battering-ram to break through burning blockage preventing the escape of others), and (b) whether the death of the person to be sacrificed was inevitable or not. Participants with high (vs low) working memory capacity deemed personally killing someone whose death was inevitable to be more acceptable. Thus, working memory capacity appears to be implicated in moral rationalization, such that individuals with high working memory capacity are better able to justify killing one person to save others when the person killed is already "slated" to die.

Finally, individual differences in working memory capacity have been implicated in probability judgments, judgments which involve simultaneously comparing a focal hypothesis with its alternatives, thus requiring one to hold considerable information active in working memory (Sprenger & Dougherty, 2006). Specifically, the accuracy of probability judgments is negatively correlated with working memory capacity. This deficiency in probability judgments associated with lower working memory capacity may have important consequences for individuals' everyday lives. For example, given that goal striving is in part a function of the expectancy of goal attainment (i.e., a probability judgment), individuals low in working memory capacity may inefficiently appropriate their motivational resources based on erroneous assessments of the likelihood of attaining their various goals. That is, inaccurate expectancy estimates might lead individuals with lower working memory to chase goals whose true probability of attainment does not warrant their pursuit, while neglecting goals that are more likely to be attained. Similarly, inaccurate estimates of the relative instrumentality of different means to a goal might lead one to adopt a suboptimal strategy in the pursuit of that goal.

Ability to achieve cognitive structure

There are situations in which the individual may desire certainty, and the comfort of assured knowledge, whereas in other situations certainty and assurance may be less desirable. The need for cognitive closure or structure (Kruglanski &

Freund, 1983; Kruglanski, 1989, 2004),¹ discussed in detail later, represents a psychological construct expressing the magnitude of such desire that may vary across situations. Yet situations may also vary in the difficulty of attaining closure. For instance, closure may be difficult to attain where the individual receives a considerable amount of inconsistent information on a topic, or is cognitively busy, and hence less capable of “connecting the dots” and piecing together a coherent belief from seemingly disparate bits of available information. Both the desire for closure/structure and the ability to attain it have been studied as dimensions of individual differences as well. In this vein, Yoram Bar-Tal et al. (1997) defined the ability to achieve cognitive structure as the “extent to which individuals are able to use information-processing strategies (cognitive structuring or piecemeal) consistent with the level of their need for structure” (p. 1158). Bar-Tal and his colleagues have explored the interactive effects of individual differences in the ability to achieve cognitive structure and the motivation to do so (i.e., the need for cognitive structure or closure) on cognitive structuring outcomes.

Specifically, Bar-Tal has proposed that the need for cognitive structure should affect judgment only insofar as individuals are capable of achieving the level of structure they desire (i.e., their ability to achieve cognitive structure) and that, likewise, the ability to achieve cognitive structure should influence judgmental outcomes only among individuals who desire cognitive structure (i.e., those who are high in need for cognitive closure). In other words, for individuals low in the need for cognitive structure, the ability to achieve cognitive structure should be irrelevant because they are unmotivated to strive for structure in the first place; and for individuals low in the ability to achieve cognitive structure, the need for cognitive structure should be irrelevant because they are unable to achieve cognitive structure regardless of its perceived desirability. Building upon this idea, Bar-Tal (1994; with Kishon-Rabin & Tabak, 1997) has investigated the joint effects of the ability to achieve cognitive structure and the need for cognitive structure on a number of decisional outcomes. Specifically, in a series of five studies, Bar-Tal, Kishon-Rabin, and Tabak (1997) demonstrated that the ability to achieve cognitive structure and the need for cognitive structure jointly determine cognitive structuring behavior, just as these authors hypothesized.

One way in which cognitive structure can be achieved is through the filtering of schema-inconsistent and schema-irrelevant information. In this vein, Bar-Tal et al. (1997) found that the need for cognitive structure was associated with the recruitment of such structuring strategies only

when the ability to achieve cognitive structure was high. For participants low in that ability, the need for cognitive structure, as such, did not affect these individuals’ cognitive structuring behavior.

A different strategy for achieving cognitive structure is the use of simplified generalizations and abstract (vs concrete) category labels, as these imply greater stability (and, thus, greater certainty) across both times and situations (for a review, see Kruglanski, 2004). Pertinent to this phenomenon, Bar-Tal and his colleagues (1997) found that high need for cognitive structure participants exhibited greater global (vs situation-specific) self-attributions and evinced lesser variability in their ratings of both an individual and a group (Palestinians) across multiple dimensions (implying non-specific, generalized conceptualizations), but only when their ability to achieve cognitive structure was high. This tendency for high need for cognitive closure individuals to rely on generalized and abstract knowledge structures when able to do so (i.e., when their ability to achieve cognitive structure is high) is consistent with the finding that the need for cognitive structure/closure is positively related to stereotypical thinking (a form of cognitive structuring) only for individuals who are high in the ability to achieve cognitive structure (Bar-Tal, 1991; cited in Bar-Tal, 1994).

Bar-Tal (1994) also explored the joint effect of the ability to achieve cognitive structure and the need for cognitive structure/closure on coping with decision-making in conflicted situations, which he regarded as a specific instantiation of psychological uncertainty. In the face of uncertainty, individuals who were both motivated (those high in the need for cognitive structure who experienced heightened levels of discomfort from the uncertainty) and able to structure the situation so as to reach decisional closure more quickly did so, and also reported the least amount of difficulty in making their decision.

Cognitive complexity

Situationally given information may contain elements that are more or less clearly differentiated; furthermore, those elements may operate together to a lesser or greater extent, and hence be more or less integrated in performing an overall function. The elements of differentiation and integration appear as twin dimensions of an individual-difference variable known as “cognitive complexity.” Thus, a cognitively complex individual will differentiate between a large number of cognitive elements and have well-developed representations of the interrelations between them, whereas

a cognitively non-complex individual will distinguish between few cognitive elements and lack a clear conceptualization of their interrelatedness.

Although cognitive complexity has been measured in a variety of ways, the two popular methods of its assessment are:

- (a) variations of Scott's (1962) Object-Sorting Test, in which participants are either provided with or asked to generate themselves a number of objects (e.g., countries) and group them in as many ways (i.e., along as many dimensions) as possible, and
- (b) the Paragraph Completion Test (Schroder, Driver, & Streufert, 1967), in which participants are asked to complete sentence stems about various topics. Tetlock (e.g., 1984, 1985, 1988) has also used the Paragraph Completion Test scale with archival data (e.g., speeches, interviews) in order to assess the complexity of high-profile political actors.

Cognitive complexity is implicated in judgment in a number of different ways. For instance, it is associated with the extremity of judgments rendered about others. Specifically, individuals low in cognitive complexity generate more extreme ratings of target persons than individuals high in complexity (Frauenfelder, 1974), and college males with relatively complex (vs non-complex) representations of older males have been found to evaluate older male targets more extremely in both positive and negative directions (Linville, 1982). In a related vein, cognitive complexity is also associated with individual differences in in-group and out-group perceptions such that, compared to participants low in cognitive complexity, those high in complexity perceive greater variability within both in-groups and out-groups and, consistent with the previously discussed findings, form less extreme evaluations of in-groups and out-groups (Ben-Ari, Kedem, & Levy-Weiner, 1992).

