

# Non-lucid dreamers actualize volition as ego executive capacity by engaging in problem solving

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*Summary.* Within the already-investigated described nocturnal cognitive problem-solving phenomenon (Kozmová, 2008, 2012, 2015), the goal of this exploratory study was to determine the contexts in which non-lucid dreamers engage in problem-solving by voluntary actions and behaviors and to characterize volition and its range in kinetic (motile) and communicative (expressive) modalities. The 979 cross-cultural operationally defined problem-solving dreams were analyzed by the method of grounded theory. The analysis of individual occurrences of problem-solving behaviors and actions as volition-based executive skills (ego executive capacity) in addition to other types of cognitions, yielded a total of exemplary 54 dreams with contexts of self-preservation, intrapersonal situations, and interpersonal relationships. The initial emergent cross-state characterization of volition in non-lucid problem-solving dreams calls for reappraisal of neurophysiological theories that did not yet consider the existence of volition as an executive skill that is sustained or could emerge during non-lucid dreaming.

*Keywords:* Volition, problem-solving, executive function, executive skills, higher order cognition, ego executive capacities, non-lucid dreaming, grounded theory

## 1. Introduction

In 1855, the French Académie des Sciences Morales et Politiques posed the following question that focused on the psychology of consciousness within the realm of nocturnal life: “What mental faculties subsist, or stop, or change considerably during sleep?” (df. Hervey de Saint Denys, 1867/1977; cited in Schwartz, 2000, p. 56). Ever since, regarding non-lucid dreaming during which dreamers remain unaware, on a continuum, of the existence of the external world (van Eden, 1913), researchers have already elucidated as subsisting in dreaming several mental phenomena of waking life. These mental capacities include higher order cognition, including self-reference; reflective awareness; self-reflection; speech; reflectiveness; meta-cognition; and various cognitive processes, such as planning and decision-making, and executive skills (e.g., Cicogna, Cavallo, & Bosinelli, 1991; Kahan, 1994; Kahan & LaBerge, 1996, 2011; Kozmová, 2012; Kozmová & Wolman, 2006; Meier, 1993; Purcell, Mullington, Moffitt, Hoffmann, & Pigeau, 1986; Snyder, 1970; Wolman & Kozmová, 2007).

Other waking-life phenomena with cross-state occurrences, such as emotions (e.g., Schredl & Doll, 1998), have been found in non-lucid dreaming also as continuing (for review, see Nielsen & Carr, 2011). The continuity of experiencing emotions connected or integrated with cognition becomes

apparent especially when dreamers encounter particularly vexing situations that require problem-solving (Kozmová, 2015).

Earlier considerations and studies demonstrated the existence of problem-solving in non lucid dreams (e.g., Glucksman, 2007; Glucksman & Kramer, 2004; Greenberg, Katz, Schwartz, & Pearlman, 1992; Greenberg & Pearlman, 1975, 1983). Wolman & Kozmová (2007) conceptualized problem-solving as part of the executive process belonging to rational thought processes in which any time the non-lucid dreamer uses his or her own capacities for mental actions and reaching conclusions, the act of volition is involved (p. 841) and it accompanies these nocturnal mental acts. Volition, in this case, is understood as a mentally “pursuing a self-selected goal” (Kozmová, 2012, p. 58) and it is the also the core of problem-solving during nocturnal non-lucid dreaming. In addition, in the described multilayered nocturnal cognitive problem-solving phenomenon, its three direct modalities (executive thought, using emotions, and behaviors and actions; Kozmová, 2008, p. ii) “represents a variety of dreamers’ attempts to resolve the situations in the sense that the dreamer, with his or her own authority (as a person or self in the role of a decision-maker and actor), reacts to the situation” (p. 83). This direct, deliberate problem-solving and strategizing in the cognitive domain—the dreamers’ use of any of the eight identified executive thought processes during a dreamer’s experiences experience—is considered as “building blocks of volitionally pursuing a self-selected goal” (Kozmová, 2012, p. 58). It is the also the core of problem-solving. This collection of mental actions has been defined and exemplified (as a taxonomy) while accompanied by volition within the immediacy of non-lucid dreams in the form of dreamers’ intellectual and cognitive “attempts for resolution of dilemmas within immediacy of their dreams” (Kozmová, 2012, p. 51).

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Yet, despite the richness of the abovementioned research studies that examined higher order cognition's elements of waking consciousness as cross-over mental capacities subsisting in non-lucid dreaming consciousness, the *volition* remains only partially explicated as far as its intellectual and cognitive capacities (Kozmová, 2012). The comprehensive and inclusive research of volition as one of the most important and intriguing experiences, mental capacities, and phenomenological features of consciousness that abounds in waking life (Farthing, 1992) remains enigmatic and almost absent from scientific discourse.

The additional rudimentary beginnings of quantitative consideration of volition in dreaming can be also seen in the concept of "choice" (Kahan & LaBerge, 2011), or in its retrospective occurrence investigated with quantitatively based questionnaires in various states of consciousness (Dresler et al., 2014). Yet, besides the already-mentioned executive ego capacities accompanied by volition (Kozmová, 2012), the additional descriptive consideration of how else and when could volition come about or become actualized in non-lucid problem-solving dreams is missing from the scholarship of consciousness studies. The fact that volition as a richly endowed experience exists, though, is illustrated by the following anecdotal examples that depict the dreamer (both dreams are part of a research archive collected for the previous research studies; Kozmová & Wolman, 2006; Wolman & Kozmová, 2007), the experiences of her volition, and its additional range. This scope of volitional mental activities came into its existence under the strained and curiosity-driven difficulties that the dreamer decided to deal with and problem-solve:

1. Now I saw the bug sitting on top of the open shoebox.

The top was facing inside out. I thought the bug escaped. It flew around me, landed on the ground. I stepped on it. I was stepping on it with my tennis shoes, and I was trying to aim a hard step at the bug so I would kill it. It did not want to die. I was applying pressure and it did not do much good; the bug was getting out from underneath my tennis shoe and escaping. After all that stomping, it started to change; it changed twice, from black to brown, larger one, and from that to a bluish round one, sort of like a ball with a diameter of one centimeter. Parts of it were dead, the wings and legs, but the core body remained. I said to someone, I think I said it to a boy, "Bring me a hammer." I thought perhaps if I aimed well, I would be able to kill it. The hand appeared, I don't know whose hand it was, and gave me a long needle. The needle was about 15 centimeters long. I thought that I would not be able to kill it with the needle, I would need to aim right in the middle of it, and that does not seem like a good strategy because the bug could harm me while I am trying to aim. I thought the hammer would have been a better choice.

2. I had a destination in mind where I am going. I knew I had to pass J.'s house. I also knew that on the way either I could pass through the place—the clinic where Dr. P. practiced—or I could avoid it. I decided to go through the place even though I felt a bit of fear. I thought, What will I do if I meet him in the hallway? Nevertheless, I decided to go through the clinic (Kozmová, 2008, pp. 4-5).

Without dialogue with the dreamer, it remains unknown what might be the symbolic, psychological, emotional, or cross-state reaching significance of concerns that could reflect waking life situations represented in the abovementioned

dreams (e.g., Domhoff, 1996, 2011; Glucksman, 2007; Hall, 1951). Despite this lack of knowledge, while approaching the contemplation of these illustrative dreams in a *prima facie* manner (first impressions), one might notice that the dreamer reports experiences of some undetermined threats and problems. She makes decisions and thus becomes engaged with problem-solving activities within spontaneously arising, unplanned, and uncalled-for circumstances brought about by the dream. The dreamer actively proceeds to handle ongoing difficulties by using her self-awareness and volitional variety of self-initiated strategies, actions, and evaluative and appraising thoughts. Even her lack of a critical reflective quality of distinguishing conscious states of waking and dreaming (e.g., Rechtschaffen, 1978) did not seem to prevent her from using initiative, strategizing, and taking charge (Kozmová, 2008) that demonstrates the intactness of her nocturnal mental faculties: The dreamer, in addition to using feelings and thoughts, actively pursued goals, determined the course of events with her capacities for vocal expression and other actions to deal with the situations and thus demonstrated intentionality and volition (Purcell, Mofitt, & Hoffmann, 1993, p. 214).

Because, as seen in two anecdotal illustrations, at least one dreamer expanded her volition beyond its accompaniment of decision-making (Kozmová, 2012), there is an indication that volition might be sustained (Hervey de Saint Denys, 1986/1977) in more than one aspect (Kozmová, 2012) in the non-lucid dreaming state. Prior to stating hypotheses and research questions, it seems fruitful to review propositions and conceptualizations about volition in non lucid dreaming and in the waking states of consciousness.

### Conceptualization of Volition in the Psychology of Non-Lucid Dreaming Consciousness

Even though the previously mentioned dreamer, while asleep, became an agent, an originator, a volitional decision-maker, and an initiator with instrumentality of thought and action (Grand, 1982), on phenomenological grounds Hobson (2009a) asserted that "most experienced dream reporters say that they decided nothing at all in their non-lucid dreams. Things just happened to them, spontaneously as it were. They did not have the dream as much as the dream had them!" (p. 81). Thus, the theory about volition in non-lucid dreaming state of consciousness predicts a loss of "agentive control" (Voss, Holzmann, Tuin, & Hobson, 2009, p. 119) and "normally involuntary dream experience" (Hobson, 2009c, p. 41). In other words, the "executive ego" (Hobson, 2007, p. 79) known as a mental faculty of a waking life—the "ego-self" that uses will and volition (Meissner, 2011, p. 1123)—is considered continuously inoperative during non-lucid dreaming (Hobson, 2007, p. 79). Voss et al. (2009) also predicted "loss of volition" (p. 1198) based on state-dependency of the brain (Hobson, 2009a).

In neuropsychological terms, the prevailing state-dependency-based hypothesis of consciousness and its formal features states that volition in a non-lucid dreaming state of consciousness is "weak" based upon "disinhibited subcortical network activation" (Hobson, 1997, p. 391). Because these neural correlates are deemed diminished during non-lucid dreaming (Hobson, Pace-Schott, & Stickgold, 2000), the theorizing follows earlier neuroimaging reports (e.g., Braun et al., 1996) reviewed by Maquet et al. (2005), who re-emphasized that "volitional control is notoriously decreased

in dreams” (p. 223). Under these circumstances, “executive ego functions” (e.g., attention, planning, decision-making, and volition) are considered “deficient” (Hobson, 2007, p. 79) or actually lost (Hobson, 2009a). In other words, under the assumption of isomorphism or one-to-one correspondence between physiology (with investigations aimed to find neural correlates) and psychology (with investigations of phenomenological features within the dream reports), the presumed disengagement of the frontal cortex in non-lucid dreaming (e.g., Hobson, 2002) is equal to its inoperativeness (Hobson, 2007, p. 79). In this formulation, the non-lucid dreamers are stuck, in static suspension, with the lack of “voluntary agency” (Hobson, 2007, p. 75). Voss et al. (2009) also extended their speculation and claimed that only in lucid dreaming volition, as one of the “psychological functions,” returns with wake-life reactivation of dorsolateral prefrontal cortex (DLPFC, p. 1198). As Killgore (2010) emphasized regarding waking life executive skills accompanied by volition, for use of executive ego capacities, DLPFC is considered a neural region of interest that supports these mental activities.

Despite the previous predictions about the lack of volition during a non-lucid dreaming state of consciousness, there are, however, several notable theoretical and research exceptions (including data about executive skills accompanied by volition; Kozmová, 2012) upon which further development of interest in investigation of volition could be instantiated.

First, the applicable theoretical position is of Smith et al. (2004), who proposed that non-lucid dreamers could engage in self-initiated “motivated behavior” upon their unsatisfactory experiences, notably, “an experience of a discrepancy between an existing state and a preferred, or more valued state” (p. 504).

Second, Purcell, Moffitt, and Hoffmann (1993) investigated dreamers’ degree of developed cognitive behaviors with volition-intentionality as an underlying instrumental phenomenon that influences the transformation of dreamers’ change in state of consciousness from being non-lucid to becoming lucid (p. 218). The authors’ *Dream Scale Control Categories in Abbreviated Form* contains a range of intentional-volitional actions that include ego styles in terms of involvement, activity, effort, and feeling expressiveness: Progressively, the individual dreamer’s presence and activities in the dream range as follows: (a) not being present; (b) being present as an observer but not participating; (c) being present as an observer with some personal opinions or comments about observed dream events; (d) the dreamer being a main actor but when experiencing difficulty; he or she acts incompetently and does not have communicative means available; (e) the dreamer might be using some basic behavior to save himself or herself in a difficult situation; (f) the dreamer might be taking charge of his or her own behavior and using expressiveness (communication) that leads to success; (g) the dreamer is thinking about a solution to a problem and implementing it behaviorally without knowing that there is a world outside one’s own dreaming mind; and (h) the dreamer becomes lucid and able to “exert control over dream events or outcomes” (p. 219).

