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Article in *Social and Personality Psychology Compass* · October 2010

DOI: 10.1111/j.1751-9004.2010.00308.x

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Lay Epistemic Theory: The Motivational, Cognitive, and Social Aspects of Knowledge Formation

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Abstract

We review and integrate three separate research programs emanating from the theory of lay epistemics (Kruglanski, A. W. (1989). *Lay Epistemics and Human Knowledge: Cognitive and Motivational Bases*. New York: Plenum). The *need for cognitive closure* is an epistemic motivation that propels knowledge formation and has widely ramifying consequences for individual, interpersonal, and group phenomena. The *unimodel* investigates the process of new knowledge formation from the 'information given.' The work on *epistemic authority* highlights the centrality of social source effects, including the self as a source, in human epistemic behavior. These three research programs examine facets of epistemic behavior that function interdependently to produce the knowledge that guides individual and social functioning.

Understanding how knowledge is formed and changed is of critical importance for psychological science. Indeed, psychologists have examined the epistemic processes involved in knowledge formation via a wide range of paradigms, including those focused on attitude formation and change, impression formation, judgment under uncertainty and causal attribution. Traditionally, such endeavors have highlighted localized issues *specific* to a given domain of knowledge (see Kruglanski & Orehek, 2007).

Thirty years of research on factors involved in a *general* knowledge formation process have been conducted under the umbrella of *Lay Epistemic Theory* (LET) (Kruglanski, 1989). Extensive empirical and conceptual developments have taken place under the auspices of three separate research programs, namely those on the *need for cognitive closure* (see Kruglanski, 2004), on the *unimodel of social judgment* (see Kruglanski, Pierro, Mannetti, Erb, & Chun, 2007), and on *epistemic authority* (see Kruglanski et al., 2005). In this paper, we summarize the theory of lay epistemics and describe the three separate research programs that it inspired, offering a conceptual integration that identifies their interrelationships.

Even though they were carried out separately, these three research programs represent interdependent facets of knowledge formation pertinent to all its instances. The unimodel focuses on the evidential basis of all knowledge. The need for closure program addresses the motivational substrate of knowledge construction, and epistemic authority research highlights the special role of social sources of information in the knowledge formation process. We now consider these research paradigms, following an examination of the theory from which they emanated.

Lay Epistemic Theory

The theory of lay epistemics constitutes a framework for understanding the process of knowledge formation. Its point of departure was Karl Popper's (1959) notion that scientific knowledge is formed in the same manner as lay knowledge. Popper suggested that while knowledge formation is guided by the ideal of truth, we can never be certain that the ideal has been realized. This implies that the concept of 'knowledge' is best understood as a subjectively held belief.

Evidence

A major assumption of lay epistemic theory is that knowledge is derived from evidence. Knowledge is constructed in the form of inference rules of an if E then C type in which the antecedent term is the evidence (E), and the consequent term is the conclusion C. The conclusion can also be thought of as a hypothesis (H) supported by the evidence.¹ A special category of evidence concerns other people's opinions, especially if those people constitute 'epistemic authorities' for the individual, lending the epistemic process a social flavor.

Terminating the epistemic sequence

In principle, one could continue indefinitely constructing hypotheses and testing them without ever crystallizing firm knowledge. Of course, such epistemic 'obsession' would be highly dysfunctional and paralyzing. Indeed, people are usually capable of forming judgments quickly on the basis of the evidence available. An important mechanism that allows this to happen is the need for cognitive closure. Two types of the need for closure have been distinguished, referred to as the needs for nonspecific and specific closure.

The need for nonspecific closure reflects a desire for a firm answer to a question, any answer, when compared to confusion and ambiguity. The need for specific closure reflects a motivation to reach a specific, personally desirable, answer to a question. Each need is assumed to vary in degree and lie on a continuum. Thus, one may desire closure strongly, mildly or not at all, even wanting to avoid it. Finally, both types of need for closure determine the length of the hypothesis generation and testing sequence. The higher the need for nonspecific closure, the shorter the sequence and the stronger the tendency to 'seize' and 'freeze' on accessible evidence. The higher the need for a specific closure, the stronger the tendency to terminate the sequence when the evidence appears to yield the desired conclusion, or to keep the sequence going until such conclusion is implied by the evidence.

