

PAWEŁ STROJNY  
MAŁGORZATA KOSSOWSKA  
AGNIESZKA STROJNY  
Jagiellonian University  
Institute of Psychology

## WHEN THE NEED FOR CLOSURE PROMOTES COMPLEX COGNITION

Lay epistemic theory is one of the most popular theoretical frameworks describing the knowledge formation process. According to it, the central variable determining the epistemic process is the need for cognitive closure. In most cases, high levels of this motivation are associated with simplified and accelerated processing of information. This can lead to an overly simplified understanding of this variable. In fact, there are reasons to believe that the typical relationship is reversed under certain circumstances. The paper is a review of the research supporting this prediction. Results were analyzed with particular emphasis on two postulates of the theory: the two phases of the epistemic process and the dual nature of the need for cognitive closure.

**Keywords:** need for closure, cognitive strategy, social judgment, knowledge formation, information processing.

### INTRODUCTION

The problem of decision-making and judgment formation has long been frequently studied and discussed in psychology. One of the most influential theories analyzing this issue is the lay epistemic theory (Kruglanski, 1989). Its two key assumptions are as follows: (1) there is a formal analogy between scientific and

---

Address for correspondence – PAWEŁ STROJNY, Jagiellonian University, Institute of Psychology, ul. Ingardena 6, 30-060 Kraków; e-mail: p.strojny@uj.edu.pl

The studies presented in the article were conducted under the grants of National Science Centre awarded to Paweł Strojny (DEC 2011/03/N/HS6/00997) and Małgorzata Kossowska (DEC 2011/02/A/HS5/00155).

“layman” modes of acquiring knowledge, and (2) motivation is a key factor regulating the course of these processes. Despite its popularity, a number of controversies have arisen around the lay epistemic theory, relating to both how the epistemic process is described in theory and how the results of some empirical studies are interpreted. The most important topics in views challenging elements of the lay epistemic theory include: doubts about the primacy of motivational factors in the epistemic process (e.g., Bar-Tal, 1994; Kossowska & Bar-Tal, 2013), discussion on the nature of the need for cognitive closure (e.g., Neuberg, Judice, & West, 1997), proposals of fundamental modifications to the tools used (e.g., Roets and Van Hiel, 2007), and, finally, the question of how to empirically differentiate the stages of the epistemic process postulated by the theory (e.g., Roets, Van Hiel, & Cornelis, 2006).

Contrary to what one might think, the aim of this study is not to “correct” (or to “deal with”) this useful theory. The purpose is rather to make an attempt to return to its sources and to emphasize two postulates, now often overlooked, that might shed new light on the results of several published (and perhaps many unpublished) studies.

### **MOTIVATION IN THE PROCESS OF KNOWLEDGE ACQUISITION**

Reflection on the relationship between motivation and cognition (including knowledge formation) has always been present in contemporary psychology. Over the years, however, researchers emphasized different aspects of this relationship. Initially, they concentrated their efforts on identifying and understanding specific motives that would explain human cognitive activity. For instance, a change of attitudes and judgments induced by confrontation with contradictory information was considered an effect of *motivation* to reduce the unpleasant state of cognitive dissonance (Festinger, 1957), and the tendency towards rivalry and an adherence to high performance standards could be a result of achievement *motivation* (McClelland, Atkinson, Clark, & Lowell, 1953). Later on, under the influence of the cognitive revolution in psychology (Miller, 2003), researchers focused on the capabilities and limitations of the human mind, which were viewed as the main determinants (and even sources) of any cognitive activity. Tverski and Kahneman (1974), for example, claimed that human reasoning is analogous to that of a computing machine; however, humans make mistakes and succumb to distortions because of their *cognitive* limitations. In response to this

line of inquiry, some researchers refocused their attention to motivational variables as important determinants of cognitive processes. For example, one of the first studies in this vein showed that *motivation* resulting from a fear of invalidity affects the way information is collected and analyzed (Freund, Kruglanski, & Shpitzajzen, 1985). Such studies led to the formulation of the theory of lay epistemics (Kruglanski, 1989), which highlights the influence of motivation upon the epistemic process. The knowledge accumulated in the context of this particular theory and its key construct – the need for cognitive closure – are the subject of the upcoming reflections.