Cognitive complexity has also been implicated in judgments about the self. It is related to greater confidence in self-evaluative judgments (Adams-Webber, 2003), and appears to moderate the relationship between global self-evaluation and self-reported depression, such that the relationship is attenuated for individuals higher in cognitive complexity (Gara, Woolfolk, & Allen, 2002). Linville (1985, 1987) extended the cognitive complexity construct to the domain of self more explicitly with the concept of "self-complexity," defined as "the number of aspects that one uses to cognitively organize knowledge about the self, and the degree of relatedness of these aspects" to one another (Linville, 1985, p. 97). Her research suggests that self-complexity serves to buffer

individuals from the adverse effects of stress such as depression and illness (but see Rafaeli-Mor & Steinberg, 2002, for a challenging viewpoint and review of the literature). It is possible to view these results in terms of substitutability of different means to the goal of positive self-regard. The highly self-complex individuals have multiple such means (corresponding to the large number of self-dimensions that they distinguish), and hence the failure of endeavors regarding one of the aspects can be compensated for by pursuit of one or more of the remaining aspects.

Beginning in the 1980s, implications of cognitive complexity for the political domain – specifically, the notion of a relationship between cognitive complexity and ideological orientation – began to attract the attention of various researchers. Tetlock's (1986) value pluralism model proposes that greater cognitive complexity will be engendered by pluralistic ideologies in which core values are often in conflict with each other, compared to monistic ideologies in which only one value, or a set of values that are highly congruent with each other, are viewed as important. Furthermore, Tetlock (1993) has argued that the center-left position on the ideological spectrum inherently creates the highest levels of value conflict because it places considerable value on both freedom and equality, two values that often are in conflict when it comes to public policy initiatives. In this view, therefore, moderate liberals should exhibit the highest levels of cognitive complexity, while ideological extremists, for whom one value presumably trumps all others, should be the least cognitively complex. Alternatively, Sidanius' (e.g., 1984) context theory proposes that extremists at both ends of the political spectrum will actually be the most politically sophisticated, and thus exhibit greater levels of cognitive complexity than individuals closer to the ideological center.

Evidence supporting both theories has been mixed, with Tetlock (1984, 1986) providing empirical evidence in support of the value pluralism model and Sidanius (1988) providing empirical evidence in support of context theory (Van Hiel & Mervielde, 2003). Van Hiel and Mervielde (2003) have suggested that one explanation for these inconsistent findings might be grounded in methodology. Specifically, they point out that whereas Tetlock's work has been primarily conducted via content analysis of archival data (e.g., speeches) from political elites, Sidanius' has been based on Swedish student samples using Sidanius' (1978) political prediction task, in which participants predict the likelihood of political outcomes (e.g., rioting) from provided information, as a measure of cognitive complexity. In their own investigation into the complexity-ideology relationship, Van Hiel and Mervielde found greater support, across

multiple samples and operationalizations of cognitive complexity, for the positive relationship between political extremism and cognitive complexity hypothesized by Sidanius.

Schematicity

Another way that individuals can differ in cognitive sophistication is in the extent to which they engage in the schematic processing of information within a given domain. Bem's (1981) gender schema theory posits that sex-typed individuals are more likely than their non-sex-typed (e.g., androgynous) counterparts to engage in gender-schematic processing, in which gender information (about the self as well as others) is encoded and organized simplistically, along the sole dimension of masculinity/femininity. Gender-schematic individuals (as assessed via Bem's Sex Role Inventory) are more likely to stereotype sports as masculine or feminine (Koivula, 1995) and confuse individuals belonging to the same gender group (Frable & Bem, 1985), and gender-schematic males are more likely to sexually objectify women following exposure to pornographic stimuli (McKenzie-Mohr & Zanna, 1990). In addition to gender schematicity, race schematicity (e.g., Levy, 2000), physical appearance schematicity (e.g., Hargreaves & Tiggemann, 2002), and self-monitoring schematicity (e.g., Mellema & Bassilli, 1995) have also been investigated.

INDIVIDUAL DIFFERENCES IN MOTIVATED COGNITION

The view of the thinker in social cognition research has changed considerably throughout the history of social psychology (Fiske & Taylor, 2007). Among the most notable developments has been the growing recognition of the profound role that motivational forces can play in cognitive processes. Below, as a third and final class of factors discussed in this chapter we will review some prominent examples of such motivational constructs in social cognition research in particular reference to individual variation on the dimensions these constructs represent.

The need for cognition

The need for cognition (Cacioppo & Petty, 1982) is an individual-difference variable defined as a "tendency to engage in and enjoy thinking" (p. 130). Individuals may occupy varying locations along a need for cognition continuum that

spans from cognitive misers to intensive cognizers (Cacioppo, Petty, Feinstein, & Jarvis, 1996). Thus, although situational factors may affect the extent to which individuals are willing to engage in effortful cognition, the need for cognition has been conceptualized and assessed as a dimension of stable individual differences.

The need for cognition is associated with a variety of processes and outcomes relevant to judgment (for a review, see Cacioppo et al., 1996). Because it describes a tendency toward, and the enjoyment of, thinking, the need for cognition is positively associated with the seeking out and processing of information. Indeed, there is evidence that individuals high in the need for cognition engage in more extensive information search when tasked with making a decision (Verplanken, Hazenberg, & Palenewen, 1992) and appear to process information more thoroughly; the latter has been demonstrated by the finding that, in the realm of persuasion, argument quality has a greater impact on message evaluations, source impressions, and, ultimately, attitudes for individuals high in the need for cognition (Cacioppo, Petty, & Morris, 1983). Furthermore, for individuals high (vs low) in the need for cognition, attitude change effected by a persuasive message persists longer and is more resistant to counter-attitudinal influences (Haugtvedt & Petty, 1992).

The need for cognition also appears to reduce one's susceptibility to a number of judgmental biases, primarily those that stem from insufficient information processing. Specifically, individuals high in the need for cognition are less susceptible to the correspondence bias (i.e., the tendency to overemphasize the role of internal factors when explaining an individual's behavior to the neglect of external factors; D'Agostino & Fincher-Kiefer, 1992), the attractiveness bias (i.e., the tendency to believe attractive people also possess other desirable traits; Perlini & Hansen, 2001), and primacy (Ahlering & Parker, 1989) and framing effects (Smith & Levin, 1996), presumably because their propensity to engage in a greater amount of thinking allows them to correct, at least in part, for the biasing processes involved. Moreover, when forming impressions of others, individuals high in the need for cognition tend to engage more in explanatory thinking (Lassiter, Briggs, & Slaw, 1991) and appear to be less prone to forming expectancy-consistent impressions than their low need for cognition counterparts (Dudley & Harris, 2003). In the same vein, the judgments of individuals low in the need for cognition are more heavily influenced by stereotypes, presumably because they require lesser cognitive effort (Crawford & Skowronski, 1998).

However, although relative to their low need for cognition counterparts, individuals high in the

need for cognition seem to enjoy a number of advantages in rendering unbiased judgments, Cacioppo et al. (1996) have emphasized that this need not always be the case. Rather, the need for cognition may in some circumstances actually promote biased judgments, insofar as the process of engaging in more thought leads to more opportunity for that thought to be influenced by biasing factors such as mood (Petty, Schumann, Richman, & Strathman, 1993) and priming effects (Petty & Jarvis, 1996).

In addition to the foregoing implications of the need for cognition for a variety of general cognitive processes, the need for cognition is also associated with a number of content-specific judgments. For one, individuals high (vs low) in the need for cognition are less supportive of punitive measures toward criminals, a relationship apparently mediated by greater attributional complexity of individuals high in the need for cognition (Sargent, 2004). However, this relationship is moderated by authoritarianism, such that, for individuals high in right-wing authoritarianism (RWA) or social dominance orientation (SDO), the need for cognition is associated with increased support for punitive measures and dispositional attributions of crimes, and reduced support for the rehabilitation of criminals (Tam, Leung, & Chiu, 2008). Similarly, although the need for cognition has been shown to be generally negatively associated with racial prejudice (Waller, 1993), it has been shown to predict increased rationalization of a racially discriminatory practice (the failure of a White taxi driver to pick up a Black man) in participants who held strong anti-Black attitudes (Khan & Lambert, 2001). Thus, although the need for cognition is generally associated with reduced levels of punitiveness and racial prejudice, strongly held orientations (i.e., SDO and RWA orientations, and anti-Black attitudes) appear to not merely negate but actually reverse this effect. This shouldn't be too surprising: After all, high need for cognition has implications only for the extent of processing, not for its content. Thus, the content of judgment finally reached should depend heavily on the sequencing of informational contents. Where a given piece of information comes early in the sequence and its opposite later in the sequence, low need for cognition may favor the early information and high need for cognition the later information, whatever the contents of the early and later information might be.

