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Editorial

Introduction to special issue on anxiety

This special issue is well-timed. We now have a number of well-developed theories that offer valuable insights into the different aspects that characterise anxiety; and we have ample evidence to show that these different aspects have important practical implications for a wide range of everyday behaviours. The purpose of this special issue is to showcase many of these theories and findings, whilst at the same time identifying problems, both theoretical and empirical in nature, which continue to call for resolution. In selecting papers, we have chosen to focus on the psychological literature, as opposed to related ones (e.g., molecular genetics) that, whilst of high importance, do not address the mechanisms, processes and ramifications of anxiety. The final collection of papers are not intended to provide a comprehensive picture of all theoretical approaches to anxiety; instead, they are intended to provide an adequate and representative sample of the types of approaches currently being pursued – the choice of perspectives reflect the editors' preferences, but it is to be hoped that these preferences are not overly idiosyncratic.

1. Anxiety: a multidimensional construct

It is trite to state that anxiety is a complex, multidimensional construct, yet this remains true. The challenge is to assimilate physiological, cognitive, affective, behavioural and subjective components, often couched in terms of evocation by threat or danger (Zeidner, 2008). The mantra of assimilation is easy to chant; much more difficult is its realisation. For example, we are still in a quandary as to the appropriate level of analysis and explanation (e.g., biological vs. cognitive).

Therefore, it should come as no surprise that there are currently many competing models of anxiety, each entailing different antecedent stimulus conditions, latent mediating processes, and outcomes (Barlow, 2002). These conceptual distinctions expand variability of measurement and assessment procedures, which further poses a problem for the operationalisation of anxiety and, in consequence, the implications of empirical findings for validating theories. However, in place of a counsel of despair, there are indications that certain core elements of anxiety are achieving some measure of consensus. One important purpose of this special issue is to throw light on these elements.

2. Etymological analysis of 'anxiety'

Language has the power to illuminate, but it also has the potential to obscurate. Are we always clear what we mean when we use the word 'anxiety'? Perhaps often we are clear; but we can be fairly confident that our understanding of its meaning will not always be the same as the other person's. Even among scientists, the word 'anxiety' is used in different ways. For example, several papers in this special issue contrast 'fear' and 'anxiety', some seeing them as on a continuum, while others see them as qualitatively different. For this reason, it might repay our time to survey some of the more important etymological routes of 'anxiety'.

Etymological analysis indicates the different meanings of 'anxiety'; and, in part, these different meanings correspond to different psychological models that attempt to explain the related phenomena (Weinberger, Schwartz, & Davidson, 1979; Heller, 1993; Watson, 2000; Robinson & Compton, 2006). First, the physical meaning of anxiety refers to the Indo-European root of a word *angh*, which was transformed into Greek 'angkito', which might be translated as 'squeeze', 'choke', 'constrict' or 'throttle' (Himmelhoch, Levine, & Gershon, 2001). Findings stemming from, for example, genetic, neural, physiological or pharmacological data, so far, are by no means conclusive as to the specific physical signs and somatic symptoms accompany anxiety (Gray, 1982; Kasturagi et al., 1999; Schwerdtfeger, 2004; Corr, 2008a). From an evolutionary perspective, the neural substrates mediating anxiety are assumed to have developed to promote survival in the face of danger and threat (Panskepp, 1998). It is suggested that several cortico-limbic neural structures (amygdala, septo-hippocampal circuit, insula, interior and medial hypothalamus, cingulum), operating in a parallel and synergic manner, form the substrates of normal anxiety and the various anxiety disorders (for a review, Zeidner, 2008). This widely distributed system has been incorporated into the updated neuropsychological model of anxiety (Gray & McNaughton, 2000), which previously (Gray, 1982) took a distinctly hippocampal-centric view – in the revised theory, the hippocampus is still assigned a pivotal role, but now it is seen to work in conjunction with other neural structures. The genetic contribution to anxiety has been long established (Eysenck & Eysenck, 1985; Eysenck, 1992), although the identification of which genes are involved has proved more elusive (e.g., Deary et al., 1999; Hariri & Weinberger, 2003); however, some studies have proved promising (e.g., Hariri & Holmes, 2006) – although all studies face the hard challenge of replication. Also, although not universally endorsed, arousal theory continues to be used to account for some of the features of anxiety and, especially, its effects on performance (e.g., Matthews, Davies, Westerman, & Stammers, 2004). Generally, with few exceptions (e.g., Eysenck, 1967; Eysenck, 1992; Gray, 1982; Gray & McNaughton, 2000), biological theories of anxiety are attempts to explain particular anxiety disorders rather than broad theories of anxiety (Rachman, 2004). These theories have roots in the Greek 'angkito'.

