



Are obsessive–compulsive tendencies related to reliance on external proxies for internal states? Evidence from biofeedback–aided relaxation studies

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ABSTRACT

This article presents two studies that examine the hypothesis that obsessive–compulsive (OC) tendencies are associated with a general deficiency in subjective conviction, which leads to seeking and reliance on external proxies to compensate for that deficiency. We examined this hypothesis using a biofeedback–aided relaxation procedure. In Study 1 low OC participants performed better on a relaxation task than high OC participants. More importantly, viewing the biofeedback monitor (an external proxy for the internal state of relaxation) had a different effect on the two groups: Whereas high OC participants performed better, low OC participants did not. In addition, when given the opportunity, high OC participants requested the biofeedback monitor more than did the low OC participants. In Study 2 high OC participants were more affected by false biofeedback when judging their level of relaxation compared to low OC participants. Real relaxation level differences between the two false biofeedback phases among the two groups were not found. These results provide preliminary support for the hypothesis that obsessive–compulsive disorder is associated with deficient subjective conviction in internal states and increased reliance on external proxies. Implications for the understanding of OCD-related rules and rituals as well as for cognitive therapy for OCD are discussed.

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One of the principal symptoms of OCD is persistent and malignant doubt, which is often followed by compulsive checking (American Psychiatric Association, 2000). While these doubts typically revolve around issues of contamination, aggression, or safety, several studies demonstrated that they are not limited to such concerns. It is well established that people with OCD doubt their memory (e.g., Brown, Kosslyn, Breitler, Baer, & Jenike, 1994; Dar, 2004; Dar, Rish, Hermesh, Fux, & Taub, 2000; MacDonald, Antony, MacLeod, & Richter, 1997; Tolin et al., 2001), and recent studies have broadened this lack of confidence beyond general memory abilities to include related processes such as decision-making and concentration abilities (Nedeljkovic & Kyrios, 2007; Nedeljkovic, Moulding, Kyrios, & Doron, 2009). Other studies have shown that obsessive–compulsive (OC) individuals also distrust their attention, perception and senses (e.g., 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). Classic descriptions of OCD have also observed that OCD patients doubt their own feelings, preferences, comprehension and other internal states (Janet, 1903; Rapoport, 1989; Reed, 1985;

Shapiro, 1965). These pervasive doubts are believed to account for the variety of pathological behaviors typical of OCD, including excessive self-monitoring, repeated checking, mental reconstruction, incessant questions and requests for external validation or reassurance (Dar et al., 2000).

Several models of OCD hypothesize that the pervasive doubts and related symptoms in this disorder stem from deficient “feeling of knowing” or “subjective conviction” (Boyer & Lienard, 2006; Joel & Avisar, 2001; Rapoport, 1989; Reed, 1985; Shapiro, 1965; Summerfeldt, 2004; Szechtman & Woody, 2004). According to the classic description by David Shapiro (1965), people with obsessive–compulsive (OC) tendencies have “lost the experience of conviction.” These individuals have a diminished ability to access their own feelings, wishes and preferences directly and must therefore rely on external indicators to infer these internal states. To use a metaphor by Shapiro, OC individuals can be likened to pilots flying at night, who must rely on flight instruments instead of on their own vision. When asked whether they like someone, believe in something or prefer one thing to another, most people usually feel that they simply “know” the answer. In contrast, OC individuals, according to Shapiro, must deduce their answers from external indicators or base them on general rules or norms. A similar model was advanced by Reed (1985), who proposed that the clinical symptoms of OCD should be seen as

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manifestations of a functional impairment in the spontaneous organization and integration of experience. According to Reed, the symptoms of OCD patients can be seen as attempts to compensate for their impaired ability to define and put closure on experiences. Both Shapiro and Reed suggested that individuals with OCD are able to function well despite this deficit by using various compensation strategies, such as adopting rules and norms to guide their behavior. For example, an obsessive–compulsive man may conclude that he must be in love with his partner because she possesses all the “right” attributes (Shapiro, 1965).

The idea that OCD is related to a disturbance in the subjective experience of conviction has been adopted in several recent models of OCD. Szechtman and Woody (2004) suggest that OCD is related to a disturbance in the “feeling of knowing,” defined as “a subjective conviction functionally separate from knowledge of objective reality (p. 115).” According to their model, this feeling of knowing serves as a termination signal to a “security motivation system.” As OC individuals are unable to generate the feeling state that normally shuts down the system, they are left in a continuous state of anxiety and doubt. As a result, they repeat the security-related behavior over and over again in an attempt to overcome the dysfunctional feedback mechanism and to eventually dampen the driving motivation. Summerfeldt (2004) has also used the term “feeling of knowing” in her account of the OCD-related feeling of incompleteness. According to Summerfeldt, the core of incompleteness in OCD is a malfunction in an internal signal that usually terminates behavior by producing a “feeling of knowing”—an emotional indicator that signals to the individual that a satisfactory state has been achieved. Thus, the OCD individual remains with a tormenting feeling of incompleteness, continuously trying to get rid of this feeling, usually by performing different futile acts such as keeping symmetry, counting and checking. Finally, Boyer and Lienard (2006) postulated that OCD symptoms are related to the failure of “evolutionary precaution actions,” which are taken in response to the detection of potential dangers, to trigger “satiety feedback feelings” that would put an end to the operation of the system.