#### **THE FORMULATION OF A SCIENTIFIC THEORY AS ANALOGOUS TO COMMON KNOWLEDGE ACQUISITION**

The *raison d'être* of a scientist is to pose questions and find answers to them. A simplified view of the actions of an honest researcher interested in formulating answers to a research question is as follows: using her previous and constantly updated knowledge, she formulates possible answers (hypotheses). When she stumbles upon one hypothesis that seems to be reliable enough – she chooses to test it. Then, using the methodology appropriate for her discipline, she collects crucial data about the problem, which allow her to verify the selected hypothesis. If the information gathered is in accordance with her initial answer, she accepts it as true; otherwise – she rejects it and starts searching for an alternative explanation.

According to the lay epistemic theory (Kruglanski, 1989), the above process of generating new knowledge may also illustrate the way everyone acquires new knowledge. This idea was based on Popper's assertion that scientific knowledge is "overgrown common sense" and that it follows the same rules that govern the formulation of common beliefs (Popper, 1959). The very term "lay epistemics" is not meant to be evaluative but denotes a set of cognitive "tools" used by an individual. In this case, expertise and precise experimental methods are replaced by personal opinions.

Kruglanski's main assumption is that the basic process responsible for human activity is knowledge acquisition. Both the content and the way of gathering knowledge determine further activities: formulating judgments, decision-making, and, eventually, behavior. Knowledge should be understood as a set of judgments, opinions, experiences, and attitudes – generally referred to as "units of knowledge" (cf. Erb et al., 2003; Kossowska, 2005). The very process of know-

ledge acquisition continuously undergoes a cycle of hypothesizing and hypothesis testing. Consequently, an individual applies the “if – then” principle (Erb et al., 2003; Kossowska, 2005) and generates beliefs relating not only to the facts of interest but also, for example, to the rules of conduct in a particular situation or to expectations regarding encounters with other individuals (Kruglanski, 1989; Kruglanski & Thompson, 1999; Erb et al., 2003). This process occurs regardless of the quality of the information acquired or the individual’s involvement in its acquisition and processing. Regardless of whether they are judgments, beliefs, or impressions – the process of their formation is subjected to the universal principles of knowledge acquisition (Kossowska, 2005).

In order for a newly acquired unit of knowledge to contribute to the formulation of a judgment it must become the minor premise of a subjective syllogism. When combined with a major premise, it enables judgment formation. For instance, when informed that “Charles is a graduate of a theological seminary” one can think that “Charles is a priest,” provided that when formulating this judgment one already has access to the major premise stating that “Every seminary graduate is a priest.” In other words, new information can be used as the basis for a judgment only when knowledge attained so far allows to incorporate the information into the structure and – subsequently – to draw a conclusion. Similarly to the minor premise, the major premise can take different forms; from explicitly formulated statements of fact (“Every seminary graduate has higher education”), through stereotypical beliefs (“Seminary graduates talk a lot and do nothing”), to personal feelings (“Seminary graduates are trustworthy”). As one can see, depending on the preexisting knowledge, one piece of information can lead to different judgments. Depending on the subjectively perceived strength of the association between a knowledge unit and preexisting knowledge, the unit may or may not become substantial evidence (Kossowska, 2005) – for example, if the relationship between graduating from a particular type of university and the degree of formal education is strong, one can formulate a judgment about Charles’s education with great certainty. On the other hand, if the relationship is weak or nonexistent, there may be no judgment at all. One last thing worth noting is that even though knowledge acquisition is conceptualized in a formal manner, the theory does not state that the individual must know the rules of formal logic, that the process is carried out exclusively consciously, or that knowledge always takes the form of an abstract, consciously accessible rule (Erb et al., 2003). On the contrary, the process usually takes place unconsciously and people do not need to be aware of the factors that influence them (e.g., Kruglanski & Webster, 1991). The theory also allows for a variety of errors, for instance better or worse

copied with a problem depending on the level of its abstraction (Evans, 1989), unjustified assignment of meaning to objectively irrelevant premises and vice versa (Crocker, Hannah, & Weber, 1983), and – lastly – reasoning errors (e.g., Wason, 1966).

### FROM THE NEED FOR CLOSURE AVOIDANCE TO THE NEED FOR CLOSURE

According to the theory of lay epistemics, the process of acquiring knowledge is mainly determined by the level of the need for cognitive closure. This need is a person's tendency to possess certain information and is also related to ambiguity aversion (Kruglanski & Webster, 1996). The term should be understood as motivation associated with personal goals rather than an information gap in need of filling. This tendency can lead to efforts aimed at achieving closure, bias the individual's choices towards options that facilitate closure and – depending on the level of closure – modulate the individual's affective state. The term "need for cognitive closure" may be misleading. Due to the fact that it sounds like a term describing one of two ends of a continuum, it is customary to think solely about "high" and "low" need for cognitive closure (the latter sometimes mistakenly understood as lack of motivation). The very way in which the author defines this concept: "The need for nonspecific closure<sup>1</sup> is a desire for an answer on a given topic; any answer compared to confusion and ambiguity" (Kruglanski, 1990, p. 337), seems to suggest that a person may display more or less tolerance for "ambiguity," which in turn corresponds to a smaller or greater need for structuring by means of cognitive closure. The definition seems not to allow for the existence of motivation to avoid closure, which would promote remaining in the state of "ambiguity."