Secondly, psychological meaning reveals interpretation of the English word 'anxiety', the German word 'angst' and the French word 'l'anxiètè' and 'l'angoisse'. All of these words originate from the Latin 'anxietas' and mark the affective and cognitive aspects

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of anxiety like 'worry', 'fear', 'feelings of apprehension', 'threat vigilance', 'danger anticipation', whose sources are ill-defined and largely unknown (Himmelhoch, Levine, & Gershon, 2001). Anxiety is often grouped (with other related constructs) under the broader category of 'negative affectivity', referring to a general tendency to experience negative emotion and mood (Watson, 2000, 2005), which tend to have adverse effects on cognitive performance. Consistent with this view are numerous laboratory-based studies demonstrating the processing mechanisms contributing to bias in selective attention (e.g., Fox, 1994; Fajkowska & Eysenck, 2008), impairment of working memory and attentional control (for a review, Eysenck, Derakshan, Santos, & Calvo, 2007), and reduction in on-task effort (e.g., Humphreys & Revelle, 1984). Biasing effects of anxiety on encoding, processing and rehearsal are generally robust; however, more studies are needed to detail the influence of anxiety on more complex cognitive processes (e.g., judgement, decision making, problem solving, categorization or reasoning, and economic choice). Furthermore, the true-to-life situations studies find that specific type of anxiety (e.g., social, maths, exam, and sport performance) interfere with appropriate competence and, by so doing, influence many behaviours of wide-spread significance (for a review, Zeidner 2008).

Finally, rendition of 'existentielle angst' (German) and 'anxiety' (English) exposes its philosophical denotation, usually addressed to existential anxiety (Kierkegaard, 1843/2006). Previous to this time, two of the philosophical systems important to anxiety were Epicureanism and Existentialism. In the Epicurean view (i.e., the purpose of life was to attain happiness and freedom from anxiety and fear; Epicurus from Samos 341–270 BC), the state of pleasure as absence of fear was located in the human mind. In the Existentialist view, and contrary to Epicureanism, happiness was seen not as the opposition of anxiety (Kierkegaard, 1844/1981), but rather it was understood as a profound and deep-seated spiritual condition of insecurity and fear in the free human being, creating different possibilities for personal growth and salvation.

These rich and varied philosophical traditions have encouraged the proliferation of theoretical perspectives, which themselves lead to specific research approaches – these proclivities have led to the current state of affairs, where whole areas of anxiety researchers tend not to speak to each other, either theoretically or methodologically (e.g., psychodynamic and neurobiological perspectives).

3. The content of this special issue

As already noted above, on the one hand, it is easy to discuss anxiety as a complex multidimensional construct requiring some form of integrative theory, but, on the other hand, it is far more difficult to achieve such integration, at least beyond a superficial endorsement of the need for eclecticism in theorising and research. The challenge is to provide an integrative framework sufficient to account for (a) the causality of relatively stable patterns of anxiety behaviours, and (b) the different response systems (e.g., neural, affective or experiential systems) that together comprise what we mean by 'anxiety', including the exotica of conscious awareness and qualia. Any such integrative view should be concerned with functional relations among separated and different response systems (Cervone, 2008); and attention should be paid to the contextualized patterns of variability in response (Caprara & Cervone, 2000). Moreover, such an integrative framework, if it is to be successful, must be amenable and receptive to empirical test and disconfirmation. These are big challenges.