The need for cognitive closure

A motivational variable heavily implicated in sense making and the construction of subjective

knowledge is the need for cognitive closure (Kruglanski, 1989), which describes a desire for a definitive answer to a question (i.e., "closure"), as opposed to prolonged uncertainty, confusion, or ambiguity. The need for cognitive closure is conceptualized as containing the dual tendencies of urgency and permanency; these are assumed to work in concert to provide and maintain cognitive closure, and ward off a lack of closure. Whereas the urgency tendency promotes "seizing" upon early information, allowing the individual to render an immediate judgment and thus obtain closure quickly, the permanency tendency promotes "freezing" upon the resulting judgment such that the obtained closure is maintained (Webster, 1993).

The need for cognitive closure may appear to be closely, and negatively, related to the need for cognition. However, these two needs should not be thought of as simply opposite ends of a single bipolar dimension. Empirically, although the need for cognition and the need for cognitive closure are correlated, the magnitude of the correlation is modest – e.g., Webster and Kruglanski (1994) found a correlation of only -0.24 between the two measures – inconsistent with the notion of a single latent construct underlying these two motivational forces. More importantly, the two constructs differ conceptually: whereas the need for cognition emphasizes the cognitive process (i.e., the act of engaging in cognitive endeavors), the need for closure emphasizes a desired outcome, i.e., a goal of that process (closure). Put differently, the need for cognition defines the cognitive process as an *end in itself*, whereas the need for closure defines it as a *means to an end*.

As has been typically the case with the presently reviewed variables, the need for cognitive closure may vary as function of the situation and the person. Indeed, empirical findings based on situational and dispositional operationalizations of the need for cognitive closure have been found to consistently converge (for reviews, see Kruglanski, 2004; Kruglanski & Fishman, 2009).

Individual differences in the need for cognitive closure are implicated in judgment in a number of ways. Individuals who are high (vs low) in the need for cognitive closure search for less information (Mayseless & Kruglanski, 1987; Webster, Richter, & Kruglanski, 1996) and generate fewer alternative hypotheses before forming a crystallized judgment (Mayseless & Kruglanski, 1987). Ironically, however, they are subjectively more confident in their decisions than their low need for cognitive closure counterparts (e.g., Kruglanski, Webster, & Klem, 1993), perhaps because they are less cognizant of alternative judgmental possibilities (Kruglanski & Fishman, 2009).

Unsurprisingly, given their predisposition toward quick “seizing” upon information that allows them to reach closure, individuals high in the need for cognitive closure demonstrate a heightened susceptibility to primacy effects in impression formation (Webster & Kruglanski, 1994) when the impression formation goal is introduced prior to the presentation of information, but are more prone to recency effects when the impression formation goal is introduced only after exposure to the pertinent information (Richter & Kruglanski, 1999). The need for cognitive closure is also associated with an increased reliance on stereotypes (Dijksterhuis, van Knippenberg, Kruglanski, & Schaper, 1996; Kruglanski & Freund, 1983), an augmentation of the correspondence bias (Webster, 1993), and a reduced ability to take the perspective of and feel empathy for a dissimilar target (Webster-Nelson, Klein, & Irvin, 2003); presumably all these phenomena arise from the curtailment of cognitive exertion that accompanies a drive toward closure.

Of special social psychological interest, the need for cognitive closure plays a significant role in intergroup evaluative and perceptual phenomena. For one, need for cognitive closure is associated with greater in-group liking. In a study by Shah, Kruglanski, and Thompson (1998), participants were provided with information about fictional individuals, who they expected to be either their partners or their competitors in a future task. Compared to participants low in the need for cognitive closure, those high in the need for cognitive closure reported more liking for their own “teammates” and less liking for presumed members of the other teams. A heightened need for cognitive closure is also associated with greater linguistic intergroup bias (Webster, Kruglanski, & Pattison, 1997), in that it increases the extent to which positive in-group behaviors and negative out-group behaviors are described in abstract terms, thereby implying stable, fundamental traits. Generally speaking, the need for closure may lead to greater “group centrism” (Kruglanski, Pierro, Mannetti, & DeGrada, 2006), a tendency that manifests itself in greater striving for group uniformity, greater intolerance of opinion deviancy and diversity, and a tendency to prefer autocratic, hierarchical, group decision-making structures that increase the likelihood of a quick arrival at consensual closure and a firm shared reality.

Preference for consistency

An assumption underlying much early social psychological theorizing – e.g., Festinger’s

(1957) cognitive dissonance theory, or Heider’s (1958) cognitive balance theory – is that maintaining consistency among one’s cognitions constitutes a driving human motivation. In attempting to account for why, despite the richness of these consistency theories, empirical evidence demonstrating such effects could be difficult to produce, Cialdini, Trost, and Newsom (1995) proposed that there might exist individual differences in the extent to which people place a premium on cognitive consistency. In turn, these differences were assumed to have considerable implications for a number of seminal social psychological theories predicated on the notion of a universal human need for consistency.

To test these ideas, Cialdini et al. (1995) developed the preference for consistency scale. Research conducted with this instrument found that individuals did, in fact, differ in their preference for consistency and, more importantly, that these differences significantly moderated two classic consistency-related phenomena – cognitive balance and cognitive dissonance – such that individuals with a low preference for consistency did not exhibit classic cognitive balance and dissonance effects. These findings support the notion that, contrary to the traditional view of cognitive consistency as a universal human need, or drive, consistency is merely a means of knowledge construction (consistent cognitions validating a knowledge structure, and inconsistent ones undermining it) rather than an end in itself. In cases where such knowledge is desirable, consistency would be preferred over inconsistency; however, where the knowledge was aversive, or had negative implications for one’s well-being, inconsistency that undermined such negative knowledge would be welcome and much preferred over consistency that supports it (for a discussion, see Kruglanski & Shteynberg, in press).

Regulatory focus

An important example of the motivation–cognition interplay is represented in Higgins’ (1997) theory of regulatory focus. According to this theory, a useful distinction can be made between two types of basic human needs – promotion needs, concerned with advancement, growth, and accomplishment, and prevention needs, concerned with protection, safety, and responsibility (Higgins, 1997).

Higgins proposed that these different regulatory foci give rise to divergent modes of goal pursuit: namely, with a promotion regulatory focus, people are attuned to the presence and absence of gains and the pursuit of “ideals,” whereas with a prevention regulatory focus, people

are attuned to the presence and absence of losses and the pursuit of “oughts.” These different mindsets have a wide array of implications for social cognitive processes and outcomes (Molden, Lee, & Higgins, 2008).

As with the need for cognitive closure, the magnitude of prevention and promotion orientations is assumed to vary both as a function of the person and of the situation. Concerning a situational induction, a promotion motivation is activated by, among other things, gain-focused incentives, growth needs, independence concerns, and ideal self-standards. The prevention motivation, on the other hand, is activated by, among other things, loss-focused incentives, security needs, interdependence concerns, and ought self-standards. These same factors that can lead to variation as a function of situational factors are also thought to foster the development of stable inter-individual differences in regulatory focus, insofar as they lead to the chronic activation of promotion or prevention needs (Molden, Lee, & Higgins, 2008).