In line with the models reviewed above, we suggest that OC symptoms, and in particular doubting and checking, are related to a reduced sense of subjective conviction. We suggest that this deficit is not limited to security and safety concerns or to feelings of incompleteness, but can be relevant to any internal state (Lieberman & Dar, 2009). In addition, the models reviewed above (Boyer & Lienard, 2006; Summerfeldt, 2004; Szechtman & Woody, 2004) do not include a mechanism through which OC individuals can compensate for the missing inner feeling, which they are unable to generate endogenously. According to our model, in contrast, OC individuals develop and rely on external “proxies,” defined as objectively verifiable indicators of internal states, to compensate for their deficient inner subjective experience (Lieberman & Dar, 2009). We further suggest that the reliance on these external proxies and the tendency of OC individuals to monitor and question their own subjective experiences further reduces their confidence in these experiences. It is well established that checking behavior has the ironic effect of reducing confidence and increasing doubt regarding memory (e.g., Ashbaugh & Radomsky, 2007; Radomsky, Gilchrist, & Dussault, 2006; Tolin et al., 2001; van den Hout & Kindt, 2003a,b), perception (van den Hout et al., 2008, 2009) and even general knowledge (Dar, 2004).

We can illustrate the divergence between previous models and the one proposed here by using compulsive and ritualistic hand washing as an example. From one point of view, the washing ritual can be considered a repetitive and futile action emanating from the inability of the normative washing act to generate an inner feeling of cleanness, a feeling that would normally shut down the operation of the security/precaution system. From another point of view,

the washing ritual can be considered an objectively verifiable indicator (i.e., the external proxy) signaling to the individual that his hands are clean, thus compensating for his missing internal feeling of cleanness. To give another example of the current model, a young OCD patient that was tortured by worries that he did not fully understand the material he was studying in school. The more he questioned and attempted to monitor his level of understanding, the more his uncertainty grew. To compensate, he developed the rule that he should know the material by heart. Knowing by heart, unlike understanding, has an objectively verifiable criterion, and thus can serve as a proxy for understanding when one does not have access to his or her internal states.

In the research presented here, we examined this general hypothesis using a biofeedback-aided relaxation procedure. Applied biofeedback is a group of therapeutic procedures that uses electronic or electromechanical instruments to accurately measure, process, and feedback to users information about their neuromuscular and autonomic activity in the form of auditory and/or visual feedback signals. With the aid of these procedures, users develop greater awareness of, confidence in, and an increase in voluntary control over their physiological processes that are otherwise outside awareness and/or under less voluntary control. This is achieved by first controlling the external signal, and then by using cognitions, sensations, or other cues to prevent, stop, or reduce symptoms (Schwartz & Schwartz, 2003). Thus, the biofeedback apparatus utilizes external representations of internal physiological activity as cues for the learning of voluntary control or modification of the internal activity (Ince, Leon, & Christidis, 1987), especially when internal cues are not discriminable (Segreto, 1995). This function of the biofeedback apparatus makes it suitable for examining our model's predictions, as it can be used as an “objective” verifiable criterion for the participant (i.e., an external proxy) for the subjective and vague state of relaxation.

In the studies presented in this paper we employed a sample of extreme high and low scorers on a measure of OCD. There is abundant evidence as to the similarity in content and type of OC phenomena across clinical and non-clinical populations (e.g., Rachman & de Silva, 1978; Salkovskis & Harrison, 1984). Furthermore, the use of non-clinical or sub-clinical populations in OCD research is a common practice that has produced useful and valuable insights regarding many aspects of this disorder (e.g., Amir, Freshman, Ramsey, Neary, & Brigidi, 2001; Gibbs, 1996; Hajack, Huppert, Simons, & Foa, 2004; Nedeljkovic & Kyrios, 2007; Nedeljkovic et al., 2009; Rachman & de Silva, 1978; Salkovskis & Harrison, 1984; Soref, Dar, Argov, & Meiran, 2008).

The two studies presented below examined the hypothesis that OC tendencies are associated with deficiency in feeling of knowing or subjective conviction and increased seeking of and reliance on objectively verifiable cues and proxies. In Study 1 we examined the hypothesis that participants with high OC tendencies, compared to those with low OC tendencies, would rely on and benefit more from external objective feedback in attaining a state of relaxation. In Study 2 we examined the hypothesis that OC tendencies would be related to reliance on self-perception processes in inferring internal states. Specifically, we predicted that participants with high OC tendencies, compared to those with low OC tendencies, would be more strongly influenced by false feedback regarding their state of relaxation.

Study 1 – Reliance on the biofeedback screen in achieving relaxation

As detailed above, we hypothesize that OC tendencies are related to a reduced sense of subjective conviction and that this leads OC individuals to develop and rely on external “proxies” to compensate for their deficient inner subjective experience

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