To rise to meet these challenges, this special issue covers some of the important multi-layered approaches in anxiety. We cannot claim that the papers included are comprehensive, and they are far from being exhaustive; however, we claim that they are representative of mainstream anxiety research of the type routinely published in *Personality and Individual Differences*. Some of these papers present an overview of empirical studies, exploring anxiety from different perspectives, response systems and levels of analysis; other papers attempt to provide theoretical clarity and to highlight outstanding theoretical problems still in need of resolution. The diversity of the opinions expressed in these papers suggests that the best way to explain anxiety is still a matter of (often considerable) debate.

Setting out the 'ground rules', including delineation of the main issues to be resolved by the future research, is especially important. For this reason, we developed a list of protean questions from which authors could pick and choose to discuss in their papers.

1. What are the major differences between trait and state anxiety?
2. Where in the major structural models of personality do trait and state anxiety reside?
3. To what extent does anxiety (and its disorders; e.g., GAD) differ from fear (and its disorders; e.g., phobia): are fear and anxiety qualitatively or quantitatively different?
4. To what extent is anxiety biologically and socially influenced?
5. What is the most appropriate level of explanation to understand human anxiety; and is it possible, or indeed desirable, to attempt to understand anxiety at all levels of explanation (e.g., evolution, DNA, brain, endophenotype, and behaviour)?
6. What is the role and importance of conscious awareness in anxiety (i.e., the subjective feelings associated with various forms of anxiety?); and are subjective aspects causally important or impotent?
7. What are the functional similarities and differences between anxiety and neuroticism?
8. What are the functional similarities and differences between anxiety and depression?

Authors restricted themselves to addressing to one or two of these questions, although some of the more theoretical papers attempted to address a wider range of issues. We leave it to the reader to judge the extent to which these questions were adequately answered, and the issues that remain in need of further clarification.

4. Summary of papers

A theory paper by Corr (*Anxiety: splitting the phenomenological atom*) sets the scene by discussing the multidimensional nature of anxiety and the problems this poses for building integrating models. Two problems are highlighted: (a) the 'lateness' in the causal chain of events of conscious awareness; and (b) how controlled ('cognitive') processes interface with the neural machinery that control immediate (automatic) behaviour. Corr builds a theoretical model of anxiety based around the behavioural inhibition system (BIS), and recent ideas concerning the control of behaviour and regulation (Corr, 2010), especially involving the nature and functions of conscious awareness that loom large in anxiety. Continuing with the BIS theme, a, review paper by McNaughton (*Trait anxiety, trait fear and emotionality: the perspective from non-human studies*) surveys the non-human animal literature for the claim that fear and anxiety are separate, and sometimes opposing processes and states. This distinction forms the basis of the influential revised Reinforcement Sensitivity Theory (RST) of personality (Gray & McNaughton, 2000; Corr, 2008b). Strelau and Zawadzki (*Fearfulness and anxiety in research on temperament: temperamental traits are related to anxiety disorders*) present an empirical paper that examines the relations between fear and anxiety in terms of temperamental traits and anxiety disorders. Following this paper, Krohne and Hock (*Anxiety, coping strategies, and the processing of*

threatening information: investigations with cognitive-experimental paradigms) present a review paper that shows how the trait-state differentiation leads to a dynamic model of processing threatening information within the model of personality-oriented coping. This paper gives an appropriate theoretical background to the notion that threat processing underlies anxiety, which is the central theme of the ideas presented in the Corr and McNaughton papers.