Third, Dresler et al.’s (2014) investigation of volitional components of consciousness with the use of retrospective questionnaires while focusing on the differences in volition’s existence between waking, non-lucid dreaming, and lucid dreaming pointed to at least some interest in the topic. In

addition, in Kahan and LaBerge’s (2011) work with individuals’ dream samples from interrupted late-night REM sleep and waking experiences and individuals’ responses to the Metacognitive, Affective, Cognitive Experiences (MACE) questionnaire, the the higher-order cognition’s element termed *choice* could be considered as a component of volition with its underpinning and accompaniment of executive skill of decision-making (Kozmová, 2012; Wolman & Kozmová, 2007).

### Conceptualization of Volition in the Psychology of Waking Consciousness

In the psychology of waking consciousness, will, or volition, as one of the ego executive capacities, is considered to be an “active intrapsychic mechanism” (Rangell, 2009, p. 1159) that is a “central and essential component of human psychic functioning” (Meisner, 2011, p. 1123). The volitional engagement of processes of executive capacities allows individuals to become “involved in the control and coordination of willful action towards future goal states” (Goel, Rao, Durmer, & Dinges, 2009, as paraphrased in Killgore, 2010, pp. 118-119). Thus, volition accompanies a variety of ego executive capacities including specific cognitive processes of planning, judgment, decision-making (Killgore, 2010); “flexible interactions with environment” including noticing of “novelty values” (Fosse & Domhoff, 2007, p. 52); and internal behavior (Faden & Duchamp, 1986). Ego executive capacities further include attention; noticing, self-reflective awareness; synthesis of new information (Hobson, 2009a); organizing internal experiences; motivating oneself; exercising agency; voluntarily acting in one’s behalf; and reflecting upon one’s actions (Jenkins, 2001; Rychlak, 1994; Workman et al, 2000). Volition, as the capacity of an executive ego that a person internally autonomously initiates and which then accompanies these processes, is viewed as a “central and essential component of human psychic functioning” (Meisner, 2011, p. 1123).

In experiential terms, Dijksterhuis and Aarts (2010) proposed that people motivate themselves and thus behave volitionally according to their goals. Further, using one’s mental capacities for taking part in decisively volitional behavior or in pursuing goal-oriented behavior (in terms of “set, strive for, and attain”) brings about the “sense of agency or willfulness in that we experience ourselves as the cause of our own behavior as a result of decisions and actions” (p. 468). Dijksterhuis and Aarts, similarly to Jenkins (2001), Rychlak (1994), and Workman et al. (2000), further asserted that *volition* is also a central organizing principle that people use to define and understand themselves (p. 468).

In addition, the subjective experience of *volition* comes about upon “awareness of one’s goal-directed self-reflective ‘now’” with simultaneously occurring decision-making (Fisher, 1986, p. 9). *Volition* has been defined as “the act of deciding upon and initiating a course of action. Synonym: will” (English & English, 1958, as cited in Farthing, 1992, p. 38). As Farthing further proposed, a person acting volitionally could do it either through some type of obvious behavior, or the person could pursue acting volitionally in his or her mind. Also, in order for it to be voluntary, this experience ought to be accompanied by a “conscious feeling of volition” or belief that one is acting and thinking deliberately and with personal choices in mind, in other words, taking into consideration possible options (Farthing, 1992, p. 38).

Furthermore, Farthing delineated that acting volitionally with choices in mind (regarding “*what to do, when to do it, or both*”) is accompanied by a “feeling that it could have been otherwise” (p. 38). As Farthing suggested, for inclusion of a *feeling of volition* into elements of consciousness, the person acts intentionally or volitionally and is “consciously aware of the decision to act before the action is initiated.” Thus, at a minimum, to act volitionally means “to be aware of a decision and able to report it” (p. 39).

Farthing’s (1992) propositions about volition in terms of the awareness of making mental decisions and/or acting voluntarily upon the world (in terms of objects, people, situations, circumstances, problems, etc.) include also using one’s own body either in the mental act of imagination (Nielsen, 2011) by itself or in an interaction in the real-world contexts. An additional aspect of acting volitionally means communicating to one’s self or others in time and space as initiation, complement, or accomplishment of intended behavior or action. At the same time, voluntary actions and behaviors, whether mental or in the real world, ought to be accompanied or concluded by feelings of alternatives (Farthing, 1992).

Theorists have further asserted that when the act of *volition* is in use during awake time, with support from the frontal lobes (dorsolateral prefrontal cortex, [DLPFC]; during waking, the thought processes of planning and decision making physiologically are believed to occupy the dorsolateral prefrontal cortex and medial parietal regions; Cabezza & Nyberg, 2000; Corbetta & Shulman, 2002; these regions are considered deactivated in REM sleep, Hobson et al., 2000), an awake individual with intact executive ego has “the ability to plan and coordinate *willful* (for emphasis, italicized by the present author) action in the face of alternatives, to monitor and update action as necessary and to suppress distracting material by focusing attention to the task at hand” (Jones & Harrison, 2001, p. 464). Thus, the use of higher order cognition processes of executive ego capacities sustains individuals in their involvement in volitional control and subsequent volitional actions toward future goal states (Killgore, 2010).

Taken together, as Killgore (2010) detailed, for executive processes to be accompanied by volition requires a “complex integration of information” and includes “coordinated interaction of cortical and subcortical networks within the brain”; these operations are held together and supported by the prefrontal cortex (p. 119). In terms of psychological and intellectual functioning, using *voluntarily* the abovementioned collection of executive capacities is considered by some authors as a quintessence of well-being (e.g., Workman et al., 2000).

## Background, Rationale, and Research Questions

For the exploratory qualitative work about volition as one of the executive ego capacities with assumed range occurring in non-lucid problem-solving dreams, the researcher followed Fosse and Domhoff’s (2007) claim that dream science is in the state of “noteworthy absence of contributions from core processes of executive thought” (p. 50). In addition, Hobson (2009a) asserted that *volition* as an experience and function in non-lucid dreaming belongs to types of mental phenomena that are not yet operationalized even though there is nothing “more crucial or central to our in-

terests” and that “no attention has yet been paid to those crucial functions by scientists interested in consciousness” (p. 80).

The previous appeal for operationalization of volition (Hobson, 2009a) already came to an initial fruition: Kozmová’s (2012) research of executive skills in existence during non-lucid problem-solving dreaming established that the eight distinct higher order processes of executive ego are initiated and accompanied by volition. The present author aimed to expand the knowledge about cognitive and intellectual aspects of volition by additional assumed volitional mental acts while taking into consideration Maquet et al.’s (2005) re-evaluation of human sleep.

Regarding executive processes occurring during nightly sleep, Maquet et al. (2005) asserted that volitional motor actions (illustrated earlier in this article) are examples of executive skills:

Executive processes coordinate external information, thoughts, and emotions and organize actions in relation to internal goals. The [person’s] selection of motor actions may directly rely on external stimuli, but in other cases it is based on the perceptual context or whole temporal episode during which the individual is acting. (p. 221)

Thus, when considering awareness of internal *goal cues* (Klinger, 2013, p. 1) in the landscape of endogenous random or self-created perceptual dream contexts, the non-lucid dreamer might find cues for volitionally attaining goals in various situations that require problem-solving upon encountering overt or covert problems. Based upon Maquet et al.’s (2005) assertion of executive skills including “selection of motor actions” (p. 221), it seemed reasonable to focus purposefully on two additional aspects of volition: (a) mental motile behaviors and actions strategies; and (b) as indicated earlier by Purcell et al. (1993) in their intention-volition scale, dreamers’ communications as verbally expressed behaviors both in the service of problem-solving. For this reason, with the larger goal of investigating whether volition as mental capacity could be sustained (cf. Herve de Saint Denys, 1867/1977, as cited in Schwartz, 2000, p. 56) in non-lucid problem-solving dreams, the goal of the present study was to capture hypothesized kinetic (mental physical motion or motile action) and *communicative* (expressiveness in a form of verbal speech) properties of volition that dreamers might use for their problem-solving efforts in the pursuit of the solutions or satisfaction of curiosity.

The rationale for mapping out problem-solving volitional *kinetic* and *communicative* actions and behaviors is supported by the following theories and investigations: Dreams with physical movement are considered “typical” (Freud, 1900/1966, p. 241), and physical motion is “employed whenever is needed” (p. 237). Dream motion, as part of dreamers’ psychology, is a salient pervasive experiential feature (Porte & Hobson, 1996). For example, in Hall’s (1951) study of 10,000 dreams, the dreamers performed actions “as a change in bodily position” (p. 62) in 34% of them. In Snyder’s (1970) study, in close to one third of 635 REM sleep laboratory dream reports, dreamers performed “active exertions” (p. 144). Strauch and Meier (1996) mentioned that in just one dream 16 motor activities and movements occurred (p. 41). Fosse, Stickgold, and Hobson (2004) considered “sensations in any sensorimotor modality,” including “kinesthetic sensations . . . realistic, akin to perceptions” (p. 299), a dominant part of dreamers’ experiences. Recently, Kahan and LaBerge (2011) investigated, through a phenom-

enological lens, dreamers' own behaviors in dreams as an ongoing cognitive activity, and Kahan and Claudatos (2016), in their extended study of the phenomenological features of dreams, listed self-movement as one of the sensory and structural categories of dreams (pp. 167-168). In addition, the motility as a possible part of dreamers' problem-solving repertoires has not yet been investigated in dream science.

Furthermore, focusing on communication as an expression of volition within executive skills during dreamers' problem-solving efforts is warranted by the following notions: The interactions in dreams include "verbal as well as motor activities" (Strauch & Meier, 1996, p. 118), and speech is deemed as "the principal means of social interaction in dreams" (Meier, 1993, p. 67). In dreams, speech, as one of the higher order cognitive skills, is considered "productive cognitive activity" (Kilroe, 2016, p. 13) and a "motor breakthrough" (Wolchover, 2012, para. 3). In addition, Hobson (2009a) proposed that "dream speech is in need of much more careful study" (p. 18); Kilroe (2016) echoed this sentiment by highlighting that speech is an "understudied area of dream research" (p. 14). Moreover, it is also not yet known whether dreamers even use speech—as an action or behavior—for problem-solving.

At the same time, more complex characterization (based in data of narratives) of *volition* as a psychological feature and part of mental life phenomena (Hobson, Pace-Schott, & Stickgold, 2003) in waking and non-lucid dreaming states of consciousness that either initiates or accompanies problem-solving goal-oriented subjective experiences of conscious states is so far missing from the science of consciousness.

The present author hypothesized that volition, based on anecdotal examples and research that previously identified it as accompanying executive thought processes in non-lucid dreaming (Kozmová, 2012; Wolman & Kozmová, 2007) could subsist in additional varieties "considerably during sleep" (df. Hervey de Saint Denys, 1867/1977, as cited in Schwartz, 2000, p. 56). For this reason, the investigator assumed that volition could be researched and described. Also, in the view of Hobson et al. (2003) suggestion, its characterization in its initial cross-state form as one of "psychological features" (p. 221) could be initiated. With appealing to "more detailed attention to phenomenology" (Hobson, 2009b, p. 812), the "emergent theory" (Henwood & Pidgeon, 2003, p. 136) of expanded concept of volition could be offered

Additionally, the investigated phenomena (including dreaming phenomena; Kozmová, 2015) occur in contexts (Charmaz, 2008; for the exception of experiencing developmentally based static images without contexts, see Domhoff, 2003). For this reason, the part of the research of volition needed to focus on delineating contexts in which individual dreamers use it to problem-solve with an overt or covert goal in mind. Then, the range of volitional motoric and communicative expressions dreamers used during problem-solving could be explicated.

In summary, the current research focuses on studying the landscape of endogenous random- or self-created dreaming contexts within which individual dreamers are behaving, acting, and communicating when encountering challenges or curiosities while volitionally making "attempts for resolution of dilemmas within immediacy of their dreams" (Kozmová, 2012, p. 51). The study constitutes a smaller part of the previous larger exploratory research that has been guided by the question, "What is the scope of cognitive prob-

lem-solving strategies that dreamers are capable of employing for resolving situations encountered during dreaming?" (Kozmová, 2008, p. ii). From this research emerged a complex description of the *phenomenon of nocturnal cognitive problem-solving strategies* (Kozmová, 2008) with several core variables (Kozmová, 2012, 2015), and volition in the form of behaviors and actions is understood as a core variable of direct problem-solving modality (Kozmová, 2008).