So, does lay epistemic theory state that people can only vary in the degree of aversion to confusion? Kruglanski leaves no doubt on that matter when he writes: "An individual can have a strong, medium, or no need for nonspecific closure, in fact one may even wish to avoid it." (Kruglanski & Webster, 1996, p. 266), which clearly indicates that motivation to avoid cognitive closure is possible. Despite the fact that the above quotation on lay epistemic theory was

---

<sup>1</sup> Lay epistemic theory distinguishes between specific and nonspecific need for closure (Kruglanski, 1989). The former can be understood as the need to confirm a specific conclusion. The subject of this study is the nonspecific need for closure, and it is this concept that by the term "need for closure" refers to later on in the text.

derived from his early writings, similar definitions and objections can be found in the author's much later works (e.g., Kruglanski, 2004; Kruglanski, Dechesne, Orehek, & Pierro, 2009; Roets, Kruglanski, Kossowska, Pierro, & Hong, 2015). This proves that the possibility of motivation to avoid closure is a consistently formulated theoretical postulate. However, the issue of the "lower" end of the need for cognitive closure unfortunately has not yet been of particular interest to researchers, who focused their efforts on the consequences of motivation to achieve closure.

The above mentioned theoretical postulates are important because they point to the fact that the level of the need for closure is actually situated on a continuum ranging from strong motivation to remain in a state of ambiguity to strong motivation to formulate a clear answer. The results of empirical studies presented below confirm the existence of this continuum. Using this particular approach, it is possible to formulate hypotheses concerning how not only motivation to achieve closure but also motivation to avoid it can be expressed. This will make it possible to fully describe the process of knowledge formation and to understand its mechanisms more thoroughly.

### **THE TWO STAGES OF KNOWLEDGE ACQUISITION**

Most publications devoted to the issue of the need for cognitive closure will expose the reader to a general statement that there are two stages of the closure process and (rarely) that the level of this need has two consequences – the tendencies of urgency and permanence of the formulated knowledge (Kruglanski & Webster, 1996). Although both predictions were present in lay epistemic theory from the very beginning, their significance has lately been less appreciated. According to the authors, taking into account these two theoretical postulates into account allows for more precise predictions and sheds new light on the emerging, seemingly contradictory, results of empirical research.

The process of formulating knowledge is divided into two stages that occur in a sequence and manifest themselves in different ways. The first one is called the "seizing" phase and the second – the "freezing" phase (Kruglanski & Webster, 1996). The aim of the "seizing" phase is to answer the question being posed; the higher the need for closure, the more quickly one takes a stance. This is a reaction to the uncomfortable state of remaining without an answer. It is generally agreed that a high need for closure increases the propensity for rapid inter-

ruption of the information gathering process, and in recent years this has been by far the dominant way of thinking. It should be noted, however, that lay epistemic theory also allows for contrary predictions. In certain circumstances one should expect an increased meticulousness in information seeking at this stage under the influence of high need for closure (Kruglanski, 2004). According to lay epistemic theory, the “seizing” phase ends when “a belief crystallizes and turns from hesitant conjecture to a subjectively firm ‘fact’” (Kruglanski & Webster, 1996; p. 266).

The moment an individual develops this “subjectively firm ‘fact,’” the second phase takes place, in which the focus is on protecting the newly acquired answer. How much determination one has to defend (or challenge) the answer is – again – dependent on the need for cognitive closure. Once a view is formulated, the higher the motivation to obtain closure, the stronger the aversion to modify it. This may manifest itself in phenomena such as the primacy effect (e.g., Freund et al., 1985; Webster & Kruglanski, 1994) or susceptibility to the anchoring heuristic (Kruglanski & Freund, 1983).