Explorations in Lay Epistemics

Need for cognitive closure

The intra-personal level. The magnitude of an individual's need for closure is determined by the perceived benefits of closure and the costs of lacking closure. For instance, the need for closure is heightened when action is required because the initiation of intelligible action requires prior closure. Additionally, the need for closure is elevated in circumstances in which closure would avert costly or laborious information processing, as may occur under time pressure, in the presence of ambient noise, or when a person is fatigued or intoxicated. In addition to the transient situational determinants of the need for

closure, this motivation also represents a dimension of individual differences. Empirical findings for need for closure effects measured by an individual difference variable (the Need for Closure Scale, Webster & Kruglanski, 1994) and laboratory manipulations of this motivation converge in their results.

We treat the need for closure as the fundamental motivational base of knowledge construction through which other motivational constructs may influence epistemic phenomena. For instance, accuracy concerns (Petty & Cacioppo, 1986; Chaiken, Liberman, & Eagly, 1989), accountability concerns (Tetlock, 1985), or need for cognition (Cacioppo & Petty, 1982) may reduce the need for closure, or instill the need to avoid closure. Authoritarianism (Adorno, Frenkel-Brunswick, Levinson, & Sanford, 1950) or dogmatism (Rokeach, 1950) may enhance the need for closure. Ego defensive, self-enhancement, or impression management motives (Chaiken et al., 1989) may introduce needs for specific closures corresponding to these motivations respective goals, etc.

Seizing and freezing phenomena. A heightened need for closure induces the tendency to 'seize' on early evidence and 'freeze' upon the judgments it suggests. For instance, Kruglanski and Freund (1983) demonstrated that time pressure increased participants' tendency to seize on 'anchors' presented prior to a judgmental task, whereas fear of invalidity reduced such tendency. Mayseless and Kruglanski (1987) demonstrated that participants high when compared to low in the need for closure increased their confidence more and were less willing to consider alternatives after having made a decision.

The interpersonal level Group Centrism. Kruglanski, Pierro, Mannetti, and DeGrada (2006) defined the concept of 'group centrism' as the degree to which individuals strive to enhance the 'groupness' of their collectivity. Groupness, in turn, has been defined by a 'smooth' shared-reality surface unperturbed by dissents and debates (Hardin & Higgins, 1996).

In the initial phases of group formation, this should involve members' attempts to arrive at a swift consensus by exerting uniformity pressures. Consistent with this prediction, need for closure leads group members to promote the emergence of an autocratic group structure wherein influence emanates from a centralized authority, enhancing the likelihood of commonly shared opinions (De Grada, Kruglanski, Mannetti, & Pierro, 1999; Pierro, Mannetti, DeGrada, Livi, & Kruglanski, 2003).

Intensified quest for uniformity under heightened need for closure tends to express itself in group members' intolerance of diversity (Shah, Kruglanski, & Thompson, 1998; Kruglanski, Shah, Pierro, & Mannetti, 2002) and in rejection of opinion deviates (Kruglanski & Webster, 1991). Heightened need for closure is also related to favoritism toward one's ingroup in direct proportion to its degree of 'groupness,' as well as in outgroup derogation insofar as the outgroup tends to be contrasted with the ingroup (Shah et al., 1998; Kruglanski et al., 2002).

The quest for a stable shared reality among individuals with a high need for closure should express itself in conservatism and the tendency to uphold group norms and traditions. Consistent with this expectation, political conservatism was found to be positively related to the need for closure (Jost, Glaser, Kruglanski, & Sullaway, 2003a,b). In this connection, Kosic, Kruglanski, Pierro, and Mannetti (2004) found evidence that need for closure increases loyalty to one's ingroup and instills an unwillingness to abandon it and 'defect' to alternative groups, but only when one's ingroup is salient in the individuals' social environment. If, however, an alternative group's views became overridingly salient, high need for closure may prompt members to switch groups. Specifically, immigrants who were high (versus low) on need for closure assimilated less to the host culture if their social environment at entry consisted of their co-ethnics. However, if their refer-

ence group consisted of members of the host culture, high (versus low) need for closure immigrants tended more to assimilate to the host culture.