To reiterate, in the framework of non-lucid problem-solving dreams occurring in the dreaming minds, *volition* as part of executive processes is not yet fully understood in theory, nor has it been sufficiently investigated by research and subsequently offered in initial cross-state characterization. As I explained previously (Kozmová, 2008, p. 35), on the most rudimentary level, the dreaming brain and the dreaming mind could be distinguished in terms of the subjective experience during sleep. The brain as an organ regulates the need for sleep and could be considered an inherent instigator of involuntary existing sleep stages, which are not consciously regulated by individuals (Monaco & Cavanna, 2007). The dreaming mind, on the other hand, could be defined in terms of mental activities or "sum-total of mental operations" (Goldberg, 1980, p. 7) active during dreaming that contribute to the rise of subjective experiences in dreams. The contribution of the study rests in offering findings about dreamers' contexts which serve for deliberate (volitional) actions and behaviors in problem-solving dreams (Kozmová, 2008). This extended research of dreamers' volitional cognitive kinetic and communicative behaviors and actions has not yet been disseminated through article publication.

The present exploratory study with its focus on dreamers' use of volition was guided by the following research questions: "In which contexts are some non-lucid dreamers able to use their motile and communicative volitional capacities?" and "What types of non-lucid dreamers' behaviors and actions (in a variety of discernible strategies) demonstrate dreamers' capacities for using cognitive kinetic and communicative volition in non-lucid problem-solving dreams?"

## 2. Method and Materials

### 2.1. Assumptions and Operational Definitions

**Assumptions.** Explications of assumptions and philosophical foundations that guide particular research generally assist in reducing investigative biases in the use of methods and discussion of results (Gantt & Melling, 2009). Several suppositions disclosed below informed the present study:

1. The collection of archival dreams used in the current research consists of dreams recalled spontaneously at home without any preceding arrangements with dreamers. The dreams are deemed to be from the latter Rapid Eye Movement (REM) sleep period, which is, with its physiological arousals and psychological and emotional activities, the closest to the waking state of consciousness (Strauch & Meier, 1996). Thus, upon awakening, without any external prompts, dreamers have the nearest direct recollecting access to their REM-sleep subjective experiences (p. 60).
2. Dream reports are deemed to be a legitimate source of subjective data appropriate for scientific inquiries conducted by systematic investigations (Domhoff, 2003; see also dream science works in three volumes edited by Barrett & McNamara, 2007).

3. Dream narratives as the “first-person accounts of subjective experiences” contain data about “psychological features” of the person’s mind; this information about dreamers’ mental lives can be characterized and categorized (Hobson et al., 2003, p. 231).
4. The investigations of phenomena are irreducibly linked to contexts in which these are occurring (Charmaz, 2008) including mental phenomena related to the dreaming life and occurring in dreaming life (Kozmová, 2015).
5. Non-lucid dreamers retain parts of their working memory and have some access to memories acquired during waking life. For example, dreamers notice dream environments and remember their skills and abilities including skill of labeling experienced feelings, using thinking and knowing, and specifying their subjective preferences including personal values. These particulars might also serve as vantage points for dreamers making choices during non-lucid dreams (e.g., Kozmová & Wolman, 2006; Wolman & Kozmová, 2007).
6. During sleeping and dreaming, dreamers are immersed in their dream worlds and are, for the most part, disengaged from sensory contact with individuals or other external realities that could be helpful in problem-solving. The dreamers are problem-solving on their own and are using their individual mental abilities to handle the situations that arise (Kozmová, 2012).
7. Even though in some dreams the characters could become actively engaged in helping dreamers resolve difficult situations, preventing them to solve, or actually making situations worse for the individual dreamers (Kozmová, 2008, 2017), the focus of the present study is on dreamers’ own motile and communicative volitional faculties and capacities. The characters’ doings (behaviors and actions) as part of the internal idiosyncratic dynamics of the dreamer’s nocturnal life, are excluded from the present study.
8. The dreams of dreamers from the same culture could elucidate some contexts and volitional strategizing that comprise problem-solving. The dreams of many different dreamers from several different cultures would allow for a creation of a composite, richer picture (initial cross-state characterization) of the problem-solving contexts, dreamers’ attempts, and use of volitional capacities.

**Operationalized definitions.** For the current study, the author developed and advanced several definitions designated for research with dreams.

**Consciousness.** The present author defined the concept of consciousness based on several suitable sources (Farthing, 1992; Kozmová, 2008; Kozmová & Wolman, 2006; Purves et al., 2008; W. James, 1890) as subjective awareness of oneself as an experient, actor (also includes the role of participant; Kozmová & Wolman, 2006), observer, and thinker distinct from other experients, actors, observers, and thinkers regardless and including of recognition and acknowledgment of separateness between waking, dreaming, or altered states—which could be momentary or longer than a few minutes—of conscious existence. Consciousness further includes noticing and awareness of sensations, perceptions, emotions, thoughts, and memories registered in the primary and in reflective mode of experiencing. The term reflective has been defined by the present author as a concept that belongs to identifiable rational or secondary thought processes that exist within higher order skills in non-lucid dreaming (e. g., Wolman & Kozmová, 2007;

see also Kahan, 1994). Consciousness denotes an ability to recall and describe internal experiences. These recalled descriptions (offered orally to self or others or shared in a written or pictorial form) could include non-salient, salient, and surprising elements of subjective experience which may remain experienced, stored in memory, developed further in imagination, or could be volitionally acted upon—internally or externally—by internal or external prompts to action. (Kozmová, 2012, p. 51)

**Dream.** Pagel et al. (2001) documented that groups of authors working in various disciplines define the concept of dream differently. Based upon previous research, for the present study the author delineated the dream as

a subjective experience that occurred during sleep. When awake, the experient spontaneously recalled it, and described it, to oneself in an oral or in a written form, in a story-like fashion. In this narrative, which could closely follow one segment or several sequential scenes of the dream, the awake dreamer might depict some or all of the following features of subjective experience that occurred while being in the role of a dreamer: The images seen, the action performed or participated in, the solitary or shared engagements, the situations observed, the perceptions noticed, feelings felt, and thoughts thought. (Kozmová, 2012, pp. 52-53)

Because dreams can be divided into many different types, and not in every dream the dreamer might participate in a problem-solving way in the ensuing situation, it seemed practical to separate dreams into two different categories: (a) narratives of descriptive dreams that contain “the descriptions of scenery, the situations, the actions of the dreamer or other characters, and his or her observations or experiences within that dream” (Kozmová, 2008, p. 72); and (b) narratives of *problem-solving dreams* in which an independent reader would be able to discern that the dreamer was propelled or prompted to make an active choice in the presence of a situation or event, one which he or she might have recognized, defined, or identified, and explicitly described within the dream. Alternatively, in the report it could be observable that during the dream the dreamer might have implicitly hinted at and not describe, yet acted upon, some precipitating event. The “precipitating event” is not always stated in a dream report. Knowledge of this fact is the result of a pilot study conducted prior to the current research: The dreamers sometimes only indicate or implicitly hint about the problems they are solving (Kozmová, 2007). The discernible active choices as responses to internally generated, perceived, and later described situations or images could be visible and construed as reactions to an emotionally realistic immediacy of the dream or to some other unidentifiable cause. The overt or covert events, to which dreamers reacted, could be characterized by an independent reader as realistic or imagined vicissitudes of life in general (e.g., ambiguities, puzzlements, distresses, dilemmas, conflicts, concerns, difficulties, worries, threats, or dangers). (Kozmová, 2008, pp. 72-73)

The examples of descriptive and problem-solving dreams with covertly and overtly stated problems can be seen in Table 1.

**Non-lucid dreaming.** In a non-lucid dreaming state of consciousness, dreamers periodically live in and are immersed in “a convincing simulation of waking reality experience” (Nielsen, 2011, p. 596). In this state, the dreamers are “captured and held” within the context of immediate

non-lucid dream situations: Dreamers remain without direct connection to their known waking world, and their critical capacity to reflect upon the waking world existing outside of dreaming is, for the most part, not available (Rechtschaffen, 1978). In this position, they are singularly engaging their own internal capacities that come to life in this altered state of consciousness.

**Problem-solving.** The mental activity of problem-solving was operationalized as a process that encompasses individual dreamers’ distinctive ways of strategizing efforts, including “attempts for resolution of dilemmas within immediacy of their dreams” (Kozmová, 2012, p. 51).

**Kinetic (motile) activities.** Fisher (1986) understood consciousness as “intentional, goal-directed movements” and as “a domain of internalized motion” with mental activities compared to “muscular acts” (Fisher, 1986, p. 3). For the author, consciousness involves accord between having information (“what”) and using it (“how,” Konorski, 1962) which implies movement. In non-lucid dreams, motile behavior has been termed “fictive movement” (Porte & Hobson, 1986) and “kinesthetic fantasy” (Nielsen, 1993). In the present study, in the mental environment of dream that simulates waking life (Nielsen, 2011), all conscious motile movements of the dreamers’ bodies or their parts—self-movements— in dream space are conceptualized as a dreamer’s own cognitive activity (Kahan & LaBerge, 2011).

**Communicative activities.** As a speech, for the present study, the author considered mental activity of the individual dreamer (not the other characters in the dream) that involved articulating words. This verbal expressiveness of ideas, feelings, comments, or asking questions could be “directed at no one in particular” (Kilroe, 2016, p. 142); to oneself; or to other characters in dreams in order to solve problems or satisfy curiosity.

**Volition.** The present author tentatively as occurring when dreamer in the immediacy of a situations is “pursuing a self-selected goal” (Kozmová, 2012, p. 58).

## 2.2. Participants and Procedure

As I previously described the sample of participants (Kozmová, 2012, 2015), the current research consisted of using 1,298 archival dreams. The dream narratives were gathered retrospectively during the years 1990 to 2004 from 100 males and 100 females who self-selected a dream and participated in dream seminars conducted in six different coun-

tries (Argentina, Brazil, England, Japan, and two republics of the former Soviet Union—Russia and Ukraine). In addition, in the United States, each of 32 women and 66 men donated one self-selected dream; this specific dream collection remained incomplete due to permanent loss through computer failure.

While participating in dream seminars, all dream workers were protected under the approval of the Saybrook Institutional Review Board (SIRB). For the concision of the sample size of each group (N = 100), some friends and relatives of participants each contributed one dream.

The participants, ages 20 to 70 years, with a few younger or older exceptions (median age was about 40 years), were from middle- and upper-middle-class socioeconomic groups; they came with motivation to learn more about themselves through working with their self-selected dreams. Later, the donated dreams were professionally translated into English, and some groups of those were used for quantitative content analyses (e.g., Krippner, Winker, Rochler, & Yashar, 1998; Krippner & Weinhold, 2001).

As described earlier (Kozmová, 2012, 2015), 10 lucid dreams were not part of the current research. From the remaining 1,288 cross-cultural non-lucid dreams, with the operationalized definition of a problem-solving dream, 979 (67%) dreams, as a working sample, were selected for primary analysis. The national origin of problem-solving dreams is as follows: Argentina (M = 76, F = 71); Brazil (M = 69, F = 72); England (M = 74, F = 66); Japan (M = 81, F = 77); Russia (M = 75, F = 75); Ukraine (M = 90; F = 78); the United States (M = 25; F = 50).

Primary analysis led to the emergence of the complex multilayered description of the nocturnal cognitive problem-solving phenomenon with direct, self-monitoring, and indirect modalities (Kozmová, 2008). The secondary analysis of volitional executive processes is already published (Kozmová, 2012); the contexts (Charmaz, 2008) and volitional kinetic and communicative problem-solving efforts needed for categorization based on collection of individual saturated instances (Glaser & Strauss, 1967) consisted of using 54 exemplary dreams in which dreamers, as a strategy, used at least one type of action and behavior within the context of a covert or overt problem or a feeling of curiosity (Kozmová, 2008). These dreams than collectively represent a variety or range of individual instances of the non-lucid dreamers’ *volitional kinetic* and *communicative* activities and behaviors.

Table 1. Examples of Descriptive and Problem-Solving Dreams

Type of Dream, Gender, Country, Year	Dream Narrative
Descriptive dream, male, England, 1996	<i>I am in an old historic building, in the only room that had been preserved with its original décor. The walls had an intricate raised pattern, which I ran my hand over, feeling the relief with my fingertips. The pattern was a light reddish-brown on an off-white background.</i>
Problem-solving dream, female, Ukraine, 1995	<i>All that happens is very simple. My task is to keep a very small thing, somewhat like a needle, in my hands and not let it fall down or out of my hands. As I am trying to do this, very big things are falling down on me from above as if to interfere with my task. I try to get away from them. All these events make me feel very bad.</i>
Problem-solving dream, implicitly (overtly) stated problem, male, Argentina, 1992	<i>A woman puts a finger into my watch bracelet. Immediately, I start to beat her. Nobody can stop me.</i>
Problem-solving dream, explicitly (overtly) stated problem, female, USA, 1996	<i>I was putting on my makeup. My mother took it away from me. She also took away my jewelry and the other things I used to make myself beautiful. I could not get them back, and I was very sad.</i>

Previously, the *volition* noticeably represented by dreamers' use of their mental faculties during sleep became one of the six core variables of the nocturnal cognitive problem-solving phenomenon; the partial and complete description of the emerged phenomenon is not part of the current research and is presented elsewhere (Kozmová, 2008, 2012, 2015). Because the phenomenon is a multilayered characterization of conscious activities, the categorized individual processes that represent dreamers' active use of mental capacities might overlap.

