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The doubt-certainty continuum in psychopathology, lay thinking, and science

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ABSTRACT

This paper presents a theoretical model suggesting that doubt and certainty are two extremes of a continuum. Different people can be located in different locations on this continuum, according to how much they tend to seek refutation vs. confirmation. In both ends of the continuum lay mental disorders, which can be seen as extreme deviations from the usual relatively stable equilibrium between the two thinking processes. One end is defined by excessive skepticism and manifested as obsessive compulsive disorder (OCD), a disorder characterized by incessant doubt. The other end is defined by excessive certainty and lack of doubt, manifested as delusional disorders. Throughout this article, we demonstrate that the differences between normative thoughts and delusional thoughts are relatively vague, and that in general, the human default tendency is to prefer certainty over doubt. This preference is reflected in the confirmation bias as well as in other cognitive constructs such as overconfidence and stereotypes. Recent perspectives on these biases suggest that the human preference for confirmation can be explained in evolutionary terms as adaptive and rational. A parallel view of the scientific enterprise suggests that it also requires a certain equilibrium between skepticism and confirmation. We conclude by discussing the importance of the dialectic relationship between confirmation and refutation in both lay thinking and scientific thought.

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1. Obsessive doubt

Obsessive compulsive disorder (OCD) is formally defined by its two components: obsessions and compulsions (American Psychiatric Association, 2013). However, another central symptom of OCD is relentless and tormenting doubt, particularly in regard to typical concerns such as fears of contamination or of harming others. For example, a person with OCD trying to lock the door of the office might turn the key in the lock again and again, continuously doubting that the door is indeed locked, although s\he can see that the key is in place, hear the action of the lock, and manually feel that the door is locked (Dar, 1991). Incessant doubts are believed to trigger a variety of pathological behaviors typical of OCD, such as washing and cleaning, counting, demanding reassurance from others, excessive self-monitoring, mental reconstruction and especially repeating and checking. Esquirol (1837), who is considered the first to have written a detailed medical description of OCD, named the disorder "*folie du doute*", literally meaning "madness of the doubt". Some years later, Janet, who studied obsessions and compulsions following Esquirol, emphasized the lack of will and the inability to make decisions or to trust one's own perception (reviewed in Insel, 1990). According to Shapiro (1965), the obsessive-compulsive (OC) person's doubt can be conceptualized as "the loss of the experience of conviction." Due to the inability to experience conviction, the OC person to be faced with everlasting doubt in regard to his thoughts, feelings, actions and experiences.

More recent models of OCD have also hypothesized that the pervasive doubts and related symptoms in OCD stem from deficient "subjective conviction" or "feeling of knowing." Szechtman and Woody (2004) have used the term "feeling of knowing," defined as "a subjective conviction functionally separate from knowledge of objective reality" (p. 115) in their account of OCD. They suggested that in contrast to normal individuals, the behavioral output of individuals with OCD fails to generate this inner feeling, living them in a continuous state of anxiety and doubt regarding their safety and ability to avoid potential harm. In a similar account, Boyer and Liénard (2006) postulated that OCD symptoms are related to missing "satiety feedback feelings," a deficit that leads to doubts and uncertainty regarding the proper performance of actions as a precaution in response to the detection of potential dangers. Finally, in her account of the OCD-related phenomenon of incompleteness, Summerfeldt (2004, 2007) also postulated a missing "feeling of knowing" in OC individuals, which specifically leads to a sense of incompleteness and to "not just right" experiences.

Empirical studies found that OC doubts may concern a variety of cognitive functions including memory (e.g., Constans, Foa, Franklin, & Mathews, 1995; Cougle, Salkovskis, & Wahl, 2007; Dar, 2004; Dar, Rish, Hermesh, Fux & Taub, 2000; McNally & Kohlbeck, 1993; Sher, Frost, & Otto, 1983; Tolin et al., 2001), decision-making and concentration (Nedeljkovic & Kyrios, 2007; Nedeljkovic, Moulding, Kyrios, & Doron, 2009), as well as attention and perception (Hermans et al., 2008; Hermans, Martens, De Cort, Pieters, & Eelen, 2003; van den Hout, Engelhard, de Boer, du Bois, & Dek, 2008; van den Hout et al., 2009). Interestingly, as we shall elaborate below, the tendency of OC individuals to doubt these internal states contrasts with the finding that people in general tend to be overconfident in their assessment of their performance (Koriat, Lichtenstein, & Fischhoff, 1980).