Conclusions. The need for closure paradigm addresses the *motivational* underpinnings of knowledge formation, affecting the extent of information processing en route to a judgment, and the tendency to 'seize and freeze' on judgment affording information augmented when the individual's demands for closure are high.

The judgmental unimodel

The unimodel 'zooms in' on the informational aspect of the epistemic process, investigating conditions under which given information would affect individuals' judgments. This includes both cognitive (informational availability and accessibility, the presence of cognitive resources) and motivational (e.g. need for closure) factors affecting informational impact.

The function of rule-following in lay epistemics. A basic aspect of lay epistemic theory concerns the role of evidence in knowledge formation. The LET assumes that all knowledge is derived from evidence, broadly conceived. In other words, to construct new knowledge, or to form a new judgment the individual is assumed to use an inference rule of an IF THEN type, whereby IF a given evidence E obtains, THEN the conclusion C follows.

The depiction of inferences as syllogistic may seem deliberative, conscious, and explicit, yet it need be none of the above. An identical mechanism may underlie judgments considered as associative, unconscious, or 'mechanistic.' Skill acquisition involves a routinization of IF THEN sequences (Anderson, 1983), and social judgments represent a special case of procedural learning based on practice that strengthens the IF THEN component resulting in increased efficiency (Smith, 1984, 1989; Smith & Branscombe, 1988; Smith, Branscombe, & Bormann, 1988).

Awareness. In turn, efficiency implies a lowered need to commit attentional resources to the execution of social judgments. In William James (1890, p. 496) phrasing 'consciousness deserts all processes when it can no longer be of use.' According to James, routinization removes the need for conscious control of the process, rendering awareness of the process superfluous. It is in this sense then that some judgmental phenomena, mediated by well-routinized IF THEN rules, may take place outside of conscious awareness.

In brief, judgments are ruled-based and in this sense, are derived from 'evidence.' To make a judgment is to go beyond the 'information given' (Bruner, 1973), by using the information as testimony for a conclusion in accordance with an 'IF THEN' premise to which the individual subscribes.

Determinants of informational impact. Given the syllogistic structure of knowledge formation, it is possible to analyze the conditions under which the information given in a specific context would affect judgments. A syllogism includes a major premise and a minor premise that jointly yield a conclusion. In this sense, the 'information given' may be thought of as comprising the minor premise, which affirms the antecedent condition of a major premise. Accordingly, in order for a given information to exert judgmental impact, the individual should believe in the major premise linking a given antecedent condition X and a given consequent Y. Believing in an inference rule is a matter of degree reflecting the strength of confidence in the conditional association. The continuum of belief strength defines the *parameter of subjective relevance* of information X to conclusion Y.

However, the subscription to an inference rule merely determines the *availability* of such rule in memory (Higgins, 1996). To be used, the rule must be momentarily activated

from memory. Rule activation may be more or less difficult for an individual depending on its prior history of activation. The difficulty issue also arises in reference to an individual's ability to recognize that a given information *matches* an inference rule: The information may be more or less salient in a given context, constituting a weaker or stronger signal against the background of irrelevant noise. Also, the information may be presented in a more or less lengthy format and may be easy or difficult to decipher. The *difficulty of the inference task* defines another parameter that affects the degree to which the information given will impact the judgment rendered. Specifically, the greater the difficulty of the inference task, the greater the amount of *cognitive* and *motivational* resources needed to perform it.

Resource availability as a determinant of informational impact. When processing resources are limited, the easier to process information is more likely to be utilized and to affect judgments to a greater extent than the difficult to process information. When ample processing resources are available; however, the difficult to process information would be utilized more to the extent that it appears to be more relevant to the judgment than the easy to process information. The foregoing framing afforded a reconceptualization of research findings formerly interpreted from alternative perspectives on social judgment in a number of domains.