### 2.3. Grounded Theory Method

As I described elsewhere (Kozmová, 2012, 2015), the selected grounded theory method considers contexts with which phenomena are linked (Charmaz, 2008). From data observed in the contexts, the often intuitive and "theoretically sensitive" researcher (Glaser, 1978) generates a description of the investigation's object—the phenomenon under consideration also known as *core variable* (Glaser & Strauss, 1967, p. 46). As Glaser (1992) asserted, the variable could be found in the narratives of individuals' responses, habits, actions, behaviors, reactions, or experiences within contexts and environment. To define the variable, the researcher uses questions explicitly designed for specific research. The questions are applied with intention to specify sameness, similarities, and contrasts of individual occurrences of the phenomenon. The goal of this method is to form, from narratives, abstract concepts of a phenomenon by delineating and capturing its emerging elements to create the phenomenon's structure (Suddaby, 2006). At the same time, the researcher develops, from data analysis, an emerging theory by coding categories and their dimensions, modalities, properties, processes, and other distinctive markers (including outliers type), often described in "in vivo language" (in the language of participants) and documented in memos.

According to Glaser (1992) and Henwood and Pidgeon (2003), the main objective of this research segment is to attain saturation of the phenomenon's elements that create its structure. Saturation is completed upon finding in sampling and analysis quantity and sameness but no new variety. With accomplished saturation of categories and developed complex description of the phenomenon, the researcher is ready to posit a substantive theory (Glaser & Straus, 1967; Kozmová, 2015). In this phase, with disclosure of theoretical assumptions and detachment from favored hypotheses, the researcher might decrease his or her own preconceived notions and biases (Henwood & Pidgeon, 2003) in order to capture emergent theory.

At the beginning of research of a phenomenon, the investigator might first focus on an exploratory or an *a posteriori* approach while using inductive and inferential reasoning. The conclusions that the individual researchers arrive at with observed and already analyzed facts then could inform *a priori* (deducted from data-based propositions) formulation of hypotheses that could also include previously published findings or theories. The new findings are then possible to quantify by using experimental designs with logico-deductive (Glaser & Strauss, 1967) or with hypothetico-deductive (Willig, 2001) approaches.

The exploratory nature of work with the method of constant comparative analysis between instances of phenomena leaves out validity of constructs; focus on a narrow sample (e.g., particular demographics); or comparisons between

homogeneous samples and the control groups (e.g., Cozby, 1997). One of the developers of the method, Glaser (1992), solidified the flexible work with the method by explaining that the research starts with analyzing and comparing anywhere within a limited or open sample. The analyzing work continues until the point of saturation (no novel variants are found, only increasing amount of repetitiveness in investigated elements, modalities, processes, etc., are occurring). Thus, using the method promotes data-focused instead of hypothesis-focused research (the latter might follow after the phenomenon is described).

As I explicated elsewhere the detailed description of grounded theory method and exactly how to work with it within analysis of emotional component (core variable) of problem-solving dreams in mind (Kozmová, 2015), the present research continued to be qualitative by analysis of dream narratives. It was also subjective (by acknowledging the author's prior knowledge that included testing grounded method theory in a pilot study, Kozmová, 2007). In addition, it clarified the author's specific theoretical preconceptions, notions, and knowledge (e.g., their explications could be found in "Introduction," and "Assumptions and Operationalized Definitions").

As I further explained (Kozmová, 2015), while investigating the invisible yet intuited phenomenon that occurs in the minds of sleeping individuals, the present researcher worked in agreement with the principles of grounded method theory (Glaser, 1992; Henwood & Pidgeon, 2003, see Appendix A). The investigator carried out, by working with diversity of data (Charmaz, 2008) the actual analytical comparative work by reliance on her own mental faculties, intellect, psychology of being, emotional maturity, and rigorousness of scientific approach—all used in the service of categorizing and offering an initial cross-state characterization of kinetic and communicative aspects of volition found in non-lucid problem-solving dreams.

The authors who previously have researched dream narratives using limited or complete tenets of grounded theory include English (2002); Gilbert (2004); Hill (1998); Kozmová (2007, 2008, 2012, 2015); Matheny (2001); and Sungy (2001). In addition, Glaser's (1993) collection of research demonstrated that the method has been successfully applied in the social sciences, nursing, and medicine. The current research of problem-solving non-lucid dreams analyzed by the grounded theory method constitutes an original contribution by defining the contexts and characterizing the volitional executive kinetic and communicative abilities within the dreamers' problem-solving efforts.

### Brief Description of Working with the Method of Grounded Theory

A complete description of working with first-person accounts and the grounded theory method was offered in a previous article by Kozmová (2015). For the purposes of the present study, the investigator first focused on the following aspects of method of grounded theory as explicated by Henwood and Pidgeon (2003): (a) "to capture the detail, variation, and complexity of the basic qualitative material" and (b) "constantly comparing data instances, case, and categories for conceptual similarities and differences (the method of constant comparison)" (p. 131) With the method, the researcher focused on two goals: The first goal was to find contexts in which non-lucid dreamers use kinetic and

Table 2. Contexts and Types of Volitional Actions and Behaviors Dreamers Use for Problem-Solving During Threats and Losses Prompting to Self-Preservation Efforts or Struggles

Contexts and Types of Volitional Action or Behavior (Kinetic and Communicative Cognitive Strategies; Evaluative Thought)	Examples
<b>A. Threat to dreamer's life</b>	
<b>By environment</b>	
Using one's own body for escape from place of harm	<i>Then I come to know that the house caught fire because of the salute. <u>My sister and I jump out the window, and run away with mom and my boyfriend to survive.</u></i>
Using one's own body for compliance by lying down	<i>I see an application for a vaccine against AIDS. It is not the conventional form of vaccine. You have to fill it out while lying down. <u>So I lie down to get the „outside sustenance“ that the vaccine promises.</u></i>
Using one's own voice for communication in a form of asking and shouting; evaluative thought	<i>I am on a small airplane being flown by my friend. It is a damaged airplane. We go, without secure conditions. We begin to make turns and somersaults, and he keeps flying faster without my assent. <u>I ask my friend to stop. I shout.</u> The situation is desperate.</i>
<b>By characters-people</b>	
Using hands with weapon for self-defense	<i>There is a very malevolent man there, a fakir from India. He looks into my eyes and explains his intention. He wants to harm me in some way. <u>I find a sword and I cut off his head.</u></i>
Using one's own voice for directing other characters toward rescue efforts	<i>I undergo an operation. The surgeon is a man, dressed in black, but not like a doctor. He says, „We will lay her open to the bone and extract what is needless.“ He cuts my arm below the elbow from the external side, but there is no blood there. The blood starts spurting from the back of the hand. I shout: <u>“Let's go to the hospital, then! Let them sew me up and repair me!”</u></i>
Using one's own body to protect valuable object	<i>While they are punching me in the groin, <u>I am protecting my automobile against the aggression.</u></i>
<b>By birds and animals</b>	
Using one's own body to hide and using speech to save oneself	<i>My family and I are in a cabin with a family friend. The five of us, my mother, my father, my sister, and a gay male friend who works with my father are sitting in the living room. It has large picture windows on the opposite wall. An eagle crashes through the window. I hide under a chair. The bird moves the chair, picks me up, and takes me with it. <u>I explain that my father will not allow me to fly.</u></i>
Escaping by running and jumping; evaluative thought	<i>I am being pursued by a snake. It moves as if flying on the air. I feel anxious. <u>I escape. I meet my friend and sit in his car. The snake keeps pursuing us. I jump out of the car and see the snake's head falling off its body. I feel frightened. My heart beats heavily.</u></i>
Finding object (presumably by using one's body to get to it)	<i>Then I see a lion. I am filled with fear. But I find an enormous watch, and this diverts the lion. Then the lion becomes calm.</i>
<b>By entities</b>	
Using hands with weapon for retaliation and using legs to run away	<i>Then I saw darts in the dragon's paws. The dragon threw darts at me but missed. <u>In response, I mortally wounded the dragon with my sword and galloped away.</u></i>
In potential loss of self, using voice to call upon higher entity for help; evaluative thought	<i>I dream of seeing the devil. I am frightened so <u>I call upon my angel.</u> My lips are dry. I am alone but I know my angel will protect me. <u>There is nothing else that I can do.</u></i>
Running to save oneself; evaluative thought	<i>A white, floating thing is chasing me. I'm running away with a friend who is a boy. Still it chases me. Soon I see the gate of my house. I am the only one who could go in the gate because it is my house. <u>I run inside.</u> I'm saved, but my friend is still running away. <u>I am full of guilt feelings that I didn't let him in my house.</u></i>

Table 2 to be continued

communicative volition. The second goal was to collect examples that would create a typology (range) of dreamers' cognitive kinetic and communicative behaviors and actions (strategies) that would demonstrate that in specific problem-solving situations the mental faculty of *volition* (in addition to is cognitive variety [Kozmová, 2012]), might subsist during sleep (Hervey de Saint Denys, 1987/1977) and can be characterized (Hobson et al., 2003) at least in its initial

cross-state understanding. Based upon the results of both objectives, the author was then lead to posit substantive grounded theory—characterization of volition—within the problem-solving phenomenon (Kozmová, 2008) that includes its cross-state actualization. To extend the emergent theory (Henwood & Pidgeon, 2003) based on data of dream narratives with the goal of characterization of volition in its range (in addition to its previously explicated cognitive va-

Table 2. Contexts and Types of Volitional Actions and Behaviors Dreamers Use for Problem-Solving During Threats and Losses Prompting to Self-Preservation Efforts or Struggles (continued)

Contexts and Types of Volitional Action or Behavior (Kinetic and Communicative Cognitive Strategies; Evaluative Thought)	Examples
<b>B. Threat to bodily integrity</b>	
<b>Experience of finding damaged part of body-skin</b>	
Using one's eyes and body (walking) for confirmation of body integrity	<i>I was sitting on the edge of a lake and suddenly saw, in the reflection of the water, my head with spots on my face. I did not get frightened but tried to see myself again to be sure it was my face reflecting in the clean water of the lake. I went inside the water to observe myself, as if I was the reflection in the water that I had been seeing. When I did this, the spots on my face were no longer there.</i>
<b>C. Threat to psychological integrity, equilibrium, self-esteem, or loss of external support</b>	
<b>Absence of communicatin skills</b>	
Finding a novel solution by using hands to move objects	<i>I am sitting in a room with my husband. Because I have lost my power of speech, he has to guess what my thoughts are. It is a frustrating and time-consuming task. Eventually he gives up and I am left trying to make a conversation using "Scrabble" game letter pieces.</i>
<b>Unreasonable demands and intrusions by characters and enteties</b>	
Refusing (most likely vocally)	<i>The man in black appears again. This time he demands my soul be sold to him. I refuse to do that. The man's head vanishes.</i>
Resisting and refusing (most likely vocally and kinetically)	<i>I was incorporating entities. I was resisting them, but they entered me anyway. One female entity wanted very much to enter me, but I was firm and refused to let her do it.</i>
<b>Loss of power animal-loss of internal/ external support</b>	
Involving others by screaming for help	<i>I dreamed about a large jungle cat, apparently a jaguar. It has a very human face. It is my power animal. It is being crushed by a huge python snake. The snake is a positive earth energy symbol. I am very upset and I scream „Help! This is terrifying! I am horrified! Help!“</i>
<b>Experiencing loss of identity</b>	
Using screaming to reaffirm one's religious identity	<i>I volunteer next. But she hands me a bottle of red wine, not tubes. I spin the bottle on my head until there are 20 glasses of red wine on my head. Then the wine spills over my body. There is silence in the room. Then I scream. I realize that the red wine is Christ's blood, but I am a Jew. I scream „I am a Jewess!“</i>
<b>Encountering unsupportive environment at work and school</b>	
Speaking to non-collaborative environment and subsequent loss of memory and hope, followed by resignation— evaluative thought	<i>At my work place, where I do hard work, things do not seem to be going like they are supposed to go. The lectures that I usually give off the top of my head at the training sessions are difficult. I have a loss of memory and become unable to give the lectures. The participants do not follow my instructions, and my assistants do not do what I tell them. Everything I do is in vain.</i>
Upon experiencing loss and loneliness, using self-destructive behavior (cutting) and walking to place to die; evaluative thought	<i>Suddenly, I am at college, carrying a huge folio of art. I am with a classmate. She is a year below me. I am on my own, not knowing what class I am supposed to be in because I have lost my timetable. I feel lost and lonely, so I cut my wrists. I am sitting on a wall. I want people to see me, to understand my pain. But the cuts are only scratches and so nobody takes notice. I decide to look for someplace to die. I go to the toilets, but I feel that I don't want to die there because I might not be found. I realize that I want to be found before I die. Suddenly, the blood starts gushing from my wounds.</i>

riety; Kozmová, 2012), the present author used “sampling new data and case on theoretical grounds” (adding previous theoretical knowledge to the results of current data analysis; Henwood & Pidgeon, 2003, p. 136). To accomplish these phases of research, the investigator became immersed in three concurrently running parts of research: (a) selection of problem-solving dreams; (b) systematic in-depth analysis of data; and (c) concurrent memo-writing (Glaser, 1978, 1992).

