How to Handle Contradictory Results? Discount the Data or Refine the Theories? A Reply to Öhman

Birgit Mayer, Harald Merckelbach, and Peter J. de Jong
Department of Experimental Abnormal Psychology and Department of Psychology, Maastricht University, The Netherlands

Individuals with specific fears of, e.g., spiders or snakes display an increased latency when they have to color-name threat words referring to their fears. This robust effect has been termed attentional bias and it can be obtained in fearful people with supra-as well as subliminal presentations of threat words during a so-called emotional Stroop task (e.g., Lavy & Van den Hout, 1993; Mathews & MacLeod, 1985; Van den Hout, Tenney, Huygens, & De Jong, 1997). Many authors have speculated about the clinical ramifications of the attentional bias phenomenon. Indeed, one would expect that a strong version of this phenomenon can be easily documented in persons with a full-blown anxiety disorder. However, this is not necessarily the case. For example, Amir et al. (1996) found no attentional bias for social threat words in social phobics. Later on, the question is addressed as to how to explain this discrepancy between fearful and phobic individuals. For the moment, it is important to note that this “null finding” of Amir et al. (1996) has been taken seriously and has contributed to the knowledge about information processing in psychopathology. Similarly, for a proper evaluation of Öhman’s hypothesis about pre-attentive activation implying that phobic individuals react with physiological fear responses to subliminally presented phobic stimuli, it would be important to see whether such fear-specific responses not only emerge in analogue groups but can also be found in clinically phobic individuals.

In their crucial experiment, Öhman and Soares (1994) confronted spider fearful, snake fearful, and non-fearful control participants with presumably subliminal pictures of spiders, snakes, and neutral material. They found that spider fearful individuals reacted with a selective skin conductance response (SCR) to masked spider pictures, snake fearfuls reacted with a selective SCR to masked snake pictures, while non-fearful controls did not exhibit a SCR to any of the pictures. Öhman and Soares (1994; p. 238, 239) were quick to point out the clinical significance of their finding: “our data and theoretical interpretations provide a good explanation of the irrationality of phobias” and “even though our results support the psychoanalytic contention that phobias are rooted in the unconscious, they do not necessarily support a view of a smart unconscious that may patronize consciousness by deciding what is bad for it.”

However, while Öhman and Soares (1994) sometimes refer to their fearful participants as “phobic subjects” (p. 239), their participants were just what they were, namely fearful subjects. Therefore, it makes sense to apply the paradigm outlined by Öhman and Soares to people suffering from a serious clinical phobia to see whether they too react with SCRs to subliminal phobic cues. This is what we sought to do in our study (Mayer, Merckelbach, De Jong, & Leeuw, 1999). Note that although Öhman and Soares (1994) suggested that their 30 ms backwardly masked presentations of phobic and neutral stimuli were genuinely subliminal, we will never know whether this was really the case. That is, subliminal thresholds and SCRs were examined in different experiments with different fearful and normal participants. We decided in our experiment to obtain awareness check data along with SCRs in one and the same sample of participants. As we had no a priori reasons to believe that 30 ms presentations would remain subliminal, we in-
cluded two additional presentation times of shorter durations (i.e., 20 ms and 15 ms). The results were "quite disappointing": we found no indications that truly subliminal phobic pictures may elicit selective SCRs in phobic patients.

According to Öhman (1999), it is impossible to interpret our findings as there was no non-masked control condition included. In other words, he questioned whether the spider slides we used were capable of eliciting SCRs in spider phobics at all. To strengthen this argument, he states that our 30 ms SOA condition could be regarded as a non-masked control condition in which no heightened SCRs to spider slides occurred. Note, however, that in none of our three time conditions (i.e., 30 ms, 20 ms, and 15 ms) were spider slides detected above chance. Although one cannot rule out the possibility of non-responses to our spider slides on the basis of our data, this suggestion is extremely far-fetched. That is, there is abundant evidence that spider fearful individuals react with heightened SCRs to non-masked spider pictures (e.g., Diamond, Matchett, & Davey, 1995; Fredrikson, 1981; Fredrikson, Sundin, Frankenhaeuser, 1985; Hamm, Cuthbert, Globisch & Vaitl, 1997; Hare & Blewings, 1975). Most important for the issue at stake, we also consistently found enhanced SCRs to spider slides in clinically diagnosed spider phobics (e.g., de Jong & Merckelbach, 1991; de Jong & Merckelbach, 1999; de Jong, Merckelbach, & Arntz, 1995). Moreover, we used the same source to select our slides as was used by Öhman and Soares (i.e., the International Affective Picture System; Lang, Öhman, & Vaitl, 1988).

In his commentary on our article, Öhman (1999) argues that our failure to find subliminal activation of physiological responses in phobics does not represent "a contribution to science; it is merely a contribution to confusion" (p. 160). He also suggested that our experiment picked up nothing but physiological noise and that publication of the results was guided by our intention to blow up our CV. Finally, he advocates this rule: "a single instance of alleged failure to replicate should be neglected unless its authors can document the reliability and validity of their procedures and propose factors that determine when the effect is there and when it is not" (p. 161).

It is hard to defend oneself against speculations about motives involved in publishing an article. Suffice it to say that writing up disappointing results is not the best way to blow up your CV; dramatic effects do a far better job. An even more remarkable part of Öhman's commentary concerns his rule for handling replication failures. It is an example of a *contradictio in termini* because it boils down to the doctrine that failures to replicate a finding should be ignored unless the authors can document the finding. This rule echoes the Hegelian way of doing science: when the facts fail to support the theory, too bad for the facts.

Öhman (1999; p. 161) continues his commentary by maintaining that "activation of psychophysiological responses to masked stimuli has been demonstrated for many response modalities." Even apart from the fact that there are also examples of studies that failed to find such activation (e.g., Globisch, Wether, & Hamm, 1996), it is completely irrelevant for the aim of our study: our study was about phobic patients, phobic stimuli, and SCRs.

Returning to Amir et al. (1996), why were these authors unable to replicate the delayed color-naming latency for phobic material? Well, in this research domain, unexpected and counterintuitive failures have been treated seriously and, thus, have contributed to progress. Most authors now seem to agree that some conditions can override attentional bias phenomena. If, for example, the prospect of being confronted with the phobic object elicits extremely high anxiety levels in patients, their processing priorities may change in such a way that threatening test stimuli lose their ability to elicit Stroop interference. Testing theories in independent laboratories and establishing the boundary conditions for phenomena by reporting and examining failures is an essential part of science. Especially in psychopathology, this point has historical backing: theories about the "refrigerator" mother as a cause of autism or frontal lobotomy as a treatment for schizophrenia have fortunately disappeared due to failures to replicate.

References