Promotion and prevention needs have been implicated in judgment in a number of different ways. Compared to promotion-focused individuals, prevention-focused individuals generate fewer hypotheses (i.e., better to miss being right than risk being wrong; Molden, Lee, & Higgins, 2008) when making a decision and, as a result, make more certain predictions about others' future behavior (Liberman, Molden, Idson, & Higgins, 2001). The regulatory foci also engender differential sensitivities to certain kinds of information. Specifically, prevention-focused individuals are more sensitive to information regarding security and loss, whereas promotion-focused individuals are more sensitive to information regarding advancement and gains. For example, Markman, Baldwin, and Maddox (2005) found that promotion-focused participants performed best on a classification task when payoffs were structured in terms of gains, whereas prevention-focused participants performed more optimally when the payoffs were structured in terms of losses. The different regulatory foci also have implications for goal commitment insofar as they affect the importance placed on the perceived expectancy of attaining the goal, as demonstrated by Shah and Higgins (1997). Whereas promotion-focused individuals exhibited the classic maximized utility (expectancy \times value) effect for goal commitment, for prevention-focused individuals, as the value of the goal increased (and, presumably, prevention-focused individuals began to view it as a necessity), its perceived expectancy carried less weight in determining goal commitment.

Finally, prevention and promotion concerns have also been implicated in intergroup phenomena such

as intergroup bias. Across a series of studies, Shah, Brazy, and Higgins (2004) found that a promotion focus was positively related to in-group bias (e.g., cheerfulness and approach-related behaviors toward in-group members), whereas a prevention focus was positively related to out-group bias (e.g., agitation and avoidance-related behaviors toward out-group members).

Regulatory mode

Regulatory mode theory (Higgins et al., 2003; Kruglanski et al., 2000) posits the existence of two largely orthogonal core components of self-regulation – locomotion and assessment – that jointly enable goal pursuit. Locomotion refers to the act of moving either toward or away from an end state (i.e., goal) and, more importantly, away from a current state. A locomotion mindset is associated with, among other things, commitment to prompt action, an achievement orientation, the ability to stay focused on a task, psychological vitality or energy, and conscientiousness. Assessment, on the other hand, refers to the act of comparing one object (e.g., a present state) to another (e.g., a desired end state, or goal). An assessment mindset is associated with, among other things, a fear of invalidity, discomfort with ambiguity, public and private self-consciousness, a mastery orientation, and neuroticism. (Kruglanski et al., 2000).

Similar to regulatory focus theory, regulatory mode theory assumes that the magnitude of an individual's orientation toward each mode can vary as a function of situational features, and can also represent relatively stable individual differences that arise from both temperament and socialization factors (Higgins, Kruglanski, & Pierro, 2003). Locomotion and assessment are implicated in judgment in a number of ways. Below we review empirical findings regarding each mode individually, followed by a discussion of outcomes related to their joint operation.

Because individuals higher in an assessment orientation are more heavily influenced by social norms, or by a concern with doing the “right” thing (Pierro, Mannetti, Higgins, & Kruglanski, 2002), it is not surprising that assessment is negatively correlated with self-esteem and optimism, and positively correlated with social anxiety, depression (Kruglanski et al., 2000), counterfactual thinking, and regret (Pierro et al., 2008). Assessment also has direct implications for goal pursuit. For example, Kruglanski and his colleagues (2000) asked college students to list five personal attributes they wanted to attain (i.e., goals), the perceived value and attainability of each goal, and an unspecified number of means

for each goal. Participants' assessment scores were positively associated with goal value (but not goal attainability) and the number of means generated per goal (but not the speed with which the means were generated).

In contrast to the assessment orientation's emphasis on comparison and deliberation, a heightened locomotion orientation reflects a concern with simply moving from one state to another, or doing something just to be doing anything. Locomotion is positively correlated with self-esteem and optimism, and negatively correlated with social anxiety, depression (Kruglanski et al., 2000), counterfactual thinking, and regret (Pierro et al., 2008). And, regarding goal pursuit, locomotion is positively related to the expectancy of goal attainment (but not goal evaluation) and the speed with which means to a given goal are generated (but not the overall quantity of means generated) (Kruglanski et al., 2000).

Arguably, the most illuminating empirical findings regarding the locomotion and assessment modes have to do with their concurrent, as compared to their isolated, operation. Specifically, the quality of self-regulatory outcomes appear to be contingent on the joint operation of locomotion and assessment, with individuals relatively high in both outperforming individuals high on one but not the other, or low on both. Kruglanski et al. (2000) found that both undergraduates' academic achievement (as assessed via grade point average) and soldiers' successful completion of elite military training were the greatest among those high in both locomotion and assessment. The benefit of locomotion and assessment operating jointly appears to extend to group composition, as well, such that groups composed of equal numbers of individuals high on assessment and on locomotion orientations outperform groups composed of high assessors only and high locomotors only (Mauro, Pierro, Kruglanski, & Higgins, 2009).

It may be well at this juncture to differentiate between the assessment and locomotion mode distinction and the delineation between deliberative and implemental mindsets (e.g., Gollwitzer, 1990). At first blush one might presume that the terms are redundant; specifically, that the assessment component of goal pursuit corresponds with the deliberative phase of self-regulation, whereas the locomotion phase corresponds with the implemental phase. However, both locomotion and assessment concerns are implicated in deliberative and implemental mindsets. That is, deliberation is concerned with the comparison and evaluation of multiple goals, whereas implementation is concerned with the comparison and evaluation of multiple means; therefore, both processes necessarily entail assessment. Moreover,

both the deliberation and implementation phases of self-regulation must be set in motion, which necessarily requires locomotion. Thus, the locomotion and assessment modes of goal pursuit are neither redundant nor extraneous to the implemental and deliberative phases of self-regulation; rather, they are implicated in both, albeit perhaps to differing degrees. (cf. Higgins et al., 2003).

INTERRELATIONS BETWEEN COGNITIVE CAPACITY/SOPHISTICATED, MOTIVATION, AND LAY THEORIES

Though we discussed them separately, the three classes of individual difference factors discussed in this chapter – cognitive capacity and sophistication, motivation, and lay theories – often operate jointly rather than in isolation from one another. We have already discussed a few ways in which these three classes of factors may interrelate. Here we recapitulate those examples and add a few additional ones.

As discussed previously, Bar-Tal (1994; with Kishon-Rabin & Tabak, 1997) has shown that the effect of the need for cognitive closure/structure on cognitive structuring outcomes is dependent upon the individual's ability to achieve the desired structure, such that for an individual low in the ability to achieve cognitive structure, the need for cognitive closure/structure has little effect on information processing. In this case then, motivation and ability interact to determine the outcomes of cognitive structuring.

In some instances, cognitive capacity and motivation might be causally related to each other. In this vein, Kossowska, Orehek, and Kruglanski (2010) investigated the possibility that dispositional need for cognitive closure may at least partially result from aspects of working memory capacity. That is, they hypothesized that for individuals with lower working memory capacity, the reduced ability to handle large amounts of information in their environments may engender a high need for cognitive closure. Although the correlational nature of their research makes it difficult to definitively prove the existence or direction of a causal relationship, Kossowska et al. did find that working memory capacity was inversely associated to the need for cognitive closure, consistent with their hypothesis.

Illustrating the inverse trend, Tetlock's (1986) value pluralism theory proposes that cognitive sophistication may be driven by motivational concerns. Specifically, value pluralism theory posits that cognitive complexity in the sociopolitical

realm arises from conflict between important values that an individual holds and a motivation to resolve this conflict.