For illustrative purposes of working with grounded theory method, the chosen dreams can be found in Tables 2-4.

**Selection of problem-solving dreams.** Previously, the present author described the multilayered nocturnal cognitive problem-solving phenomenon for which, with the operationalized definition of a problem-solving dream, the researcher selected from 1,288 cross-cultural non-lucid dreams 979 problem-solving dreams available for the pri-

mary analysis (Kozmová, 2008, 2012, 2015). The analysis resulted in 54 working sample dreams (with saturated deliberate action and behavioral elements) that created the third direct modality of the phenomenon (the first two are represented by dreamers' use of executive skills and emotions for problem-solving). The group of 54 dreams was then used by the researcher for secondary analysis of contexts in which dreamers use motile and communicative means to problem-solve. The researcher goal was then to arrive at initial cross-state emergent characterization of volition.

**Immersion in the investigated contexts of volition.** With the first research question in mind, "In which contexts are some non-lucid dreamers able to use their motile and communicative volitional capacities"?, the researcher intended, by constant comparative analysis of problem-solving instances, "to capture, by coding, the detail, variation, and complexity of the basic qualitative material" (Henwood & Pidgeon, 2003, p. 136). Then, the investigator used, for solidifying the contexts, the analyzing question, "Why is this dreamer problem-solving?" by applying methodical focus and comparing instances of problem-solving. For an illustration of this process, in the following segment of a longer dream (Table 2, example 1) it became obvious that the dreamer experienced a threat to her own life: *Then I come to know that the house caught fire because of the salute.* The researcher named these contextual reasons for a dreamer being engaged in dealing with this type of situation "threat to life" and "self-preservation."

Additional analyzing questions for finding a variety of contexts were, "What kind of internal or external situation is the dreamer facing?" and "In what kind of difficulty or problem did the dreamer find himself or herself in?" As an illustration, in Table 4, example 4, the dreamer faces her own moral dilemma: *My cousin is in the middle of a river. It looks as if she is drowning.* And by using the contextual question, "Who or what is present in an individual dreamer's problematic or curiosity-evoking situation?" the researcher discovered that the dreamer could be alone (Table 3, example 4) with his own curiosity-provoking situation regarding how to accomplish a personal task: *I'm in Australia, surrounded by green vegetation. I'm about to paint a white wall the color I want it to be.* In Table 4, example 2, the dreamer is with other characters: *... but that girl swam surprisingly well. But suddenly she began to sink, and a lot of people gathered around the pool. . . .*

**Concurrent memo-writing.** In memos, the researcher made notes of what types of concrete situations (in vivo approach) could serve for terming the contexts depending on where the problem is located, what type of problem the dreamer is grappling with, or who else is present with the dreamer. In the first example, the problem presented a threat that ensued self-preservation (Table 2); the second example was interpersonal (Table 4); the third example represents personal significance (Table 3); and in the fourth example the dreamer is with other characters, which makes the situation also interpersonal (Table 4). Altogether, the researcher used the above mentioned questions to arrive at labeling persistently occurring three saturated specific types of contexts and their further distinctions.

**Immersion in collecting examples (range) of strategies for categorization (typology or data for emergent grounded theory) of volitional behaviors and actions.** The categorization of volitional behavioral and action-oriented strategies started with the overarching question,

"What types of non lucid dreamers' cognitive kinetic and communicative behaviors and actions (strategies) demonstrate dreamers' capacities for using volition in non-lucid problem-solving dreams?" For illustrative purposes, all four previous examples demonstrating a variety of contexts also serve as illustrations for finding abstract concepts (Suddaby, 2006) for strategies that dreamers used. These strategies then served as instances of behavior- and action-based-emerged variable *volition* coming to existence within the phenomenon of nocturnal cognitive problem-solving.

The constant comparative analysis between instances in which dreamers use behaviors and actions to problem-solve started with the following questions: (a) *How does this problem-solving activity of the dreamer differ from the problem-solving activity of a different dreamer?* (b) *How does the dreamer proceed to deal with this situation?* (c) *How does the dreamer react?* (Kozmová, 2008, p. 75). For example, in illustrative dream 1, the dreamer used her own body for escape from a place of harm: *My sister and I jump out the window, and run away with mom and my boyfriend to survive.* In dream 2, the dreamer faces endangerment of life of an extended family member; she displays a lack of activity in the face of moral dilemma and is able to evaluate her own behavior and the complexity of the situation while covertly "knowing" that some type of help is needed: *I want to help her out but I have not done anything yet. My sister is standing beside me. The time to help our cousin is running out. But neither of us does anything to help our cousin.* In this case, apparent lack of behavior and its evaluation constitutes a mental behavior (decision-making while knowing it could be otherwise) of its own. In dream 3, the dreamer methodically proceeds to fulfill his goal by appropriate actions: *I have checked that house from all directions, then have prepared to re-paint it. I put two stable ladders in place, put one board in between them, and sit on it to paint.* In dream 4, the dreamer is rushing to help the character in need and to save her life: *But suddenly she began to sink, and a lot of people gathered around the pool and I rushed to save her.* As Glaser (1992) pointed out, and Suddaby (2006) emphasized as well, in this phase of research the researcher starts to draw the concepts from the raw data. In other words, the investigator forms abstract concepts of a phenomenon by delineating and capturing its emerging elements to create the phenomenon's structure. In this case, deliberate strategies (behaviors and actions) create the core variable—volition. For the work of analysis, often most suitable abstraction rests in using *in vivo* language (the language of actual experience), as it is demonstrated in dream 4 (motility in form of rushing means using one's own body to perform specific behavior).

As I explained elsewhere (Kozmová, 2015), because I analyzed narratives of directly experienced dreams, I selected to articulate dreamers' direct immediacy of subjective experiences and dreamers' mental activities within problem-solving dreams in the vivid narrative present tense. This expression captures and exemplifies the active process of the dreamer's experiences (e.g., *I saw, I did*) transposed into dreamer-centered language (e.g., *dreamers behave, act, etc.*). This type of description is in contrast to reports of results that are generally presented in the past tense (American Psychological Association, [APA], 2010, p. 78).

Table 3. Contexts and Types of Volitional Actions and Behaviors Dreamers Use for Problem-Solving with Personal Significance or Meaning

Contexts and Types of Volitional Action or Behavior (Kinetic and Communicative Cognitive Strategies; Evaluative Thought)	Examples
<b>A. Experiencing physical sensations</b>	
Noticing one's own physical sensations, using behavior based on one's own physical state (hands, eyes, and legs)	<i>There are many college students around, walking and laughing. <u>I feel too warm. I take my jacket off and look for an empty locker to put it in, but the locker room is full of dirty sport shirts and garbage. No empty lockers were available, so I put my jacket on my arm and start to walk away.</u></i>
<b>B. Disturbing feelings and thoughts</b>	
Emotion regulation by climbing and leaving; evaluative thought	<i>I overcome my fear and <u>leave by the window</u>, which is now a door, and <u>climb</u> without weapons downstairs, leaving the residence because there is nothing there for me.</i>
Calming down disturbing feelings and persistent thoughts about relationships by walking	<i><u>I walk quickly</u>, and can't calm down and get rid of the thought, „Why did I meet them in Moscow? Why were they not together? Why are there lots of them?“</i>
<b>C. Pursuit of one's own goals</b>	
Using goal-oriented behavior (eyes, hands, legs)	<i>I am driving down a curvy hill in a small pickup truck. I am going over the edge and the truck is teetering. A stranger grabs the edge of the truck and balances it. <u>I drive the truck to safety and get it to a repair station.</u> The repairman fixes the truck and I go on my way.</i>
Using intentional behavior in order to reach a goal (head movement)	<i>I was in a kitchen area in the back, helping a couple of men and women prepare for the break time. <u>I was eager to hear the lecture so frequently stuck my ear out the serving window.</u></i>
Using goal-oriented action following the plan (legs, hands, whole body)	<i>I'm in Australia, surrounded by green vegetation. I'm about to paint a white wall the color I want it to be. It's a fine day. <u>I have checked that house from all directions, then have prepared to re-paint it. I put two stable ladders in place, put one board in between them, and sit on it to paint.</u></i>
Seeking equilibrium by action (using legs); evaluation of situation	<i><u>I run and sob</u>, because I left my teddy bear in the house. I come back there, enter the house, and see my mom has extinguished the fire by water. The fire disappears. <u>Everything is fine. My teddy bear sits safe and sound.</u></i>
Experiencing motile behavior, seeking friendly interaction—running to get it	<i><u>I fall through</u> and go deep into the ocean, down, down, so deep. Then <u>I pop up fast and am back on the ship. I run</u> through the halls looking for friends to tell.</i>
Using hands to accomplish goal	<i>I'm standing outside a prison and <u>try to open the door. It will not open and I am frustrated. I get a prying bar and open the door.</u></i>
Using hands and walking around to accomplish the goal	<i>I decide to plant them just where I am <u>loosening the soil. I start doing it, but the sand in the hole crumbles, and standing sprouts of onion fall down. I begin looking</u> for another place for planting, and <u>go around</u> my friend's cottage and see many houses with many stories.</i>
Accomplishing goal by writing and asking	<i>I am taking a written test in a gymnasium. Most people are seated at their desks, but I am sitting on the floor with some of the others. The first subjects are Japanese and English, both of which I know. The next subject is fractions. I want to use a rule and <u>write the answer neatly. I ask the teacher and she says, „This time it's all right.“</u> The questions are elementary but require patience and I get confused.</i>
<b>D. Experience of ambivalence upon encountering obstacles</b>	
Removing obstacle by hands, then experiencing lack of internal control and turning impulse into destructive behavior (using hands for different purpose); evaluative thought	<i>It is afternoon. I arrive in my automobile at the gate of my newly built lower garage. I observe an obstruction to the entrance of the automobile and <u>I push it with my hands.</u> At the same time, in front of my automobile, a small truck parks. <u>I cannot resist the impulse to push my automobile into the truck. This action shatters the side of my automobile.</u></i>

### 3. Results

#### 3.1. Discovered Contexts and Volitional Kinetic and Communicative Actions and Behaviors (Range of Cognitive Strategies)

The action- and behavior-based strategies for managing or resolving situations dreamers encountered while dream-

ing problem-solving dreams did not ensue in a vacuum or without context. Instead, the variety of tactics applied by dreamers were directly connected within the following three differing circumstances: (a) threats to self and variety of impending losses (Table 2); (b) problematic situations with specific personal relevance in mind (Table 3); and (c) problematic interpersonal relationships with strangers, family members, or people at work (Table 4). In each of these con-

Table 4. Contexts and Types of Volitional Actions and Behaviors Dreamers Use for Problem-Solving within Interpersonal Relationships