(1) *Dispositional attributions.* Trope and Alfieri (1997) found that ambiguous behavior tends to be disambiguated by assimilation to the context in which it is taking place. For instance, an ambiguous facial expression is likely to be perceived as happy if the context was happy as well, and as sad if the context was sad. Once the behavior has been identified, however, and the question of its causal origin is pondered, the context plays a subtractive (rather an assimilative) role in determining the attribution of the behavior. Specifically, the role of the context is subtracted to determine the role of the actor's disposition in causing his or her behavior.

Trope and Alfieri (1997) found that the assimilative process of behavior identification was independent of cognitive load, whereas the subtractive process of dispositional attribution was undermined by load. Two alternative explanations may account for these results: (i) the two processes are qualitatively distinct, or (ii) for some reason the behavior identification task was less demanding than the dispositional attribution task. Consistent with the latter interpretation, Trope and Gaunt (2000) found that when demands associated with the dispositional attribution task were lowered, the subtraction of context from dispositional attributions was no longer affected by load. Furthermore, Chun, Spiegel, and Kruglanski (2002) found that when the behavior identification task was made more difficult it was also undermined by load.

(2) *Base-rate neglect.* In the original demonstrations of base-rate neglect (Kahneman & Tversky, 1973), participants were presented with information about the percentage, or base-rate, of lawyers and engineers in a group (e.g. 30% lawyers), and then a specific individual was described in some detail. This research found that participants made predictions about the likelihood of the person being a lawyer or engineer based on the individuating information, neglecting to use the base-rate information. The base-rate information was typically presented briefly, via a single sentence, and at the front of the informational package. By contrast, the individuating ('representativeness') information was presented subsequently via a relatively lengthy vignette. If participants in such studies had sufficient motivation and cognitive capacity to process all the information they might have been challenged to fully process the later, lengthier and hence more demanding vignette information and to have given it considerable weight in the judgment. This is analogous to the finding in persuasion studies that the lengthier, later appearing, message

argument information but not the brief, upfront appearing, 'cue' information has impact when ample processing resources are available.

In their first study, Chun and Kruglanski (2005) replicated the typical lawyer–engineer paradigm in one condition by presenting brief and upfront base-rate information followed by lengthier individuating information. In another condition, brief individuating information was presented followed by lengthier and more complex base-rate information. A subsequent study added a manipulation of cognitive load. Participants under cognitive load made judgments based on the brief upfront information more than the lengthy subsequent information. However, participants not under load made judgments based on the lengthy subsequent information. Participants with limited cognitive resources relied on the easy to process information regardless of its type (base-rate or individuating), while participants with ample cognitive resources relied on the more elaborate information.

(3) *Persuasion research.* A pervasive finding in the persuasion domain has been that 'peripheral' or 'heuristic' cues exert judgmental impact when processing resources are limited. By contrast, 'message arguments' typically exerted their effects when ample processing resources were available (cf. Chen & Chaiken, 1999; Petty & Wegener, 1999). Rather than assign a particular role to different contents of information, the unimodel suggests that the difficulty of processing the information and the relevance of the information are the critical features, regardless of the specific type of information being considered (e.g. message arguments versus peripheral/heuristic). By now, a long line of research findings has supported this framework and its implications (Kruglanski & Thomson, 1999a, Erb et al., 2003; Pierro, Mannetti, Erb, Spiegel, & Kruglanski, 2005; Pierro, Mannetti, Orehek, & Kruglanski, 2008).

Relative relevance, task demands, and processing resources. Often, the different types of information presented to research participants have (inadvertently) differed in their subjective relevance. In the domain of persuasion Pierro, Mannetti, Kruglanski, and Sleeth-Keppler (2004) carried out content analysis of experimental materials to conclude that the 'cues' were judged as less relevant than were the 'message arguments.' Recall that in much persuasion research the 'cues' but not the 'message arguments' exerted judgmental impact when processing resources were low, whereas the 'message arguments' did so when ample processing resources were available. From the present perspective, the following derivations are implied:

(i) Given ample processing resources, the more relevant information would have a greater judgmental impact than the less relevant information, however (ii), given limited processing resources (relative to the task demands) the easier to process information (of above threshold relevance) would have a greater judgmental impact than the more difficult to process information.