In addition to establishing the extent and generality of OC doubt, researchers also examined processes that perpetuate doubt in OCD. Of particular importance has been the work of Marcel van den Hout and his colleagues, who showed that doubt not only causes excessive checking, a core symptom of OCD, but is also caused by checking. Specifically, these authors found that excessive checking related to one's own memory and perception has the ironic effect of reducing one's confidence and increasing doubt in these processes (van den Hout & Kindt, 2003a, 2003b). Their findings were later replicated and extended (e.g., Ashbaugh & Radomsky, 2007; Moshier, Molokotos, Stein, & Otto, 2015; Radomsky, Gilchrist, & Dussault, 2006). In addition, Toffolo, van den Hout, Hooge, Engelhard, and Cath (2013) showed that individuals with high OC tendencies respond with more checking behavior to mildly uncertain situations than individuals with low OC tendencies. This finding, which was later replicated by Toffolo, van den Hout, Engelhard, Hooge, and Cath (2014), extends beyond the previous studies that linked OC doubt and checking behaviors. It seems that even mild uncertainty promotes actual checking behaviors in individuals with high OC tendencies, which in turn has the paradoxical effect of reinforcing uncertainty, possibly creating a vicious cycle of increased uncertainty and repetitive checking behaviors.

OC doubt has been the focus of a recent model of OCD, termed Seeking Proxies for Internal States (SPIS; Lazarov, Dar, Oded, & Liberman, 2010; Liberman & Dar, 2009). These authors suggested that OC individuals are generally uncertain about their internal states, including what they feel, what they know, what they believe, and what they prefer. According to the SPIS model, OC doubt can manifest itself in relation to any internal state, be it cognitive (e.g., perception, memory, comprehension), affective (e.g., attraction, specific emotions) or bodily (e.g., muscle tension, proprioception). Moreover, the SPIS model postulates that OC doubts are related to actual attenuation of internal states, so that OC individuals not only feel uncertain in regard to their internal states, but also have reduced access to these states. Therefore, when they must answer questions in regard to their internal states, OC people must seek and rely on external "proxies" for these internal states. Proxies were defined as substitutes for the internal state that the individual perceives as more easily discernible or less ambiguous, such as indicators, rules, procedures, behaviors or environmental stimuli (Liberman & Dar, 2009). For example, an OC person who lacks access to her/his own feelings towards her/his partner might resort to monitoring the number of times s/he calls her/him, or the amount of money s/he spends on buying her\him a present. Research within the framework of the SPIS model showed that as predicted, OC individuals had not only reduced confidence in but also attenuated access to the internal states of relaxation, muscle tension and affective states (Lazarov et al., 2010; Lazarov, Cohen, Liberman, & Dar, in press; Lazarov, Dar, Liberman, & Oded, 2012a, 2012b; Lazarov, Liberman, Hermesh, & Dar, 2014).

The excessive doubt has implications for the assessment and treatment of OCD. Clark (2004) argued that obsessional features such as intolerance of uncertainty and pathological doubt are prominent clinical features of OCD that can interfere with the assessment of the disorder. For instance, an OC individual may have difficulty with answering a questionnaire with multiple response options, due to his\her own doubts about his\her feelings, perceptions, thoughts and behaviors. These concerns make it necessary to pay special attention to this possible difficulty and to the relevance of excessive doubt in the assessment process. Moreover, Clark (2004) proposed that the OC doubt should also be considered in the treatment of OCD. For example, one of the common tools used in Cognitive Behavioral Therapy (CBT) is the Socratic questioning (DeRubeis & Beck, 1988). In the case of OCD, however, the therapist may need to modify this tool, as OC individuals suffering from severe doubt may insist on providing the "most correct" answer to each question, and as a result may feel overwhelmed, stressed and possibly even paralyzed. Clark suggested that the modification of Socratic questioning can include, inter-alia, using more summary statements and suggestive probes. Furthermore, based on the SPIS model, Lazarov, Dar, Liberman, and Oded (2012b)