#### **THE DUAL CONSEQUENCES OF THE NEED FOR CLOSURE AND THE NEED TO AVOID CLOSURE**

The steps involved in the process of acquiring knowledge are associated with two tendencies, which are a consequence of an increased need for closure – urgency and permanence (Kruglanski & Webster, 1996). The need for urgency, defined as the “inclination to ‘seize’ on closure quickly” (Kruglanski & Webster, 1996, p. 265) forces the individual to formulate a hypothesis quickly, and prolonging the seizing phase causes a feeling of discomfort. The need for permanence has two consequences: “inclination to preserve, or ‘freeze’ on, past knowledge and to safeguard future knowledge” (p. 265).

In most cases, the effects of both tendencies on the epistemic process go hand in hand, and researchers do not attempt to separate them. For example, in studies by Maysless and Kruglanski (1987, Study 2), where participants were asked to identify numbers displayed on a screen for a short period of time and were given the opportunity to repeat the exposure in order to be certain. The number of repetitions was interpreted as a tendency towards information seeking. It was found that people with an experimentally induced need to avoid closure viewed single digits a larger number of times compared to those with an experimentally induced need for closure. This effect may be related to acting upon both

a reduced urgency tendency (collecting more information during the “seizing” phase) and a reduced permanency tendency (higher inclination to confront the formed judgment with new information in the “freezing” phase). Similar results were obtained, for instance, for the number of generated hypotheses and seeking more information confirming a judgment than challenging it. People with a high need to achieve closure generated fewer hypotheses, and at the same time needed less time to select the correct hypothesis (seizing) and to verify it (freezing) (Mayseless & Kruglanski, 1987, Study 3). By collecting only the information confirming their initial judgment, people with a high need for closure completed the seizing phase faster and eliminated arguments that could endanger their hypothesis in the freezing phase (Kruglanski & Mayseless, 1988). Numerous examples of effects rooted in the above mentioned tendencies related to the need for closure can be found in the literature (e.g., Kruglanski & Webster, 1996; Kruglanski, 2004).

Among the effects of the two tendencies, one is of particular interest – the firm belief of people with high need for closure in the validity of their judgments (Kruglanski & Webster, 1991; Kruglanski, Webster, & Klem, 1993; Webster, 1993). This effect is paradoxical because it is contrary to the common belief that what is needed in order to formulate complete and certain knowledge is more extensive processing of the available information rather than filtering it and limiting the processing (Kruglanski & Webster, 1996).

In one of their studies, Webster and Kruglanski (1994) compared subjective certainty and susceptibility to persuasion in people with different levels of the need for closure, in a situation of discussion (with the experimenter’s assistant, who always opposed the tested person) over a court’s verdict. An additional experimental manipulation was also introduced by exposing the participants to different amounts and quality of information before the discussion. The complete information condition consisted in presenting, among other materials, a legal opinion on the case discussed, which showcased the arguments of both sides (and therefore the information was to some extent contradictory). In the limited information condition, no opinion was presented. It turned out that the participants with a high need to achieve closure were more confident in their judgments and less susceptible to persuasion than those with a high need to avoid closure, but only when they had the opportunity to obtain complete information. Otherwise (when they did not have complete data needed to form a judgment), their confidence and resistance to persuasion were lower compared to participants with a low need for closure. The authors conclude that when situational factors limit the objective possibilities of formulating an accurate judgment, people with

a high need for closure are willing to be persuaded (defy their initial judgment), because each persuasive message gives them a chance to achieve closure, even when this means changing their original stance. In other words, in this case, a high need for closure results in a reduced, not increased (which is normally the case), tendency towards freezing.

Similar results have been collected over the past two decades from other research. People with a high need for closure, when facing the task of indicating the author of a drawing presented to them, searched for information more intensively when they had no good reason for formulating an initial judgment (Kruglanski et al., 1991). When facing consumer decisions, people with high need for closure were looking for less information only on condition that they were familiar with the product and had a preconceived opinion about it (Houghton & Grewal, 2000), and when choosing between two unknown brands (when the impact of any previous experience had been eliminated) they sought more information before making a decision (Vermeir, Van Kenhove, & Hendrickx, 2002).

The cited research indicates that the direction of the relationship between epistemic motivation and the course of formulating knowledge is jointly influenced by the content and the amount of the available information. Another interesting thread in the discussion about circumstances favoring the “reversal” of a typical relationship between the need for closure and reasoning is the possibility to influence this relationship by modifying an individual’s ability to effectively process information and draw conclusions. Both subjective (e.g., Bar-Tal, Kishon-Rabin, & Tabak, 1997; Kossowska & Bar-Tal, 2013) and objective (e.g., Kossowska & Jaško, 2013; Strojny, 2015) perspectives on human capabilities in this regard have been studied.