Contexts and Types of Volitional Action or Behavior (Kinetic and Communicative Cognitive Strategies; Evaluative Thought)	Examples
<b>A. Facing uncomfortable, disappointing, or novel situations</b>	
Preventing possible problem by taking action-holding the person; reasoning	<i>Three suspicious-looking men enter. The most corpulent of them comes near us. Brian laughs at him, and I take hold of Brian so that he will not offend the fat man any further.</i>
Preventing possible problem by screaming; reasoning	<i>He has one group make sounds of the forest, and the other group sounds of a grasshopper. I start to make grasshopper sounds but he tells me to make forest sounds instead. I tell him I will make the noises I want to make.</i>
Exerting cooperative-diplomatic behavior - walking and speaking; evaluative thought	<i>I am at a party being held by a friend of mine, Brian, who has been elected president of the organization for which I also am working. I go over and congratulate him, and know that I will be more successful now that he is president of the organization.</i>
Influencing others by example and action by working hurriedly and using one's voice	<i>I am trying to finish a task in the building where I work. Many men are around me, all co-workers who I know. I have to do my job in a hurry and I hope that my example I will inspire them to do the same. I even start giving orders, "Hurry up and get the work done."</i>
Pursuing a goal by walking despite an objection from characters	<i>I am in my high school for a meeting. It says "enter here" on the door. But the exit door is blocked. The men and women there are strangers, and so I want to go. They are in my way, standing in front of the exit door, eating and drinking and talking. So I go out the entrance door. They object, but I go through it anyway.</i>
Pretending and bribing-using hands to give a bribe-to regain internal equilibrium	<i>I am trying to pretend that I am okay, but I am really overwhelmed and confused. Then I find some chocolate and pretend that it is very nice. I give it to people thinking they will not be so angry with me.</i>
Avoiding-escaping by running	<i>My husband (who I married two months ago in waking life) stands on the threshold. He has stumps instead of a right arm and a right leg. I escape in tears into the other room. And he follows me. And he keeps saying, "Well, now. There, I am such a man. Just bear it."</i>
Using aggressive behavior-beating; evaluative thought	<i>A woman puts a finger into my watch bracelet. Immediately, I start to beat her. Nobody can stop me.</i>
Using aggressive behavior based on interpretation resulting in punching; evaluating	<i>Class starts and the teacher makes an insulting comment about me. He tries to humiliate me by asking me difficult questions. I am so angry I start to punch him. I keep punching him. I have never punched anyone so hard.</i>
Experiencing rage, gaining relief by throwing object, beating, punching; analyzing	<i>When my father comes, he is smiling. But I am irritated with his looseness. I throw my traveling bag at my father. I rage against him and beat him. I punch his body for a long time. I'm scared. Why did I beat my father whom I respect?</i>
<b>B. Friendly or curiosity-evoked interactions</b>	
Satisfying curiosity-asking questions	<i>I was travelling to another part of the country and I saw Stanley Krippner. I asked him what he was doing there, and he said that he had the same question for me.</i>
Advice seeking-asking, future goal-orientation	<i>I asked him what to do in order to learn from my dreams and put the knowledge to use when I am awake.</i>
Making requests of others; evaluative and reasoning thought	<i>I see myself lying in a coffin on a stone stove. I stay and watch, and my corpse lies in the coffin at the same time. I turn to my relative and say, "Uncle Grisha, bury me. Some places already have run out of coffins. So how much more time can I lie here?"</i>
Evaluative thought; making suggestions	<i>My friend and I are at a technical school. It is going to be a semester of concentrated work on Ukrainian, but I write dictation badly. I joke with my friend, saying let's go and miss this work.</i>
Being aware of body state	<i>I'm watching and finding that I have picked up his rhythms.</i>
Internally comparing; imitating-dancing with goal of mastering	<i>Then I finally get to the top of the drum and I am standing on the edge, I walk across the drum and I see a tall handsome dark man—obviously one of the natives. He is naked from the waist up and he is holding a tall spear. With a nod of his head, I realize that he means for me to dance with him. A voice within me calls my name. This is not ballet. It's not modern. It's not like any dance I've ever done, so I just follow him.</i>

Table 4 to be continued

Table 4. Contexts and Types of Volitional Actions and Behaviors Dreamers Use for Problem-Solving within Interpersonal Relationships (continued)

Contexts and Types of Volitional Action or Behavior (Kinetic and Communicative Cognitive Strategies; Evaluative Thought)	Examples
<b>C. Characters experiencing potential loss of life or endangerment and dreams subsequent behaviors or lack of behaviors</b>	
Behaving altruistically-rescuing family member by using hands; evaluative and interpretative thought	<i>I am with my daughter in a strange woman's house. It is on two levels. My daughter is in a crib, even though she is now grown. I see a red stretch of fire out of the window. This seems to be a radioactive wall and it is coming closer to the house. <u>I snatch my daughter from the crib but there is no place to take her. I feel that it is Armageddon, and I am terrified.</u></i>
Running to help	<i>It so happened that my car had caught somebody who was on the road. <u>I ran to help the victim,</u> and I saw the face of my mother with a stain of blood.</i>
Rushing to save character's life by swimming	<i>I am afraid of water a little bit but only in the sea; in the pool it is okay. So I decided to swim in a pool. A little girl swam besides me. In this dream I swam badly, but that girl swam surprisingly well. But suddenly she began to sink, and a lot of people gathered around the pool and <u>I rushed to save her.</u></i>
Using hands and projecting future use of one's knowledge; interpretative thought	<i>I see a holy book and <u>open it up.</u> As I read the pages, my hands start glowing. I think I now have the power in my hands to heal my lady friend.</i>
Experiencing moral dilemma and ensuing lack of activity, preventing oneself from moving toward family member need	<i>My cousin is in the middle of a river. It looks as if she is drowning. <u>I want to help her out but I have not done of anything yet.</u> My sister is standing beside me. <u>The time to help our cousin is running out. But neither of us does anything to help our cousin.</u></i>

texts, dreamers volitionally proceeded to use strategies that can be named and categorized. In this section, the author reports contexts and range of kinesthetic (motile) and communicative mental volitional acts.

### 3.2. Encountering Threats and Losses

**Contexts.** Dreamers who exhibit self-preserving volitional mental (cognitive) acts and behaviors find themselves in life-threatening or harmful circumstances initiated by environments, characters/people, birds and animals, and entities. Similarly, dreamers experience losses to bodily and psychological integrity, equilibrium, and self-esteem. They also face unreasonable demands and intrusions by both characters and entities, encounter unsupportive external environment, and become aware of feeling the loss of support.

**Range of volitional strategies.** In the context of one's life being threatened and when being motivated by its preservation including protecting the self and keeping bodily and psychological integrity intact, dreamers constructively use the following means for problem-solving: (a) movement of the body by running, jumping, lying down, using the hands, positioning one's body, hiding, escaping, finding things, walking, cutting, going; and (b) communication in a form of asking, shouting, directing, explaining, calling for help, refusing, resisting, screaming, and speaking. In addition to behaviors and actions, dreamers use evaluative thought.

### 3.3. Intrapersonal Situations

**Contexts.** With evoked personal meanings, dreamers find themselves in the internal (endogenous and intrinsic) prob-

lem-solving contexts of experiencing physical sensations and disturbing feelings and thoughts about others, and pursuing personally determined goals within physical, emotional, intellectual, and practical contexts. In addition, dreamers experience ambivalent states upon finding obstacles that get in the way of obtaining goals.

**Range of volitional strategies.** Within the contexts of internal experiences with personal significance, in constructive terms, dreamers are able to take care of themselves by relieving themselves of noticed physical sensations and distressing feelings and thoughts by using their hands and by walking. Dreamers also pursue their own goals by using their eyes, hands, and legs, head movement, emerging from water, running, walking, writing, pushing, and communicating. In negative terms, they follow the impulse and use their hands to act destructively while protecting valuable objects. They are also able to evaluate problem-solving situation.

### 3.4. Interpersonal Relationships

**Contexts.** In interpersonal relationships, regarding problem-solving circumstances, with family, strangers, friends, at training or work, dreamers contend with uncomfortable and disappointing situations; they experience friendly or curious interactions; or they notice that characters experience potential loss of life or are in other types of endangerment.

**Range of volitional strategies.** In their strategizing efforts, dreamers use both body movement and verbal communication as a way of preventing possible escalation of an already problematic situation. They display cooperative behavior and influence others, they assert their will, they seek advice, they make requests and offer suggestions, or

they imitate others' body behaviors. When dreamers find themselves in the position of noticing that either unknown or known characters are facing potential loss of life, dreamers use their bodies to come to the rescue (by snatching, running, swimming) or, in isolated cases, dreamers are thinking of a how to use their knowledge for future benefit of others. Alternatively, a dreamer can experience a moral dilemma: She realizes what the correct course of behavior should be when the character is endangered, yet she is not using herself or prompting others to do something altruistically proactive. In this case, mental behavior of proposing what could be done otherwise and noticing the lack of one's behavior (albeit generally not valued in the real world) represents an evaluative executive skill. In addition, some dreamers use analytical, interpretative, and reasoning thought.

### 3.5. Inclusion of Theoretical Input into the Emergent Characterization of Volition in Problem-Solving Dreams During the Non-Lucid Dreaming State

*Volition* as an experience and function in non-lucid dreaming belongs to the types of mental phenomena that remain not yet explicated (Hobson, 2009a, p. 80). Thus, as a third step inherent in the description of working with the method of grounded theory, Henwood and Pidgeon (2003) suggested, after capturing the details and variations (in current study, contexts) and constant comparative analysis of instances (in current study, range of strategies), focusing on "theoretical sampling to extend the emergent theory by checking out emerging ideas, extending richness and scope" (p. 136; see Appendix A). Because the current work was guided by hypothesis that volition might "subsist" in the non-lucid dreaming state, it seemed reasonable to "sample" or integrated the data with theoretical knowledge in psychology of dreaming and waking relevant to volition. Paying attention to ideas about functionality, developmental processes, and practicality for the dreamer had the goal of formulating the initial cross-state emergent characterization of volition pertaining to its "subsistence" in the non-lucid dreaming state as an ego executive capacity with proposed implications for waking states of consciousness.

**Functionality of volition.** As Hobson (2009a) indicated, paying attention to the function of the mental phenomenon remains crucial for scientists (p. 80) and, by extension, for clinicians as well (e.g., Glucksman, 2007). In view of this assertion, the characterization of volition in non-lucid problem-solving dreams could start with the range of motility and communication. It could be proposed that both aspects, when utilized during problem-solving, serve the rehearsal function of one's own subjectivity: In the moments of problem-solving, when the dreamer is able to access a working knowledge of himself or herself and his or her own expectations and values, and is able to make proficient use of elements of working and autobiographical memory, the dreamer's self is in existence. This rehearsal function with access to knowledge about "personal history, characteristics, [knowledge of one's own] appearance, beliefs, needs and desires, skills, and goals" (content of "subjective" thought process, Wolman & Kozmová, 2007, p. 845) becomes paramount in contrast to experiences of losing oneself as individuals diagnosed with disorders of self (e.g., Goldberg, 1980) or diseases of loss of self (e.g., dementia, Small, Geldart, Gutman, & Clarke Scott, 1998). In this sense, the characterization of volition as a "sustained" cross-state

phenomenon serves the function of experiencing oneself as an "independent center of initiative" (Kohut & Wolf, 1978, p. 414) and "cause of . . . own behavior as a result of decisions and actions" (Dijksterhuis & Aarts, 2010, p. 468). As explicated earlier, the study excluded focus on characters' contribution (Kozmová, 2008) to the success or adversity regarding problem-solving. The reports of these volitional activities and behaviors indicate that the dreamer has an intact autonomous ego executive capacity, continuously rehearsed upon encountering inconsistencies (Smith et al., 2004) while being disengaged from the awake world.

**Developmental aspect of volitional processes.** Additional aspect of characterizing volition in non-lucid dreaming pertains to individual dreamer's developmental progress. As Purcell et al. (1993) indicated, when individual dreamers are able to take charge of their own behaviors and to use expressiveness as a problem-solving means or as an evaluative communication about one's own progress, it seems essential to see these mental capacities as an intact executive ego with applicable skills practiced in already-known or novel contexts. The importance of both becomes pertinent in the treatment of nightmares in which dreamers might become paralyzed in their actions. In these circumstances, when a dreamer experiences nightmares, the deliberate volitional efforts in a form of actions, behaviors, and communication could be discerned as psychological achievements in the form of intellectual and emotional knowledge of one's own psychological *agency*. This achievement is defined as the "capacity to recognize contingencies in human interactions and to participate in exchange with others through action" (Zimmer, Bookstein, Kenny, & Kraeber, 2005, p. 547) and pertains, in terms of volition, in non-lucid problem-solving dreams for self-preservation, especially during nightmares. The non-lucid dreamer's face-to-face encounter (known from waking life as interpersonal understanding of a situation [Schutz, 1967, p. 162]) facilitated by the dreamer's evaluation and motoric and communicative expressions represents, in these specific dreams, transposition of volition into "flexible interaction" with the environment (Domhoff & Fosse, 2007, p. 52). This skill of volitional interaction then becomes functionally sustained during non-lucid dreaming.