Pierro et al. (2004) tested these predictions in three experiments based on a research design in which (i) the relevance sequence (early information less relevant than subsequent information, or vice versa) and (ii) processing motivation (high, low) were manipulated. The studies differed, however, in the content of the information given. In the first study, both the early and the later information consisted of message arguments, in the second study both consisted of heuristic information (pertinent to the 'consensus heuristic') and in the third study, contrary to the typical sequence in persuasion research, the early information consisted of message arguments and the later information consisted of heuristic cues (again regarding consensus).

All three experiments yielded the same general result: When the early information was more relevant than the later information, it was more persuasive than the later information regardless of motivation level. Unmotivated participants relied on the early informa-

tion because it was easier to process than the later information, while motivated participants relied on this information because it was more relevant than the later information. However, when the later information was more relevant than the early information, it was persuasive for motivated participants, but not for unmotivated participants. By contrast, the early, less relevant information was persuasive only for unmotivated participants but not for motivated participants.

Wegener and Claypool (1999) argued that the distinction between 'cues' and 'message arguments' (what they refer to as 'centrality') lies in the degree of relevance to the issue at hand. According to Wegener and Claypool (1999), that is why the Pierro et al. (2004) findings (that relevance of information matters even when length, complexity and position are controlled for) support the dualistic distinction between 'cues' and 'message arguments.' However, note that relevance is a matter of degree and lies on a continuum whereas the 'cues' versus 'arguments' distinction is dichotomous. More importantly, highly relevant information could be presented upfront and be easy to process, in which case it exerts impact under low resource conditions (Pierro et al., 2004), an effect reserved for 'cues' in the ELM, yet the Wegener and Claypool (1999) interpretation defines cues according to their low relevance. Thus, the relevance to conclusion definition of 'cues' (Wegener & Claypool, 1999) not only is inconsistent with other interpretations of the 'cue' concept as having to do with the message contents versus context (e.g. the source of the information, or the consensus about the conclusion), but is inconsistent with the claim in the dual process models that 'arguments' (in the Wegener and Claypool (1999) interpretation a *highly relevant* information) are impactful under high resource but not under low resource conditions.

Conclusions. Growing evidence across domains support the unimodel's assertions that the subjective relevance of information determines its impact on judgments, that the appreciation of subjective relevance depends on the relation between task demands and (cognitive and motivational) resources, and that as a function of resources information may influence judgments either in accordance with its relative relevance or with its relative ease of processing.

Epistemic authority

A broad category of evidence refers to others people's opinions. In the LET, this class of evidence is addressed by the construct of *epistemic authority*. 'Epistemic authority' refers to a source with whom an individual may rely to acquire knowledge. The ascribed epistemic authority of sources may vary and the authority of a given source may vary across domains as well as across life-span developmental phases. The characteristics that serve as the basis for identifying a source as an epistemic authority can be *general*, for instance a role, or an appearance in print, or *specific*, such as a particular person, or a particular newspaper. A source may exert influence in a variety of life domains, serving as a *generalized epistemic authority*; alternatively, a source may influence only a specific area. Individuals may differ widely in their reliance on various epistemic authorities and in their extent of such reliance across domains.

Whereas source characteristics were previously implied to offer inferior counsel as to correct judgments and were treated as suboptimal heuristics used when processing resources were depleted and when one's 'sufficiency threshold' of desired confidence was low (Chaiken et al., 1989), according to the present framework epistemic authority of some sources might be extremely powerful, to the point of overriding other information. In other words, an epistemic authority may be perceived as more relevant to a judgment

than other types of information and may exert its impact even when cognitive and motivational resources are ample.

Whereas in prior treatments of source credibility effects, the discussion centered on the credibility of sources *external* to the self (cf. Chaiken et al., 1989; Hovland, Janis, & Kelley, 1953; Kruglanski & Thomson, 1999a,b; Petty & Cacioppo, 1986), the present theory considers the self as an important target of epistemic authority assignments.