Since the mid-90s, Bar-Tal and colleagues have been developing the idea of an ability-like variable independent of epistemic motivation (e.g., Bar-Tal, 1994; Bar-Tal et al., 1997; Bar-Tal Raviv & Spitzer, 1999). In his early works, Bar-Tal and colleagues showed that the need for structure is positively correlated with the tendency to simplify the process of formulating knowledge, but only on condition that it is accompanied by high structuring capabilities. In their recent study, Bar-Tal and Kossowska (2010, Study 3) hypothesized that the need for cognitive closure would also interact in a similar manner with the ability to act upon it. The authors examined the relationship between cognitive closure and the tendency to selectively remember information consistent with the adopted hypothesis. The participants were asked to become acquainted with some information about a person. It was also suggested to them that “at first glance” this person made a certain impression (friendly/unfriendly, honest/dishonest). After obtaining

other information and a short break, the participants were unexpectedly asked to recall the information. The predominance of the correctly recognized information confirming the initial judgment indicated selective memorizing. As expected, there was a positive correlation of the need for closure and the bias in memorizing information, but only on condition that the subjective ability for closure was high. Otherwise, the direction of correlation was reversed. Similarly, Kossowska and Bar-Tal (2013) showed that analogous interactions are present in relation to the preference for information consistent with the initial decision (Study 2) and the tendency to formulate stereotypical judgments (Study 3). A recent study by Kossowska, Dragon, and Bukowski (2015, Study 1) on attitudes towards unfamiliar groups (Gypsies) has confirmed and extended the earlier findings about conditions favoring the reversal of the “typical” relationship between the need for closure and attitudes resulting from stereotypes. The authors demonstrated that high need for closure was associated with negative stereotypes against the group being evaluated only in individuals with high ability to achieve closure. On the other hand, when the respondents’ closing ability was low, their need for closure correlated positively with positive attitudes towards Gypsies. According to the authors, this result indicates that a combination of low ability and high need for closure results in a decrease in the degree of subjective fulfillment of the need for certainty and thereby causes a decrease in reliance on cognitive schemas.

Another direction in research, which has been pursued since relatively recently, is the relationship between epistemic motivation and such objective conditions of information processing as working memory capacity and cognitive resource depletion. For instance, Kossowska and Jaško (2013) showed that the efficiency of fulfilling instruction-induced need for closure depends on a sufficiently high memory capacity, which enables the person to maintain the situationally induced goal in a state of activation. On the other hand, Strojny (2015, Study 3) showed that in people with high working memory capacity the need for cognitive closure was negatively correlated with susceptibility to confirmation bias. A similar pattern of results had been obtained in previous studies, where, instead of measuring working memory capacity, researchers induced a depletion of cognitive resources (Strojny, 2015, Studies 1 and 2) – in this case, a negative correlation between the need for closure and confirmation bias susceptibility was also observed. The results of these three studies are a strong premise for the claim that objective cognitive abilities and epistemic motivation influence diverse effects of cognitive functioning. Importantly, the relatively higher capabilities (high memory capacity, lack of cognitive depletion) cause a reversal of the typical relationship between the need for closure and the tendency to rely on

cognitive schemas. This is probably due to the dual consequences of the need for closure. When motivated to develop an urgent and permanent judgment, individuals with a relatively high potential for information processing do not have to choose which of the needs to pursue. They can process a variety of information more efficiently (i.e., increase the permanence of a judgment) in a relatively short time (i.e., without sacrificing urgency).

An interesting example of the two fold consequences of a high need for closure in social situations has been provided in the study conducted by Koscic, Kruglanski, Pierro, and Mannetti (2004) on immigrants' tendency to assimilate, depending on their level of their need for closure and on the groups in which they functioned. According to their results, high need for closure resulted in a lower tendency to assimilate if, following immigration, the participants functioned in a group composed of representatives of their own ethnic group. This situation was reversed when immigrants functioned in a group forcing them to interact with citizens of the host country, in which case the increased need for closure resulted in a stronger tendency to assimilate. These results can also be interpreted as an example of the unusual functioning of an increased need for closure in conditions not conducive to defending the previously acquired knowledge. Participants with a high need for closure, who were particularly resistant to a modification of their social relations in favorable conditions, were ready to accept the uncomfortable situation of "unfreezing" their relations on condition that it was temporary and eventually led to the creation of a more permanent closure manifesting itself in new relationships.