Additionally, the waking psychology's *sense of agency*, defined as "experiences that confirm one's capacities to bring about desired results" (Zimmer et al., 2005, p. 547), is also represented in problem-solving dreams by volitional use of motor and communicative behaviors in order to change the problematic situations, whether within the contexts of oneself, within interpersonal relationships, or in the environment. By both modes of problem-solving, the dreamer attempts to construct a new reality based on previously known subjective preferences (Wolman & Kozmová, 2007) in already known or novel contexts. In this case, the initial emerging characterization of volition as a developmentally based capacity could be considered identical to that of waking life because in these situations voluntary movement serves to maintain consciousness (Fisher, 1986, pp. 3, 9; Hobson, 2009a, p. 76): When a dreamer experiences nightmares, the deliberate volitional efforts in a form of actions, behaviors, and communication could be discerned as psychological achievements of intellectual and emotional knowledge in the service of one's own psychological *agency*. This achievement is defined as the "capacity to recognize contingencies in human interactions and to

participate in exchange with others through action” (Zimmer et al., 2005, p. 547). The non-lucid dreamers’ face-to-face encounter (known from waking life as interpersonal understanding of a situation [Schutz, 1967, p. 162]) facilitated by the dreamers’ evaluation and motoric and communicative expressions represents, in these specific dreams, transposition of volition into “flexible interaction” with the environment (Domhoff & Fosse, 2007, p. 52). This skill of volitional interaction becomes, when needed, functionally sustained during non-lucid dreaming.

Furthermore, the waking psychology’s *sense of agency* defined as “experiences that confirm one’s capacities to bring about desired results” (Zimmer et al., 2005, p. 547) is also represented in problem-solving dreams by volitional use of motor and communicative behaviors to change the problematic situations whether it is within the contexts of oneself, within interpersonal relationships, or in the environment. By both modes of problem-solving, the dreamer attempts to construct a new reality based on previously known subjective preferences (Wolman & Kozmová, 2007). In this case, characterization of volition as a developmentally-based capacity could be considered identical to that of waking life because in these situations, voluntary movement serves to maintain consciousness (Fisher, 1986, pp. 3, 9; Hobson, 2009a, p. 76).

**Practicality for the dreamer.** Lastly, the emergent initial cross-state characterization of volition in non-lucid problem-solving dreams concludes with experiences of contingencies of waking life during which the individuals could become temporarily incapacitated, inhibited, or prohibited to solve encountered difficulties. When unable to plan and contribute to potentially new internal and external realities, they could experience loss of hope (Erikson, 1964) and depression (Rotenberg, 1993). Because waking life concerns are often times expressed in dreams (Domhoff, 1996; Hall & Nordby, 1972), it could be proposed that the preclusion to problem-solving in general could be transferred into non-lucid dreaming: The dreamer might experience perturbing dreams with experiences of feeling passivity and inactiveness accompanied by fear and with it self- or other imposed restriction on kinetic, communicative, and cognitive abilities. In terms of characterization of volition, the dreamer, through encountering problems and solving those during non-lucid dreaming, actually might re-initiate the waking life “search activity,” defined as “activity to change the situation or . . . attitude to it in the absence of a definite forecast of the results of such activity” (Rotenberg, 1993, p. 262). In this case, with the use of motoric or communicative acts of volition the recovery of lost hope and with it activation toward one’s goals might be possible and could be conceptualized as “inherent strength” (Erikson, 1964, p. 111) or the “active quality” (p. 113). Thus when dreamers use their own idiosyncratic range of motoric and communicative volitional activities, they rise above a hypothesized “inability to direct either . . . thoughts or actions in dreaming” (Kahn & Hobson, 1994, p. 2) and the ability to actively approach (Rotenberg, 1993) volitionally the encountered problems, difficulties, or curiosities could contribute to one’s overall health (e.g., Cartwright, 1996).

Thus when dreamers use their own idiosyncratic range of motoric and communicative volitional activities, they rise above a hypothesized “inability to direct either . . . thoughts or actions in dreaming” (Kahn & Hobson, 1994, p. 2) and the ability to actively approach (Rotenberg, 1993) volitionally

the encountered problems, difficulties, or curiosities could contribute to one’s overall health (e.g., Cartwright, 1996).

In concluding of this discussion of cross-state initial emergent characterization of volition, in addition to its cognitive aspect (Kozmová, 2012) and range of currently known kinetic and communicative capacities it needs to be emphasized that similarly to the phenomenon of problem-solving, volition in non-lucid problem-solving dreams seems to be a multifaceted phenomenon. When dreamers engage deliberately in problem-solving, they are “volitionally pursuing a self-selected goal” (Kozmová, 2012, p. 58). The engagement seems to occur in motoric and communicative manner akin to volition’s waking life conceptualizations (e.g., Farthing, 1992). Hence any dreamer who problem-solves and strategizes might be capable of employing in one dream a range of volitional problem-solving strategies that include action and behaviors, thought processes, and emotions (Kozmová, 2008, 2012, 2015). Thus, the scope of executive skills (dreaming ego capacities) that is based in volition and is observable in dream reports through the dreamers’ abilities to problem-solve could be considered individuals’ cross-state capacity and resource and thus part of developed or developing consciousness.

## 4. Discussion

When working with the method of grounded theory, one of the final steps is to posit a substantive grounded theory of the phenomenon (Glaser, 1987, 1992) that might include, in its emergent phase, “linking” the data to the existing literature (Henwood & Pidgeon, 2003, p. 136). In preparation for this future phase of the work, and because the leading theories of volition in a non-lucid dreaming state of consciousness are not phenomenologically, but physiologically based, for the most part, the discussion will link the results to neurophysiological assumptions.

### 4.1. General Assumptions about Cognitive Phenomena in Non-Lucid Dreaming

Even though Snyder (1970), with phenomenological data, pointed out “clear evidence at times of feelings of volition” (p. 134), theorists of higher order cognition (including volition, e.g., Maquet et al., 2005; Voss et al., 2009) continued to engage in “indispensable” reduction along with “isomorphic subtraction . . . performed at the psychological level (Hobson et al., 2003, p. 231). In this tradition, as Kahan and Claudatos (2016) pointed out, the individual researcher “assumes that dreaming is deficient or lacking in higher-order cognitive processes” (p. 161; see also Hobson, 1988). In fact, Hobson (2009b) termed the “sense of volitional agency to be as much an illusion as our wake-state sense of conscious will” (p. 808). Of course, if volition in both states of consciousness is understood as “illusion,” this assumption would preclude any investigation. The consideration of the earlier work by Dresler et al. (2014), in which the authors retrospectively investigated volition would disagree with this illusory conceptualization. Thus the inspiration to offer a “more attractive and concise alternative” (Hobson, 2007, p. 77) to the “illusory” nature of volition seems to be pertinent especially in view of the assertion that “loss of volition . . . is *typical* (Italicized for emphasis by the present author) of normal [non-lucid] dreaming” (Voss et al., 2009, p. 1198).

#### 4.2. Reappraisal of Non-Lucid Dreamers' Capacities for Kinetic and Communicative Volition as Ego Executive Capacity During Dreamers' Immersion in Nocturnal Problem-Solving

Previously, Maquet et al. (2005) proposed that dreamers are without a "well-identified internal goal" (p. 223). In the current study, the non-lucid dreamers' intelligent and predominantly constructive and occasionally destructive volitional mental behaviors and actions of the kinetic and communicative variety exquisitely fits the contexts in which dreamers find themselves. Dreamers simply pursue the goals that they became aware of in the contexts of their respective dream environments (see Tables 2-4). In fact, dreamers' volitional efforts are related to noticing goals-related "cues" in their dream environment (Klinger, 2013, p. 1). Because problem-solving by itself is a goal-oriented activity, for example, the dreamer who notices the fire escapes from the place of harm to preserve her life. Or, the dreamer who wanted the AIDS vaccine followed the goal-oriented "cue" and laid down to receive it (Table 2). Or, the dreamer who was confronted by fakir with harmful intentions found the sword and defended herself by cutting his head off. In these activities, the dreamers acted volitionally, with well-defined goals in mind, to preserve their lives (Table 2). Maquet et al.'s (2005) additional prediction that the "dreamer would fail to organize his mental representation" (p. 223), especially in terms of "perceptual contexts" during which the individual engages in some form of behavior (p. 221), does not seem to be supported by current research: When dreamers noticed and became aware of the presence of a clearly identified problem (e.g., when being left without speech, one dreamer reported: *I am left trying to make a conversation using "Scrabble" game letter pieces*; Table 2), or even indistinctly perceived implicit yet suggestive (sub-textual) threat (e.g., *A woman puts a finger into my watch bracelet. Immediately, I start to beat her*; Table 4), dreamers were able to organize their perceptions and impressions about particular idiosyncratic internal priorities. In addition, individual dreamer's personal significances include achievement of the goal of safety, noticing his or her own physical state that contradicts known and expected physical equilibrium, or performing altruistic behavior in unexpectedly arising situation (see Tables 2 through 4). It could be proposed that precisely these imports and personal meanings serve as organizers of non-lucid dreamers' internal experiences.

Thus, in non-lucid problem-solving dreams, at least some dreamers continue to notice a contextual and personal "discrepancy between an existing state and a preferred, or more valued state" of affairs (Smith et al., 2004, p. 509) and volitionally work their way through those inconsistencies. It seems that when the contradictions exceed or fall below individual dreamers' expectations, values, and beliefs (in terms of personal significance and meaningfulness), then the dreamers behave or act in a fashion that is fitting with their internal values-based goals.

**Subsistence of volition.** When theorists predicted that "volitional control is notoriously decreased in dreams" and that only during wakefulness an individual's "behavior would be usually adapted to the objects and locations internally perceived" (Maquet et al., 2005, p. 223), the evidence demonstrates straightforward contrast: If we consider adaptation as a waking individual's impact on the external environment along with regulating one's own internal expe-

riences (Hartmann, 1939/1958), then the dreamers, in adaptive mental manners that fit within their dream contexts, are able to change their behaviors—according to their internal perceptions—by problem-solving. The example of this behavioral adaptation to internal objects and locations can be seen in the dreamer's hostile environment: *Fakir . . . He looks into my eyes and explains his intention. He wants to harm me in some way. I find a sword and I cut off his head* (Table 2). In an aggressive environment, when the dreamer reports, *The dragon threw darts at me but missed*, the dreamer uses the object: In response, *I mortally wounded the dragon with my sword and galloped away* (Table 2). In these situations, the dreamers make a direct (in their own behalf) impact on the experienced environment and adapt their behaviors to their perceptions: The dreamers act volitionally even though they remain disengaged from the external world.

**Volitional Control and Search Activity.** Maquet et al. (2005) also proposed that "volitional control is notoriously decreased in dreams" (p. 223). Based on the evidence in Tables 2-4, it could be proposed that when non-lucid dreamers' problem-solving activities include volition in its cognitive (Kozmová, 2012); kinetic; and communicative forms, these dreamers deliberate efforts might reflect the stage of "search activity" in its healthy form (Rotenberg, 1993). Consequently, the awareness of nocturnal problem-solving might be transferable to waking life. It could be thus proposed that subsistence of volition in non-lucid dreaming precludes Maquet et al.'s proposition about its decrease. The assertion of volition's subsistence and activated search activity are examples in which dreamers are willing to mediate voluntarily (or notice the lack of their own intervening) in various circumstances with the aim of making things better for themselves and also for others who are involved in various misfortunes and hardships (e.g., when the character is drowning, Table 3). Alternatively, dreamers evaluate their lack of involvement, which is also a mental action in service of search activity (Rotenberg, 1993; for evaluative thought process as an executive skill, see Kozmová, 2012). One could postulate that as long as the dreamer is acting on one's behalf even in an inhospitable environment, Rotenberg's (1993) search activity becomes volitional act, and however idiosyncratic it might be, is demonstrated and could contribute to one's well-being.

#### 4.3. Reconsidering Assumed Isomorphism Between Phenomenology and Retrospective Neuroimaging Findings

In dream science, *isomorphism* generally refers to the assumption that nocturnal mental events that might indicate dreamers' psychology in terms of phenomenology (including higher order cognition; Kahan, 1994; Wolman & Kozmová, 2007) have a one-to-one correlation with physiology in the investigative framework of neural correlates. The basic theoretical integrative efforts between scientific domains of phenomenology and neuroscience (e.g., Nir & Tononi, 2010) are a testament to this hypothesis.

Previously, Hobson (2002) claimed that disengagement of the frontal cortex equals its inoperativeness of executive ego function (Hobson, 2007, p. 79) due to the lack of "voluntary agency" (Hobson, 2007, p. 75). This proposition focuses on the subjective experience of volition that does not have its presumed match in neural underpinning in specific regions of interest; therefore, the theorist concluded without sup-

port of particular neural networks it could not subsist during sleep. Yet, the current characterization of volition (Tables 2–4) as a phenomenological feature existing or emerging in non-lucid dreams is in contrast to this deficiency viewpoint (e.g., Voss et al., 2009). It is not yet known whether for dreaming volition could be found neurophysiologically-based “more attractive and concise alternatives” (Hobson, 2007, p. 77) needed for integrative effort of phenomenology and neuroscience (e.g., Kussé et al., 2010; Nir and Tononi, 2010).