Developmental aspects of epistemic authority. To a newborn baby, the world may well present a 'buzzing confusion' as in William James' famous turn of phrase. Whereas perceptual clarity may be improving in sharpness during physiological maturation, the development of conceptual knowledge may depend on the child's adult caregivers to interpret the meaning of information patterns. It seems plausible then, that for the young child the adult caregivers represent the ultimate epistemic authority, whose views are accepted as indisputable truth. In the course of normal socio-cognitive development, the epistemic authority of the caregivers may wane, and that of other sources including the self, increase.

Raviv, Bar-Tal, Raviv, and Houminer (1990) assessed children's attribution of epistemic authority to their mothers, fathers, teachers, and friends. During childhood, (i) the perception of parents as epistemic authorities remains relatively stable, with decreases in a few knowledge areas, (ii) the perception of teachers as an epistemic authorities remains stable with an increase in the domain of science, (iii) the perceived epistemic authority of friends increases in the social domain. Across age groups, the perception of teachers and friends varied more as a function of knowledge areas than the perception of parents. The children selected teachers and friends as epistemic authorities in certain knowledge areas only, whereas the parents were perceived to a greater extent as overall authorities across domains.

Individual differences in the distribution of epistemic authority assignments across sources. Bar (1983) formed a Hierarchy of Epistemic Authorities Test designed to investigate the epistemic authority assigned by Israeli college students to various sources. This study revealed gender differences in the assignment of epistemic authority. In domains prototypically classified as masculine (such as work and finances) women viewed their peer group as a more dominant epistemic authority than did men, whereas in domains prototypically classified as feminine (interpersonal relations, children's education) men endowed their peer group with greater epistemic authority than did women. It seems then, that when one's own epistemic authority is low, one's reference group gains in epistemic dominance.

Bar (1983) also found that assigned epistemic authorities predicted behavior in an 'information purchasing' task: Individuals were willing to pay more (in hypothetical money) for information from their highest domain-specific epistemic authority than for information from the second highest (or any other) epistemic authority.

In subsequent studies, Bar (1999) found that participants tended overwhelmingly to seek information from their dominant epistemic authority and to choose consumer products recommended by that authority. Participants also expressed greater confidence in their product choice when it was recommended by a dominant versus a nondominant epistemic authority.

Epistemic authority or heuristic cue? Bar (1999, Study 2) investigated whether epistemic authority effects might represent the workings of heuristic cues used in the absence of sufficient processing resources. To do this, Bar added two manipulations to the product choice procedure: (i) high versus low time pressure and (ii) whether or not the choices would be evaluated by another person, i.e., high versus low evaluation apprehension. Epistemic authority effects held across levels of time pressure or evaluation apprehension. Specifically,

regardless of the presence/absence of time pressure and/or evaluation apprehension participants (i) tended to first open the window pertaining to their dominant (versus nondominant) epistemic authority, (ii) were more confident in their decisions if those were based on the recommendations of dominant (versus a nondominant) epistemic authority, and (iii) tended to spend more time processing information contained in a 'window' belonging to their dominant (versus nondominant) epistemic authority. These results argue against the notion that epistemic authority functions as a 'heuristic' cue that affords low confidence and is used only when individuals' processing resources are low. Specifically, in the present instance, the epistemic authority was used as a basis for knowledge because the source yielded confident conclusions, even when processing resources were high.

Effects of Self-Ascribed Epistemic Authority: (1) *external information search under need for closure.* A unique aspect of the epistemic authority construct is that it treats the *self* and *external sources* of information identically. Pierro and Mannetti (2004) measured the strength of individuals' self-ascribed epistemic authority in the highly specialized domain of cell phones (e.g., 'I truly have considerable knowledge about different types of cell phones'). Pierro and Mannetti (2004) also assessed their participants' need for closure. It was found that the greater the individuals' self-ascribed epistemic authority in a domain, the less external information they indicated they would seek.

This result was hardly surprising. After all, ascribing to oneself epistemic authority is nearly tantamount to needing less advice from others. Of greater interest was the finding that the tendency to seek external information was moderated by the need for cognitive closure. For participants with a low self-ascribed epistemic authority – the higher their need for closure, the stronger their tendency to engage in an external information search. By contrast, for participants with a high self-ascribed epistemic authority – the higher their need for closure, the lower their tendency to engage in an external information search.