Finally, the need for cognitive closure appears to play a role in the operation of lay theories. Specifically, a heightened need for cognitive closure increases reliance on implicit cultural theories, i.e., lay theories that are chronically accessible due to the cultural context an individual is immersed in (Chiu, Morris, Hong, & Menon, 2000), and dominant epistemic authorities (Pierro & Mannetti, 2004), presumably because these provide the individual with a way of quickly reaching the desired closure. Also, it seems intuitive that individuals high in the need for cognitive closure should favor the entity theory of personal attributes over the incremental view, as a belief that traits are relatively fixed across time and situations should provide more closure. To our knowledge, thus far this particular hypothesis has not been explicitly tested.

CONCLUSION

In this chapter we reviewed (albeit not exhaustively) extensive bodies of literature about individual differences in cognitive functions pertaining to knowledge formation. Our approach rested on two assumptions: (1) that basic parameters of knowledge formation pertain to the processes of knowledge validation in light of (subjectively pertinent) evidence, as well as cognitive ability/sophistication and motivation factors affecting such validation; and (2) that individuals may stably differ on those parameters, in the same way that situations (or cultures) may so differ.

We have proposed that the process of knowledge validation is determined by subjective rules to which different individuals subscribe and which are embedded in their lay theories. Accordingly, we have reviewed a number of major such theories and the related conceptions of schematicity and ascribed epistemic authority. Digging for evidence that bears on the validity of one's knowledge often requires the investment of substantial mental effort and "cognitive work." Individuals' ability to expend such effort is determined in various ways by their general cognitive resources (such as their working memory capacity), and their sophistication in a given domain of knowledge. Whereas the general amount of cognitive capacity corresponds to a "hardware" aspect of the human mind, their sophistication and domain expertise pertain to the "software" aspect. Finally, individuals' motivation to expend the effort is determined by their stable epistemic goals having to do with the process of knowledge formation (exemplified,

e.g., by the need for cognition construct) as well as its outcomes, such as possession of (any) firm knowledge on a topic, or firm knowledge of a specific desired content.

For analytic purposes, we have accorded a separate discussion to each of those categories of factors. We also specified, however, how in reality they typically work interactively and in functional dependence on each other. Finally, the existence of individual differences in cognitive and motivational variables relevant to judgment and sense making does not imply that individuals would exhibit fixed patterns of information processing. Often, their stable cognitive and motivational proclivities may be overridden by situational determinants of the relevant epistemic processes, attesting to the dynamic and flexible manner in which people go about their sense-making endeavors across times and circumstances.

NOTE

1 The labels *cognitive closure* and *cognitive structure* have been used interchangeably in lay epistemic research to denote the desire for firm knowledge and the eschewal of ambiguity. The term *structure* was used in early papers on this topic (e.g. Kruglanski & Freund, 1983); it was replaced by the term *closure* in Kruglanski's (1989) volume, which has been used subsequently in discussions of relevant phenomena.

REFERENCES

- Adams-Webber, J. (2003). Cognitive complexity and confidence in evaluating self. *Journal of Constructivist Psychology, 16*, 273–279.
- Ahlering, R., & Parker, L. (1989). Need for cognition as a moderator of the primacy effect. *Journal of Research in Personality, 23*, 313–317.
- Bar, R. (1999). *The impact of epistemic needs and authorities on judgment and decision making*. Unpublished doctoral dissertation, Tel Aviv University.
- Bar-Tal, Y. (1991). *When the need for cognitive structure does not cause stereotypical thinking: The moderating effect of the ability to achieve cognitive structure*. Unpublished manuscript, Tel-Aviv University.
- Bar-Tal, Y. (1994). The effect on mundane decision-making of the need and ability to achieve cognitive structure. *European Journal of Personality, 8*, 45–58.
- Bar-Tal, Y., Kishon-Rabin, L., & Tabak, N. (1997). The effect of need and ability to achieve cognitive structuring on cognitive structuring. *Journal of Personality and Social Psychology, 73*, 1158–1176.

- Barrett, L. F., Tugade, M. M., & Engle, R. W. (2004). Individual differences in working memory capacity and dual-process theories of the mind. *Psychological Bulletin, 130*, 553–573.
- Baumeister, R. F., Twenge, J. M., & Nuss, C. (2002). Effects of social exclusion on cognitive processes: Anticipated aloneness reduces intelligent thought. *Journal of Personality and Social Psychology, 83*, 817–827.
- Bem, D. J., & Allen, A. (1974). On predicting some of the people some of the time: The search for cross-situational consistencies in behavior. *Psychological Review, 81*, 506–520.
- Bem, S. L. (1981). Gender schema theory: A cognitive account of sex typing. *Psychological Review, 88*, 354–364.
- Ben-Ari, R., Kedem, P., & Levy-Weiner, N. (1992). Cognitive complexity and intergroup perception and evaluation. *Personality and Individual Differences, 13*, 1291–1298.
- Brewin, C. R., & Beaton, A. (2002). Thought suppression, intelligence, and working memory capacity. *Behavior Research and Therapy, 40*, 923–930.
- Brewin, C. R., & Smart, L. (2005). Working memory capacity and suppression of intrusive thoughts. *Journal of Behavior Therapy and Experimental Psychiatry, 36*, 61–68.
- Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology, 42*, 116–131.
- Cacioppo, J. T., Petty, R. E., Feinstein, J. A., & Jarvis, W. B. G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin, 119*, 197–253.
- Cacioppo, J. T., Petty, R., & Morris, K. (1983). Effects of need for cognition on message evaluation, recall, and persuasion. *Journal of Personality and Social Psychology, 45*, 805–818.
- Chen, X. (2009). *Cognitive and motivational parameters in motivated biases in human judgment*. Unpublished doctoral dissertation, University of Maryland.
- Chiu, C., Hong, Y., & Dweck, C. (1997). Lay dispositionism and implicit theories of personality. *Journal of Personality and Social Psychology, 73*, 19–30.
- Chiu, C. Y., Morris, M. W., Hong, Y. Y., & Menon, T. (2000). Motivated cultural cognition: The impact of implicit cultural theories on dispositional attribution varies as a function of need for closure. *Journal of Personality and Social Psychology, 78*, 247–259.
- Christopher, A., & Schlenker, B. (2005). The Protestant work ethic and attributions of responsibility: Applications of the triangle model. *Journal of Applied Social Psychology, 35*, 1502–1518.
- Cialdini, R. B., Trost, M. R., & Newsom, J. T. (1995). Preference for consistency: Development of a valid measure and the discovery of surprising behavioral implications. *Journal of Personality and Social Psychology, 69*, 318–328.
- Costa, P. T., & McCrae, R. R. (1992). The five-factor model of personality and its relevance to personality disorders. *Journal of Personality Disorders, 6*, 343–359.
- Crawford, M., & Skowronski, J. (1998). When motivated thought leads to heightened bias: High need for cognition can enhance the impact of stereotypes on memory. *Personality and Social Psychology Bulletin, 24*, 1075–1088.
- D'Agostino, P., & Fincher-Kiefer, R. (1992). Need for cognition and the correspondence bias. *Social Cognition, 10*, 151–163.
- Dalbert, C. (2009). Belief in a just world. In M. R. Leary, & R. H. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 288–298). New York: Guilford Press.
- Dalbert, C., & Filke, E. (2007). Belief in a personal just world, justice judgments, and their functions for prisoners. *Criminal Justice and Behavior, 34*, 1516–1527.
- Dijksterhuis, A., van Knippenberg, A., Kruglanski, A. W., & Schaper, C. (1996). Motivated social cognition: Need for closure effects on memory and judgments. *Journal of Experimental Social Psychology, 32*, 254–270.
- Dion, K., & Dion, K. (1987). Belief in a just world and physical attractiveness stereotyping. *Journal of Personality and Social Psychology, 52*, 775–780.
- Dudley, M., & Harris, M. (2003). To think or not to think: The moderating role of need for cognition in expectancy-consistent impression formation. *Personality and Individual Differences, 35*, 1657–1667.
- Dunning, D. (1999). A newer look: Motivated social cognition and the schematic representation of social concepts. *Psychological Inquiry, 10*, 1–11.
- Dweck, C. (1999). *Self-theories: Their role in motivation, personality, and development*. New York: Psychology Press.
- Dweck, C., Hong, Y., & Chiu, C. (1993). Implicit theories: Individual differences in the likelihood and meaning of dispositional inference. *Personality and Social Psychology Bulletin, 19*, 644–656.
- Dweck, C., & Leggett, E. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95*, 256–273.
- Edlund, J., Sagarin, B., & Johnson, B. (2007). Reciprocity and the belief in a just world. *Personality and Individual Differences, 43*, 589–596.
- Engle, R. W., Kane, M. J., & Tuholski, S. W. (1999). Individual differences in working memory capacity and what they tell us about controlled attention, general fluid intelligence, and functions of the prefrontal cortex. In M. Akira & P. Shah (Eds.), *Models of working memory: Mechanisms of active maintenance and executive control* (pp. 102–134). New York: Cambridge University Press.
- Erb, H.-P., Kruglanski, A. W., Chun, W. Y., Pierro, A., Mannetti, L., & Spiegel, S. (2003). Searching for commonalities in human judgment: The parametric unimodel and its dual mode alternatives. *European Review of Social Psychology, 14*, 1–47.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, IL: Row, Peterson.
- Fiske, S. T. (1992). Thinking is for doing: Portraits of social cognition from daguerreotype to laserphoto. *Journal of Personality and Social Psychology, 63*, 877–889.
- Fiske, S. T., & Taylor, S. E. (2007). *Social cognition: From brains to culture*. New York: McGraw-Hill.
- Förster, J., & Liberman, N. (2007). Seven principles of goal activation: A systematic approach to distinguishing goal