Moving on to specific clinical disorders, the next paper by Naragon-Gainey and Watson (*Clarifying the dispositional basis of social anxiety: a hierarchical perspective*) provides a review of what is known about one of the major anxiety disorders, namely social anxiety. The authors provide evidence to show that higher-order E/PE, sociability, dominance, and the social concerns component of anxiety sensitivity, are most specific to social anxiety, not primarily to depression and GAD. Klenk, Strauman and Higgins, in their review paper (*Regulatory focus and anxiety: a self-regulatory model of GAD-depression comorbidity*), discuss the relevance of regulatory focus theory for vulnerability to GAD as well as to GAD/MDD comorbidity; their theory postulates two systems for pursuing desired end states: the promotion and prevention systems and attempts to explain how dysfunction within the prevention system could lead to GAD – with, as well as without, MDD.

The next three papers look at experimental and applied aspects of anxiety. Wytykowska and Lewicka (*Learning affective value of target categories: role of category valence and behavioural inhibition system (BIS)*) present an empirical paper that emphasizes the adaptive effects of BIS on testing hypotheses about sources of gains and losses when feedback differs in level of certainty. In an empirical paper, Matthews, Panganiban and Hudlicka (*Anxiety and selective attention to threat in tactical decision-making*) consider the influence of the interaction between anxiety and the affective context of decision processes on threat biases, revealing that anxiety biases decision-making but the results were subtle pointing to the need to consider both the measure of anxiety taken and the demands of the task. In a review paper and pointing in the direction of future research, Eysenck and Derakshan (*New perspectives in attentional control theory*) discuss the current status of attentional control theory and its potential value in future cognitive neuroscience research. In an event-related potential study, Fajkowska, Eysenck, Zagórska and Jaśkowski (*ERP responses to facial affect in low anxious, high-anxious, repressors and defensive high-anxious individuals*) provide evidence to how behavioural measures complement event-related ERPs, especially the interactive effects of anxiety and defensiveness on attentional biases for face-related stimuli. In an applied psychology empirical paper, Zalewska (*Relationships between anxiety and job satisfaction – three approaches: 'bottom-up', 'top-down' and 'transactional*) examines the relationships between anxiety and job satisfaction, revealing the measurement and methodological issues entailed when considering bottom-up, top-down and transaction approaches on one major occupational variable.

This special issue concludes with a theory paper by Wilt, Oehlberg and Revelle (*Anxiety in personality*), which offers an integrative theory of anxiety couched in terms of the coherent patterning over time and space of affect, behaviour, cognition, and desires (the ABCDs of personality). The authors go on to show how this ABCD framework allows for an integration of theories of state anxiety with those of trait anxiety. Their paper provides a useful framework for integrating the various aspects of anxiety in the specific context of personality psychology.

In their different ways, the questions we set the authors have been addressed, and many illuminating answers have been offered, although the papers raised many more additional questions for future research to tackle. This is no bad thing, for science develops as much by the clarification of the problem as the adequacy of its solution.

5. Conclusion

At this point in any editorial, it is tempting to exercise the prerogative of editors and attempt scientific percipience, seeking to distil the essence of the field and predicting future developments. We resist this temptation. Readers will see for themselves that the papers, in their various ways, highlight a number of problems that deserve scrutiny, including the characterization of the descriptive and functional properties of anxiety at the different levels of explanation that exist, and the challenge of integrating these levels to form a general theory. Such a theory is needed for understanding the broad range of normal and abnormal behaviours affected by anxiety, as well as affording the opportunity to design interventions to treat the anxiety disorders.

It is to be hoped that the papers contained in this special issue capture something of the exciting state of current knowledge. We believe that many of the problems discussed and solutions proffered also foreshadow the state of future knowledge. Accordingly, we would be remiss of our duties as editors if we did not express our genuine gratitude to the authors of this series of excellent papers; they rose to the occasion admirably. We would be equally remiss if we did not acknowledge the time and effort devoted by *sine nomine* reviewers of the drafts of these papers.

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We dedicate this special issue to our late colleague and friend, Professor Blazej Szymura.

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