Summary. The epistemic authority construct reflects the assumption that human knowledge is socially constructed and that it is influenced by others whose judgments one respects. It also touches on the developmental aspect of knowledge construction and the diversification of one's information sources in accordance with their perceived expertise.

Epilogue: Integrating the Research Programs on Lay Epistemics

The three research programs instantiated by the lay epistemic theory illustrate the interdependent aspects of knowledge formation. These research programs illuminate the separate yet interactive ingredients that shape the human knowledge formation process.

The need for closure represents a desire for firm knowledge, which requires firm evidential basis. Therefore, individuals high on the need for closure should be more likely to form rules, including general rules that they can use across a broad spectrum of situations. For example, high (versus low) need for closure individuals report higher confidence in their judgments, possibly reflecting a high self-ascribed epistemic authority, or possession of a general 'I am right' heuristic. Moreover, individuals under high need for closure exhibit group-centric tendencies (Kruglanski et al., 2006), which includes the striving for consensus, or subscription to the 'group is right' heuristic. Individuals under high need for closure prefer an autocratic, or hierarchical group structure granting epistemic authority to few leaders, suggesting a use of the 'experts are correct' heuristic, etc. Thus, an interdependence seems to exist between the need for closure and the epistemic authority paradigms of LET.

An interdependence also may exist between need for closure and the evidential aspect of LET highlighted in the unimodel. Specifically, in the interest of forming solid

knowledge individuals high on the need for closure may be likely to form rules, in their domains of interest. To test this, Dechesne and Wigboldus (2008) had participants indicate whether an A or a B appeared on a computer screen. The A's and B's appeared in a fixed order (ABBABAB), thus faster reactions to the letters over time can be interpreted as a manifestation of greater motivation to form and use rules. The pattern of results confirmed the prediction, with response latencies significantly covarying with the need for closure. Greater need for closure was associated with a greater improvement on the task over time, indicating a learning of the rule.

In summary, because knowledge is derived from evidence, and evidence reflects the use of inferential rules, individuals who are particularly motivated to form firm knowledge be particularly quick to construct such rules. Moreover, general inferential heuristics may facilitate the quick formation of knowledge across diverse content domains, leading individuals with a high need for closure to bestow domain-general epistemic authority on various agents, including the self. We are now beginning to have an understanding of these interrelated epistemic processes.

Short Biographies

Arie W. Kruglanski is a Distinguished University Professor at the University of Maryland, College Park. He is recipient of the National Institute of Mental Health Research Scientist Award (Career Award), the Senior Humboldt Award, the Donald Campbell Award for Outstanding Contributions to Social Psychology from the Society for Personality and Social Psychology (SPSP), the Distinguished Scientific Contribution Award from the Society of Experimental Social Psychology (SESP), The Award for Scholarship and Creativity from the Regents of the University of Maryland, and the Revesz Award from the University of Amsterdam. He was Fellow at the Center for Advanced Studies in the Behavioral Sciences, and is Fellow of the American Psychological Association and the American Psychological Society. He has served as editor of the *Journal of Personality and Social Psychology: Attitudes and Social Cognition*, editor of the *Personality and Social Psychology Bulletin*, and associate editor of the *American Psychologist*. His interests have been in the domains of human judgment and decision making, the motivation-cognition interface, group and intergroup processes, and the psychology of human goals. His work has been disseminated in over 200 articles, chapters and books and has been continuously supported by grants from the National Science Foundation, the National Institute of Mental Health, Deutsche Forschungs Gemeinschaft, the Ford Foundation and the Israeli Academy of Science. He has recently served as member of the National Academy of Science panels on counterterrorism, and educational paradigms in homeland security, and is serving on the NAS Board for Cognitive, Social and Sensory Processes. Kruglanski also serves as a co-PI at START (National Center for the Study of Terrorism and the Response to Terrorism), at the University of Maryland.

Endnote

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¹ For Popper (1959), the process of hypothesis testing is represented by the premise. If H then E, which implies that one can only falsify a hypothesis, but not verify it as we are suggesting. According to our analysis, however, the knower may depart from the assumption that *if and only if* hypothesis H were true evidence E would be observed.

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