- priming from priming of non-goal constructs. *Personality and Social Psychology Review*, 11, 211–233.
- Frable, D. E., & Bem, S. L. (1985). If you are gender schematic, all members of the opposite sex look alike. *Journal of Personality and Social Psychology*, 49, 459–468.
- Frauenfelder, K. (1974). Integrative complexity and extreme responses. *Psychological Reports*, 34, 770.
- Funder, D. C. (1994). Explaining traits. *Psychological Inquiry*, 5, 125–127.
- Funder, D. C., & Fast, L. A. (2010). Personality in social psychology. In S. T. Fiske, D. T. Gilbert, & L. Gardner (Eds.), *Handbook of social psychology* (5th ed., pp. 668–697). New York: Wiley.
- Furnham, A. (1982). The Protestant work ethic and attitudes toward unemployment. *Journal of Occupational Psychology*, 55, 277–285.
- Gara, M., Woolfolk, R., & Allen, L. (2002). Social cognitive complexity and depression: Cognitive complexity moderates the correlation between depression self-ratings and global self-evaluation. *Journal of Nervous and Mental Disease*, 190, 670–676.
- Geraerts, E., Merckelbach, H., Jelicic, M., & Habets, P. (2007). Suppression of intrusive thoughts and working memory capacity in repressive coping. *The American Journal of Psychology*, 120, 205–218.
- Gerrie, M., & Garry, M. (2007). Individual differences in working memory capacity affect false memories for missing aspects of events. *Memory*, 15, 561–571.
- Gervey, B., Chiu, C., Hong, Y., & Dweck, C. (1999). Differential use of person information in decisions about guilt versus innocence: The role of implicit theories. *Personality and Social Psychology Bulletin*, 25, 17–2.
- Gilbert, D. T. (1989). Thinking lightly about others: Automatic components of the social inference process. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 189–211). New York: Guilford Press.
- Glennon, F., & Joseph, S. (1993). Just world beliefs, self-esteem, and attitudes towards homosexuals with AIDS. *Psychological Reports*, 72, 584–586.
- Gollwitzer, P. M. (1990). Action phases and mind-sets. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (Vol. 2, pp. 53–92). New York: Guilford Press.
- Hafer, C., Bogaert, A., & McMullen, S. (2001). Belief in a just world and condom use in a sample of gay and bisexual men. *Journal of Applied Social Psychology*, 31, 1892–1910.
- Hargreaves, D., & Tiggenmann, M. (2002). The role of appearance schematicity in the development of adolescent body dissatisfaction. *Cognitive Therapy and Research*, 26, 691–700.
- Haugtvedt, C., & Petty, R. (1992). Personality and persuasion: Need for cognition moderates the persistence and resistance of attitude changes. *Journal of Personality and Social Psychology*, 63, 308–319.
- Heider, F. (1958). *The psychology of interpersonal relations*. Hoboken, NJ: John Wiley & Sons.
- Henderson, V., & Dweck, C. (1990). Motivation and achievement. In S. S. Feldman & G. R. Elliot (Eds.), *At the threshold: The developing adolescent* (pp. 308–329). Cambridge, MA: Harvard University Press.
- Higgins, E. T. (1996). The 'self-digest': Self-knowledge serving self-regulatory functions. *Journal of Personality and Social Psychology*, 71, 1062–1083.
- Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, 52, 1280–1300.
- Higgins, E. T. (2008). Culture and personality: Variability across universal motives as the missing link. *Social and Personality Compass*, 2, 608–634.
- Higgins, E. T., Kruglanski, A., & Pierro, A. (2003). Regulatory mode: Locomotion and assessment as distinct orientations. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 35, pp. 293–344). New York: Academic Press.
- Hong, Y., Chiu, C., & Dweck, C. (1995). Implicit theories of intelligence: Reconsidering the role of confidence in achievement motivation. In M. H. Kernis (Ed.), *Efficacy, agency, and self-esteem* (pp. 197–216). New York: Plenum Press.
- Jaschinski, U., & Wentura, D. (2002). Misleading postevent information and working memory capacity: An individual differences approach to eyewitness memory. *Applied Cognitive Psychology*, 16, 223–231.
- Jones, E. E. (1998). Major developments in five decades of social psychology. In D. T. Gilbert, S. T. Fiske, & L. Gardner (Eds.), *Handbook of social psychology* (4th ed., pp. 3–57). New York: McGraw-Hill.
- Katz, I., & Hass, R. (1988). Racial ambivalence and American value conflict: Correlational and priming studies of dual cognitive structures. *Journal of Personality and Social Psychology*, 55, 893–905.
- Khan, S., & Lambert, A. (2001). Perceptions of racial discrimination: When do people attempt to justify race-based prejudice?. *Basic and Applied Social Psychology*, 23, 43–53.
- Koivula, N. (1995). Ratings of gender appropriateness of sports participation: Effects of gender-based schematic processing. *Sex Roles*, 37, 543–557.
- Kossowska, M., Orehek, E., & Kruglanski, A. W. (2010). Motivation towards closure and cognitive resources: An individual differences approach. In A. Gruszka, G. Matthews & B. Szymura (Eds.), *Handbook of individual differences in cognition: Attention, memory and executive control* (pp. 369–382). New York: Springer.
- Kruglanski, A. W. (1980). Lay epistemologic process and contents: Another look at attribution theory. *Psychological Review*, 87, 70–87.
- Kruglanski, A. W. (1989). *Lay epistemics and human knowledge: Cognitive and motivational bases*. New York: Plenum Press.
- Kruglanski, A. W. (2004). *The psychology of closed mindedness*. New York: Psychology Press.
- Kruglanski, A. W., & Fishman, S. (2009). The need for cognitive closure. In M. R. Leary, & R. H. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 343–353). New York: Guilford Press.
- Kruglanski, A. W., & Freund, T. (1983). The freezing and unfreezing of lay-inferences: Effects on impressionality, primacy,