Isomorphism between waking and dreaming neural correlates of consciousness. When considering the phenomenological data that the current study offers about volition in its kinetic and communicative varieties, and theories that explain retrospective results from neuroimaging studies, one is bound to address a caveat: Dawson and Conduit (2011) emphasized that the understanding of neuroscientific data requires at every point making explicit “a network of assumptions” including suppositions, explications, and clarifications about neuroimaging methodology (p. 150). For example, not so long ago, Schredl and Erlacher (2011) questioned not only “how direct” but also whether there could even be a one-to-one relationship or correlation between “all dreamed activities” (dream content) and objectively measured brain activation (p. 101). This statement echoes Bulkeley’s (2006) proposition that pursuit of a correlation between REM sleep physiology [since most at home recalled dreams are considered from this sleep period] and the basic features of dreams might be a fruitless endeavor because findings might indicate that “brain-mind activities . . . are functionally independent of REM physiology” (p. 215). With these notions in mind, it could be proposed that consciousness of some subjective experiences—such as volition—in its emergent phase might be lacking isomorphic one-to-one neural underpinnings and the assumed neural correlates either need to be developed or might be supporting volition in most unexpected places. Alternatively, firings of neural correlates might not need to be a necessary condition for subjective experiences to occur; awareness and with it some executive skills could emerge, as an organism’s emergent malleable property, without isomorphic correspondence to neural activation or even despite neural decreases (e.g., Gusnard & Raichle, 2001). In addition, because non-lucid dreamers’ mental faculties, capacities, and abilities in question include volition in a problem-solving mode, which might not even have specific nocturnal neural underpinnings, it remains unclear how to conceptualize, in neuroimaging terms, dreamers’ cognitive (including, but not restricted to evaluative, appraising, and decision-making), kinetic, and communicative varieties of volitional problem-solving.

It could also be proposed that without even considering volition and its presumed active neural regions in waking or dreaming *per se*, it remains unknown how to interpret neuroimaging data collected from participants in various states of consciousness, including REM sleep with its dreaming state (e.g., Braun et al., 1997). As Gusnard and Raichle (2001) cautioned regarding functional magnetic resonance imaging (fMRI) conducted during participants’ wakeful state, in the absence of knowledge about “baseline or resting state of brain function involving specific set of mental operations,” the brain activities documented by the increases and decreases in neural activations in considerations with specific goal-oriented tasks are difficult to interpret (p. 685). The authors emphasized that “the identification of a

control or baseline against which the condition of interest can be compared” is an essential scientific aim (p. 685): In wakefulness, during participants’ goal-oriented mental actions, there are notable task-independent decreases in brain activation, especially in the areas of posterior cingulate cortex, precuneus, and retrosplenial cortices (p. 690). Gusnard and Raichle proposed that these seemingly inactive regions of the brain act as a brain baseline that is incessantly and without rest involved in a high level of collecting and processing information about the world and “possibly within us” (p. 690).

Gusnard and Raichle (2001) also pointed out other specific neural regions of interest that are consistently involved in the processing of information, even in their deactivation, during waking goal-oriented tasks. These regions are the posterior medial and lateral cortices, the ventral medial prefrontal cortex, and especially the dorsal medial prefrontal cortex [DMPC]; the latter one is considered to be involved in a “simulation of behavior” or “inner rehearsal” (Ingvar, 1985). As Gusnard and Raichle (2001) further proposed, DMPC is involved in either unprompted or tasks-relevant “self-referential or introspectively oriented mental activity” (p. 692). How this specific interpretation of neuroscientific findings might prove to be important for neural correlates for volitional problem-solving in non-lucid dreams remains unknown.

For purposes of explaining findings of the current study by linking those with the retrospective neuroimaging data with information from non-lucid dreaming states (e.g., review by Maquet et al., 2005), it is not yet known whether there exists a not-yet-found nocturnal very active brain resting baseline state that would be equivalent to brain regions found through neuroimaging findings that are deactivated, yet active and working in their supposed baseline resting during wakefulness and goal-oriented tasks. Furthermore, as Dawson and Conduit (2011) proposed, there exists an intricate relationship between emotional and cognitive activities, neural activation, and blood flow in sleep captured by fMRI that might not reflect or correspond to activations in specific anatomical regions with their functionality as it is known during the waking state of consciousness (p. 150).

Regarding explanations of neuroimaging data obtained during the state of non-lucid dreaming consciousness, *if* it could be assumed that the brain and the mind actually do not sleep even when the individual person is asleep (Moore, 1847, p. 77), *then* it is interesting to note the various regional deactivations of REM sleep, for example, “dorsolateral prefrontal cortex (DLPF), posterior gyrus, precuneus, and the inferior parietal cortex” currently are explained differently: These deactivated neural regions are deemed as neural underpinnings necessary for executive function (because, currently, their activation during the waking state is considered a “baseline” for comparison to activations and deactivations in the dreaming state), and they are deemed decoupled in dreaming from their waking life function (Dang-Vu, Schabus, Desseilles, Schwartz, & Maquet, 2007, p. 100). In other words, in non-lucid dreaming, deactivated regions of interest are equated with deactivated “executive ego function” with its dreamers’ capacity of acting voluntarily (Hobson, 2007, p. 75). This state of affairs could be considered puzzling and in need of data-based explanations especially in view of Gusnard and Raichle’s (2001) propositions about incessant mental activities of brain.

Additional predictions about volition that were developed under the assumption of isomorphism, for example, that “the frontal executive cannot compete with disinhibited subcortical network activation” (Hobson, 1997, p. 391) or that “loss of volition . . . is typical of normal [non-lucid] dreaming” (Voss et al., 2009, p. 1198) are, in view of the absence of brain baseline in its resting activity state, in need of reappraisal. For example, Ioannides, Kostopolous, Liu, and Fenwick (2009) found, by using magnetoencephalography, that in REM sleep there is activated left DLPFC. Ioannides et al. (2009) also highlighted the methodological challenges of earlier PET studies conducted, for example, by Braun et al. (1997): The authors asserted that the crucial “dorsal areas, like DMPFC . . . were outside of field of view of early PET scanners” (p. 465). Yet, these early and, according to Ioannides et al., methodologically insufficient neuroimaging findings that do not reflect the actual state of affairs are predominantly referred to, cited, and considered as the gold standard for theoretical predictions and explanations about executive function and volition in non-lucid dreaming (e.g., Maquet et al., 2005). Thus, without any concrete neuroimaging data that would lend credence to theoretical predictions about volition-based phenomenological data, and with numerous challenges that exist in neuroimaging, such as assumptive or methodological constraints, there seems to be a need for reconsideration of theories connected with non-lucid dreaming, and dreamers’ reported problem-solving and use and volition.

In addition, Maquet et al. (2005) concluded in their reappraisal of neuroimaging findings about human cognition that, surprisingly, data show that “the superior frontal gyrus, the medial frontal areas, the intraparietal sulcus, and the superior parietal cortex are not less active in REM sleep than during wakefulness” (p. 226). At the present time, it is not known precisely whether neural activations in these regions of interest could be considered neural underpinnings of REM dreaming, dreamers’ volitional problem-solving activities of various kinds, or are representing the dreaming brain in its active baseline mode. Nevertheless, with the current range of volitional activities (cognitive, kinetic, and communicative), it could be postulated that under the assumption of isomorphism, perhaps one or several of these regions of interest might be needed to support, in their inactive or deactivated state, the dreamer’s active problem-solving.

#### 4.4. Limitations of the Current Study

The current study represents one arm of the all-encompassing investigation of the nocturnal cognitive problem-solving phenomenon (Kozmová, 2008, 2012, 2015). The explored collection of dreams was gathered from individuals who eagerly wanted to learn about themselves and sought out insight through examination of their own self-selected individual dreams in dream seminars. The present author worked with an integrally biased and motivated sample taken from the archived collection of dreams. At the same time, the diversity of dreamers (males and females from seven different—collectivistic and individualistic—countries) was highly desirable because it allowed for defining a wider range of volitional contexts and strategies.

It is also conceivable that despite using dreams from dreamers of seven different countries, the study might not capture the complete range of all behaviors and actions that demonstrate dreamers’ mental capacity for volition.

## 5. Future Directions

Glaser (1978), in his guidelines for engendering emergent grounded theory of any phenomenon explained that through this process the analyst “generates theory that fits the real world, works in predictions and explanations, is relevant to the people concerned, and is readily modifiable” (p. 144). In view of not having neuroimaging data about neural networks of problem-solving and volition available, it seems inevitable to postpone more complex development of characterization of volition as a goal-oriented activity and offer it in a form of substantive grounded theory. For now, with the current data about kinetic and communicative activities, volition seems to be sustained by processes known from waking consciousness and thus has potentiality for future investigations. It seems that for the rise, awareness, engagement, and applications of executive ego functions, including capacities for volitional behaviors and actions in a kinetic and communicative manner that are similar to waking-life situations, non-lucid dreamers need to face self-created or randomly created (by dream characters or environments) problems, difficulties, threats, or curiosities (Kozmová, 2012, 2015). In these conditions, the abilities for and attempts at problem-solving emerge and have a chance to become manifested or maintained and further practiced (e.g., Revonsuo & Valli, 2000). Therefore, in future studies of any of the executive ego function capacities, including volition, the researchers might need to take into consideration the distinction between descriptive and problem-solving dreams. For any subsequent integrative efforts of data from phenomenology of ego executive functions and neuroscience, the assumptive frameworks would also need to be explicated (Dawson & Conduit, 2003).

Because the current evidence demonstrates that, similarly to waking life, dreamers’ volition arises, as executive skill in ego executive capacity, in situations when dreamers are confronted with problems, difficulties, threats, or curiosities, it might be feasible to investigate the not-yet known developmental trajectory of this capacity. Alternatively, for clinical purposes, it might be interesting to find out when the capacity for volition ceased to be sustained in non-lucid problem-solving dreams.

In summary, the initial theoretical framework (Hervey de Saint Denys, 1867/1977, cited in Schwartz, 2000, p. 56) offered the possibility of finding out about the status of the psychological feature of volition in non-lucid dreams. Hervey de Saint Denys presented researchers with three options suitable for hypotheses: The investigated element subsists, stops, or considerably changes (p. 56). With data from the current study, volition in problem-solving situations seems to expand itself exponentially under specific conditions: The evidence, in the form of previous study (Kozmová, 2012) and in the present study concomitantly brought forward the evaluative, appraising, decision-making and other cognitive volitional efforts and in the present study highlights kinetic and communicative problem-solving activities that further solidify that as dreamers’ volition becomes actualized, the executive skill in ego executive capacity, in situations when the non-lucid dreamers are confronted with problems, difficulties, threats, or curiosities becomes actualized as well.

## 6. Conclusion

The current results of the wide range of kinetic and communicative forms of volition as part of the nocturnal cognitive

problem-solving phenomenon (Kozmová, 2008) investigated in non-lucid problem-solving dreams also add evidence to Moore's (1847) prediction that the sleeping "mind is always ready for actions whenever the organization is in a fit state to convey impressions and to be employed" (p. 77). Inarguably, non-lucid dreamers' perceptions of difficulties and incongruities between the current experienced state and the possibly existing state of affairs based on individual dreamer's values (e.g., Smith et al., 2004) seem to prompt dreamers to organize their impressions in the goal-oriented contexts that require problem-solving: This experienced discrepancy seems to be a prerequisite for using executive ego skills and capacities and their engagement within non-lucid dreaming environments. The host of depicted range of volitional behaviors and actions also offers phenomenologically-based alternative to deficiency theories about volition in non-lucid dreaming.

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## Appendix A

Henwood and Pidgeon (2003) summarized the following discrete segments of working with the method of grounded theory in the following fashion:

1. Open-coding to capture the detail, variation, and complexity of the basic qualitative material (sometimes also referred to as substantive coding);
- 2a. Constantly comparing data instances, case, and categories for conceptual similarities and differences (the method of constant comparison);
- 2b. Sampling new data and case on theoretical grounds as analysis progresses (theoretical sampling to extend the emergent theory by checking out emerging ideas, extending richness and scope, and in particular to add qualitative variety to the core data included within analysis);
- 2c. Writing theoretical memoranda to explore emerging concepts and links to existing theory;
- 3a. Engaging in more focused coding (including focused, axial, and theoretical coding) of selected core categories;
- 3b. Continuing to code, make comparisons, and sample theoretically until the point at which no new relevant insights are being reached (theoretical saturation); and
4. Additional tactics to move analysis from descriptive to more theoretical levels: for example, grouping or reclassifying sets of basic categories; writing definitions of core categories, building conceptual models and data displays, linking to the existing literature; writing extended memos and more formal theory. (p. 136)