Jaśko, Czernatowicz-Kukuczka, Kossowska, and Czarna (2015) found an effect similar to the one previously presented in the case of an abstract decision-making problem. Participants were shown a matrix consisting of 25 covered fields, which revealed one of two colors when uncovered. The respondents' task was to assess which of the colors was represented in larger quantities on the matrix provided, and for this purpose they could reveal any number of fields. Naturally, the more fields were discovered, the more likely one was to answer correctly. Once again, those with a high need for closure collected more data in this study if they had not previously received any additional information. Importantly, the authors identified a significant moderator – the described effect occurred only when the uncovering of successive fields was not associated with losses. When the rules of the task included a cost for opening each field (i.e., increased the need for urgency) – the effect disappeared. Perhaps this is the first clear example of the clash of opposing tendencies for urgency and permanence in formulating knowledge. When permanence was the only modulator (i.e., when no costs

of collecting additional information reduced the need for urgency) – the participants followed it and maximized the certainty of formulated knowledge by increasing its quality. However, the reintegration of the need for urgency into the “subjective count of gains and losses” abolished the effects of the need for permanence.

The above results take us back to the issue of the two stages of formulating knowledge. Is it possible that in certain situations the need for urgency contradicts the need for permanence? Kruglanski and Webster (1996) seem to suggest that the tendencies towards urgency and permanence do not coexist in the same moment in the course of the epistemic process. They claim that the point in time that separates them is the moment when judgment becomes crystallized – i.e., the end of the seizing stage and the beginning of the freezing phase. In line with this reasoning, the tendency for urgency is reflected in the epistemic process during the seizing phase – causing a shortening of the information seeking process and accelerating judgment formation. The tendency towards permanence manifests itself after an initial judgment has been formulated as an inclination to ignore contradictory information in order to maintain the previously acquired knowledge. However, this does not explain the above mentioned research results. Let us recall that in each study – Houghton and Grewal (2000), Vermeir and colleagues (2002), as well as Jaško and colleagues (2015) – the participants were put in a situation that prevented initial judgment formation (and, consequently, its crystallization); thus, they could not complete the seizing phase. Remaining under the influence of a high need for closure, they abandoned fulfilling the urgency need during the first phase of the epistemic process and made an effort to seek more information. At this stage, such behavior should rather be expected from individuals with a high need to avoid closure.

As evidenced by the summarized results, although in most cases the need for closure speeds up and simplifies the process of formulating knowledge (review: Kruglanski et al., 2009), situations in which individuals characterized by a strong motivation to achieve closure are ready to make extra cognitive effort in order to formulate a credible answer to a persistent question are not only possible in theory but also observable in practice. The above results are derived from a wide variety of studies, their topics extend over subjects such as abstract problems (Jaško et al., 2015), consumer decisions (Houghton & Grewal, 2000), and actual behavior in a social context (Kosic et al., 2004). These effects are present both in studies that operationalize the need for closure as a dispositional variable (e.g., Bar-Tal et al., 1997, 1999, 2010) and in those that operationalize it as a situational variable (e.g., Mayseless & Kruglanski, 1987; Kossowska & Jaško, 2013). The

multitude of studies and diverse paradigms in which the described results have been obtained provoke a search for a universal mechanism that would be responsible for them. The authors' view is that this mechanism may lie in the conflicting tendencies towards permanence and urgency. It is quite probable that, in some circumstances, the two tendencies do not go together and are in opposition to each other. This might be the case, for example, when an individual believes that the knowledge formulated on the basis of a simplified process (which meets the requirements of a high need for urgency) is not sufficiently accurate (does not satisfy the high need for permanence). In such a situation, a person under the influence of a high need for closure must choose the tendencies of greater importance from his or her perspective. The above mentioned effects – seemingly contradictory to the predictions of the lay epistemic theory – are probably situations in which the second aspect of the tendency towards permanence (tendency to improve the quality of the formulated knowledge) dominates the need for urgency (which leads to a simplification and acceleration of the process of formulating answers). As noted by Kruglanski himself, “no one would consciously adopt a closure that she or he adjudged invalid” (Kruglanski, 2004, p. 10) – there are many indications that this is the situation in the abovementioned studies.