- ethnic stereotyping and numerical anchoring. *Journal of Experimental Social Psychology*, 19, 448–68.
- Kruglanski, A. W., & Gigerenzer, G. (2011). Intuitive and deliberate judgments are based on common principles. *Psychological Review*, 97–109.
- Kruglanski, A. W., Pierro, A., Mannetti, L., & DeGrada, E. (2006). Groups as epistemic providers: Need for closure and the emergence of group centrism. *Psychological Review*, 113, 84–100.
- Kruglanski, A. W., Raviv, A., Bar-Tal, D., Raviv, A., Sharvit, K., Ellis, S., et al. (2005). Says who? Epistemic authority effects in social judgment. *Advances in experimental social psychology* (Vol. 37, pp. 345–392). San Diego, CA: Elsevier Academic Press.
- Kruglanski, A. W., & Shteynberg, G. (in press). Cognitive consistency as means to an end: How subjective logic affords knowledge. In B. Gawronski & F. Strack (Eds.), *Cognitive consistency: A unifying concept in social psychology*. New York: Guilford Press.
- Kruglanski, A. W., & Sleeth-Keppler, D. (2007). The principles of social judgment. In A. W. Kruglanski & E. T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (pp. 116–137). New York: Guilford Press.
- Kruglanski, A. W., Thompson, E. P., Higgins, E. T., Atash, M. N., Pierro, A., Shah, J. Y., et al. (2000). To do the right thing! or to just do it! Locomotion and assessment as distinct self-regulatory imperatives. *Journal of Personality and Social Psychology*, 79, 793–815.
- Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: "Seizing" and "freezing." *Psychological Review*, 103, 263–83.
- Kruglanski, A. W., Webster, D. M., & Klem, A. (1993). Motivated resistance and openness to persuasion in the presence or absence of prior information. *Journal of Personality and Social Psychology*, 65, 861–876.
- Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin*, 108, 480–498.
- Kunda, Z., & Sinclair, L. (1999). Motivated reasoning with stereotypes: Activation, application, and inhibition. *Psychological Inquiry*, 10, 12–22.
- Lassiter, G., Briggs, M., & Slaw, R. (1991). Need for cognition, causal processing, and memory for behavior. *Personality and Social Psychology Bulletin*, 17, 694–700.
- Lerner, M. J. (1965). Evaluation of performance as a function of performer's reward and attractiveness. *Journal of Personality and Social Psychology*, 1, 355–360.
- Lerner, M. J. (1980). *The belief in a just world: A fundamental delusion*. New York: Plenum.
- Lerner, M. J., & Miller, D. T. (1978). Just world research and the attribution process: Looking back and ahead. *Psychological Bulletin*, 85, 1030–1051.
- Lerner, M. J., & Simmons, C. (1966). Observer's reaction to the 'innocent victim': Compassion or rejection? *Journal of Personality and Social Psychology*, 4, 203–210.
- Lerner, M. J., & Miller, D. T. (1978). Just world research and the attribution process: Looking back and ahead. *Psychological Bulletin*, 85, 1030–1051.
- Levy, G. D. (2000). Individual differences in race schematicity as predictors of African American and White children's race-relevant memories and peer preferences. *The Journal of Genetic Psychology: Research and Theory on Human Development*, 161, 400–419.
- Levy, S. R., Chiu, C., & Hong Y. (2006). Lay theories and intergroup relations. *Group Processes and Intergroup Relations*, 9, 5–24.
- Levy, S. R., Ramirez, L., & Vellila, E. (2005). *The role of culture and context on the intergroup meaning of the Protestant work ethic*. Unpublished manuscript, State University of New York at Stony Brook.
- Levy, S. R., Stroessner, S., & Dweck, C. S. (1998). Stereotype formation and endorsement: The role of implicit theories. *Journal of Personality and Social Psychology*, 74, 1421–1436.
- Levy, S. R., West, T., Ramirez, L., & Karafantis, D. (2006). The Protestant Work Ethic: A lay theory with dual intergroup implications. *Group Processes and Intergroup Relations*, 9, 95–115.
- Lewin, K. (1939). Field theory and experiment in social psychology: Concepts and methods. *American Journal of Sociology*, 44, 868–896.
- Lieberman, N., Molden, D., Idson, L., & Higgins, E. (2001). Promotion and prevention focus on alternative hypotheses: Implications for attributional functions. *Journal of Personality and Social Psychology*, 80, 5–18.
- Linville, P. (1982). The complexity extremity effect and age-based stereotyping. *Journal of Personality and Social Psychology*, 42, 193–211.
- Linville, P. (1985). Self-complexity and affective extremity: Don't put all of your eggs in one cognitive basket. *Social Cognition*, 3, 94–120.
- Linville, P. (1987). Self-complexity as a cognitive buffer against stress-related illness and depression. *Journal of Personality and Social Psychology*, 52, 663–676.
- Markman, A., Baldwin, G., & Maddox, W. (2005). The interaction of payoff structure and regulatory focus in classification. *Psychological Science*, 16, 852–855.
- Mauro, R., Pierro, A., Kruglanski, A. W., & Higgins, E. T. (2009). The perfect mix: Regulatory complementarity and the speed-accuracy balance in group performance. *Psychological Science*, 20, 681–685.
- Mayseless, O., & Kruglanski, A. W. (1987). What makes you so sure? Effects of epistemic motivations on judgmental confidence. *Organizational Behavior and Human Decision Processes*, 39, 162–183.
- McKenzie-Mohr, D., & Zanna, M. P. (1990). Treating women as sexual objects: Look to the (gender schematic) male who has viewed pornography. *Personality and Social Psychology Bulletin*, 16, 296–308.
- McVay, J., & Kane, M. (2009). Conducting the train of thought: Working memory capacity, goal neglect, and mind wandering in an executive-control task. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 35, 196–204.
- Mellema, A., & Bassilli, J. N. (1995). On the relationship between attitudes and values: Exploring the moderating effects of self-monitoring and self-monitoring schematicity. *Personality and Social Psychology Bulletin*, 21, 885–892.

- Mischel, W. (1968). *Personality and assessment*. New York: John Wiley and Sons.
- Mischel, W., & Shoda, Y. (1995) A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review*, *102*, 246–268.
- Molden, D. C., Lee, A. Y., & Higgins, E. T. (2008). In J. Shah & W. Gardner (Eds.), *Motivations for promotion and prevention*. *Handbook of motivation science* (pp. 169–187). New York: Guilford Press.
- Moore, A. B., Clark, B. A., & Kane, M. J. (2008). Who shalt not kill? Individual differences in working memory capacity, executive control, and moral judgment. *Psychological Science*, *19*, 549–557.
- Murray, S. L., & Holmes, J. G. (1999). The (mental) ties that bind: Cognitive structures that predict relationship resilience. *Journal of Personality and Social Psychology*, *77*, 1228–1244.
- Oberauer, K. (2005). The measurement of working memory capacity. In O. Wilhelm & R. W. Engle (Eds.), *Handbook of understanding and measuring intelligence* (pp. 393–407). Thousand Oaks, CA: Sage Publications.
- Perlini, A. H., & Hansen, S. D. (2001). Moderating effects of need for cognition on attractiveness stereotyping. *Social Behavior and Personality*, *29*, 313–321.
- Petty, R. E., Brinol, P., Tormala, Z. L., & Wegener, D. T. (2007). The role of metacognition in social judgment. In A. W. Kruglanski & E. T. Higgins (Eds.), *Social psychology: handbook of basic principles* (pp. 254–284). New York: Guilford Press.
- Petty, R. E., & Jarvis, W. (1996). An individual differences perspective on assessing cognitive processes. In N. Schwarz & S. Sudman (Eds.), *Answering questions: Methodology for determining cognitive and communicative processes in survey research* (pp. 221–257). San Francisco, CA: Jossey-Bass.
- Petty, R. E., Schumann, D., Richman, S., & Strathman, A. (1993). Positive mood and persuasion: Different roles for affect under high- and low-elaboration conditions. *Journal of Personality and Social Psychology*, *64*, 5–20.
- Perlini, A., & Hansen, S. (2001). Moderating effects of need for cognition on attractiveness stereotyping. *Social Behavior and Personality*, *29*, 313–321.
- Pierro, A., & Kruglanski, A. W. (2008). 'Seizing and freezing' on a significant-person schema: Need for closure and the transference effect in social judgment. *Personality and Social Psychology Bulletin*, *34*, 1492–1503.
- Pierro, P., Leder, S., Mannetti, L., Higgins, E. T., Kruglanski, A. W., & Aiello, A. (2008). Regulatory mode effects on counterfactual thinking and regret. *Journal of Experimental Social Psychology*, *44*, 321–329.
- Pierro, A., & Mannetti, L. (2004). *Motivated consumer search behavior: The effects of epistemic authority*. Unpublished manuscript, University of Rome "La Sapienza."
- Pierro, A., Mannetti, L., Higgins, E. T., & Kruglanski, A. W. (2002). *Moderating role of regulatory mode on relationships between theory of planned behavior variables*. Unpublished manuscript, University of Rome "La Sapienza."
- Rafaeli-Mor, E., & Steinberg, J. (2002). Self-complexity and well-being: A review and research synthesis. *Personality and Social Psychology Review*, *6*, 31–58.
- Richter, L., & Kruglanski, A. W. (1999). Motivated search for common ground: Need for closure effects on audience design in interpersonal communication. *Personality and Social Psychology Bulletin*, *25*, 1101–1114.
- Ros, L., Latorre, J., & Serrano, J. (2010). Working memory capacity and overgeneral autobiographical memory in young and older adults. *Aging, Neuropsychology, and Cognition*, *17*, 89–107.
- Ross, L., & Nisbett, R. (1991). *The person and the situation: Perspectives of social psychology*. New York: McGraw-Hill.
- Sakalli-Uğurlu, N., Sila Yağın, Z., & Glick, P. (2007). Ambivalent sexism, belief in a just world, and empathy as predictors of Turkish students' attitudes toward rape victims. *Sex Roles*, *57*, 889–895.
- Sargent, M. (2004). Less thought, more punishment: Need for cognition predicts support for punitive responses to crime. *Personality and Social Psychology Bulletin*, *30*, 1485–1493.
- Schroder, H., Driver, M., & S. Streufert, S. (1967). *Human information processing*. New York: Holt, Rinehart, & Winston.
- Scott, W. A. (1962). Cognitive complexity and cognitive flexibility. *Sociometry*, *25*, 405–414.
- Shah, J. Y., Brazy, P., & Higgins, E. T. (2004). Promoting us or preventing them: Regulatory focus and manifestations of intergroup bias. *Personality and Social Psychology Bulletin*, *30*, 433–446.
- Shah, J. Y., & Higgins, E. T. (1997). Expectancy \times value effects: Regulatory focus as determinant of magnitude and direction. *Journal of Personality and Social Psychology*, *73*, 447–458.
- Shah, J. Y., Kruglanski, A. W., & Thompson, E. P. (1998). Membership has its (epistemic) rewards: Need for closure effects on ingroup bias. *Journal of Personality and Social Psychology*, *75*, 383–393.
- Sidanius, J. (1978). Cognitive functioning and socio-political ideology: An exploratory study. *Perceptual and Motor Skills*, *46*, 515–530.
- Sidanius, J. (1984). Political interest, political information search, and ideological homogeneity as a function of socio-political ideology: A tale of three theories. *Human Relations*, *37*, 811–828.
- Sidanius, J. (1988). Political sophistication and political deviance: A structural equation examination of context theory. *Journal of Personality and Social Psychology*, *55*, 37–51.
- Smith, S., & Levin, I. (1996). Need for cognition and choice framing effects. *Journal of Behavioral Decision Making*, *9*, 283–290.
- Sprenger, A., & Dougherty, M. (2006). Differences between probability and frequency judgments: The role of individual differences in working memory capacity. *Organizational Behavior and Human Decision Processes*, *99*, 202–211.
- Tam, K., Leung, A., & Chiu, C. (2008). On being a mindful authoritarian: Is need for cognition always associated with less punitiveness?. *Political Psychology*, *29*, 77–91.

- Tetlock, P. (1984). Cognitive style and political belief systems in the British House of Commons. *Journal of Personality and Social Psychology, 46*, 365–375.
- Tetlock, P. (1985). Integrative complexity of American and Soviet foreign policy rhetoric: A time-series analysis. *Journal of Personality and Social Psychology, 49*, 1565–1585.
- Tetlock, P. (1986). A value pluralism model of ideological reasoning. *Journal of Personality and Social Psychology, 50*, 819–827.
- Tetlock, P. (1988). Monitoring the integrative complexity of American and Soviet policy rhetoric: What can be learned?. *Journal of Social Issues, 44*, 101–131.
- Tetlock, P. (1993). Cognitive structural analysis of political rhetoric: Methodological and theoretical issues. In S. Iyengar & W. J. McGuire (Eds.), *Explorations in political psychology* (pp. 380–405). Durham, NC: Duke University Press.
- Turner, M. L., & Engle, R. W. (1989). Is working memory capacity task-dependent? *Journal of Memory and Language, 28*, 127–154.
- Van Hiel, A., & Mervielde, I. (2003). The measurement of cognitive complexity and its relationship with political extremism. *Political Psychology, 24*, 781–801.
- Verplanken, B., Hazenberg, P., & Palenewen, G. (1992). Need for cognition and external information search effort. *Journal of Research in Personality, 26*, 128–136.
- Waller, J. (1993). Correlation of need for cognition and modern racism. *Psychological Reports, 73*, 542.
- Weber, M. (1905/1958). *The protestant work ethic and the spirit of capitalism* (T. Parsons, Trans.). New York: Scribner's.
- Webster, D. M. (1993). Motivated augmentation and reduction of the overattribution bias. *Journal of Personality and Social Psychology, 65*, 261–271.
- Webster, D. M., & Kruglanski, A. W. (1994). Individual differences in need for cognitive closure. *Journal of Personality and Social Psychology, 67*, 1049–1062.
- Webster, D. M., Kruglanski, A. W., & Pattison, D. A. (1997). Motivated language use in intergroup contexts: Need for closure effects on the linguistic intergroup bias. *Journal of Personality and Social Psychology, 72*, 1122–1131.
- Webster, D. M., Richter, L., & Kruglanski, A. W. (1996). On leaping to conclusions when feeling tired: Mental fatigue effects on impressionary primacy. *Journal of Experimental Social Psychology, 32*, 181–195.
- Webster-Nelson, D. M., Klein, C. F., & Irvin, J. E. (2003). Motivational antecedents of empathy: Inhibiting effects of fatigue. *Basic and Applied Social Psychology, 25*, 37–50.
- Wegner, D., Schneider, D., Carter, S., & White, T. (1987). Paradoxical effects of thought suppression. *Journal of Personality and Social Psychology, 53*, 5–13.
- Zhao, W., & Dweck, C. S. (1994). *Implicit theories and vulnerability to depression-like responses*. Unpublished manuscript, Columbia University.