## CONCLUSION

Lay epistemic theory (Kruglanski, 1989) is one of the most influential theories explaining the process of formulating knowledge. Consequently, it has often been referred to by researchers focusing, among other issues, on: decision-making, prejudice, intergroup relationships, extremism, and organizations management (review: Roets et al., 2015). The application of this approach in so many areas proves its usefulness and relevance; however, it involves a risk of an overly simplified understanding of its postulates. This can lead to erroneous predictions stemming from the belief that a high level of the need for closure is always accompanied by a tendency to simplify the processing of information. The reason for this is the fact that a vast majority of results published over the last three decades confirms precisely this direction of the relationship – the higher the need for cognitive closure, the faster and more heuristic the process of knowledge formation. In reality, this relationship is not as simple, and in some cases it may lead to opposite results. This does not contradict the assumptions of the theory of lay epistemics, which predicts the dual manifestation of the need for permanence: a stronger commitment to a hypothesis once it is formulated, and the care to im-

prove the quality of the formulated knowledge (Kruglanski & Webster, 1996, p. 256). Perhaps, then, in some circumstances – when the tendency for urgency is reduced (as in the study by Jaško and colleagues, 2015), or impossible to fulfill (as in the one by Vermeir and colleagues, 2002) – the tendency towards permanence is put at the forefront, which manifests itself in greater care for the quality of the formulated knowledge during the “seizing” phase.

The presented results illustrate the need for in-depth analysis of the relationship postulated in lay epistemic theory. Two questions can be posed in the light of these results: To what extent is it possible to separate the seizing and freezing stages when studying the epistemic process? Do we presently have the tools to precisely distinguish the two aspects of the need for closure (the tendencies towards urgency and permanence)? Roets and colleagues (2006) made an attempt to answer the former question. Inspired by the critical comments of Neuberg and colleagues (Neuberg et al., 1997; Neuberg, West, Judice, & Thompson, 1997) about the Need for Closure Scale, they verified whether the two factors constituting the scale (the Decision-Making subscale and the other four subscales) translate into a tendency towards accelerated seizing and freezing. It seemed possible that the tendency towards accelerated seizing would correlate with the Decision-Making subscale results, while freezing would correlate with the other four subscales. The results of analyzes did not confirm these predictions. Even less is known about the answer to the second question: so far, no attempt has been made to empirically grasp the differences between the tendency to urgently formulate knowledge and the tendency towards permanence.

In conclusion, we hope that the awareness of the research results collected herein will contribute to an increased interest in the problem of the second (“low”) end of the need for closure continuum, as well as in research on the relationships between the need for closure and tendencies towards urgency and permanence in formulating knowledge. Perhaps this work will shed new light on the “unexpected” results, which are yet to be published.

## REFERENCES

- Bar-Tal, Y. (1994). The effect on mundane decision-making of 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.
- Bar-Tal, Y., & Kossowska, M. (2010). The efficacy at fulfilling need for closure: The concept and its measurement. In J. P. Villanueva (Ed.), *Personality traits: Classification, effects and changes* (pp. 47-64). New York: Nova Publishers.

- Bar-Tal, Y., Raviv, A., & Spitzer, A. (1999). The effect on coping of monitoring, blunting, and the ability to achieve cognitive structure. *The Journal of Psychology, 133*, 395-412.
- Crocker, J., Hannah, D. B., & Weber, R. (1983). Person memory and causal attributions. *Journal of Personality and Social Psychology, 44*, 55-66.
- 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.
- Evans, J. S. B. T. (1989). *Bias in human reasoning: Causes and consequences*. Hove, UK: Lawrence Erlbaum Associates, Ltd.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.
- Freund, T., Kruglanski, A. W., & Shpitajzen, A. (1985). The freezing and unfreezing of impression primacy: Effects of the need for structure and the fear of invalidity. *Personality and Social Psychology Bulletin, 11*, 479-487.
- Houghton, D. C., & Grewal, R. (2000). Please, let's get an answer – any answer: Need for consumer cognitive closure. *Psychology & Marketing, 17*(11), 911-934.
- Jaško, K., Czernatowicz-Kukuczka, A., Kossowska, M., & Czarna, A. (2015). Individual differences in response to uncertainty and decision making: The role of behavioral inhibition system and need for closure. *Motivation and Emotion*. doi: 10.1007/s11031-015-9478-x
- Kosic, A., Kruglanski, A. W., Pierro, A., & Mannetti, L. (2004). Social cognition of immigrants' acculturation: Effects of the need for closure and the reference group at entry. *Journal of Personality and Social Psychology, 86*, 796-813.
- Kossowska, M. (2005). *Umysł niezmienny. Poznawcze mechanizmy sztywności*. Cracow, PL: Jagiellonian University Press.
- Kossowska, M., & Bar-Tal, Y. (2013). Need for closure and heuristic information processing: The moderating role of the ability to achieve the need for closure. *British Journal of Psychology, 104*(4), 457-480.
- Kossowska, M., Dragon, P., & Bukowski, M. (2015). When need for closure leads to positive attitudes towards a negatively stereotyped outgroup. *Motivation and Emotion, 39*, 88-98.
- Kossowska, M., & Jaško, K. (2013). Need and ability in knowledge formation process. In D. Cervone, M. W. Eysenck, M. Fajkowska, & T. Maruszewski (Eds.), *Personality dynamics: Embodiment, meaning construction, and the social world* (pp. 109-123). Clinton Corners, NY: Eliot Werner Publications. Warsaw lectures on personality and social psychology, vol. 3.
- Kruglanski, A. W. (1989). *Lay epistemics and human knowledge: Cognitive and motivational bases*. New York: Plenum.
- Kruglanski, A. W. (1990). Lay epistemic theory in social cognitive psychology. *Psychological Inquiry, 1*, 181-197.
- Kruglanski, A. W. (2004). *The psychology of closed mindedness*. New York: Psychology Press.
- Kruglanski, A. W., Dechesne, M., Orehek, E., & Pierro, A. (2009). Three decades of lay epistemics: The why, how, and who of knowledge formation. *European Review of Social Psychology, 20*, 146-191.
- Kruglanski, A. W., & Freund, T. (1983). The freezing and unfreezing of lay inferences: Effects of impression primacy, ethnic stereotyping and numerical anchoring. *Journal of Experimental Social Psychology, 19*, 448-468.
- Kruglanski, A. W., & Mayselless, O. (1988). Contextual effects in hypothesis testing: The role of 742 competing alternatives and epistemic motivations. *Social Cognition, 6*, 1-21.

- Kruglanski, A. W., Peri, N., & Zakai, D. (1991). Interactive effects of need for closure and initial confidence on social information seeking. *Social Cognition, 9*(2), 127-148.
- Kruglanski, A. W., & Thompson, E. P. (1999). Persuasion by a single route: A view from the unimodel. *Psychological Inquiry, 10*, 83-109.
- Kruglanski, A. W., & Webster, D. M. (1991). Group members' reactions to opinion deviates and conformists at varying degrees of proximity to decision deadline and of environmental noise. *Journal of Personality and Social Psychology, 61*, 212-225.
- Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: "Seizing" and "freezing". *Psychological Review, 103*, 263-283.
- 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.
- 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.
- McClelland, D. C., Atkinson, J. W., Clark, R. A., & Lowell, E. L. (1953). *The achievement motive*. East Norwalk, CT: Appleton-Century-Crofts.
- Miller, G. A. (2003). The cognitive revolution: A historical perspective. *Trends in Cognitive Sciences, 7*, 141-144.
- Neuberg, S. L., Judice, T. N., & West, S. G. (1997). What the Need for Closure Scale measures and what it does not measure: Toward differentiating among related epistemic motives. *Journal of Personality and Social Psychology, 72*, 1396-1412.
- Neuberg, S. L., West, S. G., Judice, T. N., & Thompson, M. M. (1997). On dimensionality, discriminant validity, the role of psychometric analyses in personality theory, measurement: Reply to Kruglanski et al.'s defense of the Need for Closure Scale. *Journal of Personality and Social Psychology, 73*, 1017-1029.
- Popper, K. R. (1959). *The logic of scientific discovery*. New York: Basic Books.
- Roets, A., Kruglanski, A. W., Kossowska, M., Pierro, A., & Hong, Y. (2015). The motivated gatekeeper of our minds: New directions in need for closure theory and research. *Advances in Experimental Social Psychology*. doi: 10.1016/bs.aesp.2015.01.001
- Roets, A., & Van Hiel, A. (2007). Separating ability from need: Clarifying the dimensional structure of the need for closure scale. *Personality and Social Psychology Bulletin, 33*, 266-280.
- Roets, A., Van Hiel, A., & Cornelis, I. (2006). The dimensional structure of the Need for Cognitive Closure Scale: Relationships with "seizing" and "freezing" processes. *Social Cognition, 24*, 22-45.
- Strojny, P. (2015). *Cognitive sources of social knowledge formation process* (Unpublished doctoral thesis). Jagiellonian University Institute of Psychology, Cracow, PL.
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*, 1124-1130.
- Vermeir, I., Van Kenhove, P., & Hendrickx, H. (2002). The influence of need for closure on consumer's choice behaviour. *Journal of Economic Psychology, 23*(6), 703-727.
- Wason, P. C. (1966). Reasoning. In B. M. Foss (Ed.), *New horizons in psychology* (pp. 113-135). Harmondsworth: Penguin.
- Webster, D. (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.