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Creativity and positive schizotypy influence the conflict between science and religion

James S. MacPherson, Steve W. Kelly *

Department of Psychology, University of Strathclyde, United Kingdom

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ABSTRACT

Recent research suggests that evaluations of scientific and religious explanations compete for 'explanatory space'. This study examines whether a combination of positive schizotypy (PS) and creativity can partly explain why a scientist committed to empirical measurement and evidence could hold a concomitant faith-based view of the world. The O-LIFE, the religious orientation Scale and the Creative Personality Scale were completed by (n = 222) PhD level Scientists and a Control group of (n = 193) non-scientists. Regression analyses found that PS and creativity accounted for a significant degree of variance in religiosity in the Scientist sample. This relationship was not demonstrated in the Control group, nor was it affected by the intrinsic/extrinsic religiosity dimension. These findings suggest that PS and creativity help afford religious beliefs when commitment to empiricism is high. Links to cognitive processing styles such as syncretic cognition and Transliminality are discussed.

1. Introduction

The scientific method involves making testable predictions, which are supported or refuted through measurement, in a way that can be replicated (Newton, 1999). As the purpose of science is to explain the natural world, so James (1994) ascribes the central purpose of religion as reducing the sense of puzzlement of this domain yet a religious conviction that is not supported by independently verifiable evidence, by definition, violates the scientific method. Of course, that is not to say that deistic or theistic belief requires independently verifiable evidence. Many studies reveal that religious belief is moderated via experiential evidence, as in the cases of dramatic conversion (James, 1994), or the many types of sensory or quasi-sensory experiences described by Hardy (1979). Nevertheless, an intuitive tension exists between science and religion as explanatory systems (Livingston, 2005) though some argue this may be more due to category-error than actual conflict between the two. Aquinas (1974) writes "the things of faith surpass man's understanding and so become part of his knowledge only because God reveals them" (p. 165). Gould (1999) similarly separates science and religion into "non-overlapping magisteria" with each explaining different facets of the world: science covering empirical fact and religion concerned with moral values and ultimate meaning. While conceiving of science and religion as exclusive epistemic systems may afford their co-existence, Livingston (2005) notes that this assumption precludes meaningful dialogue on many important issues between a religious and secular audience and further gives rise to the paradox of many different and opposing truths being revealed by a divine revelatory process.

Other authors maintain that a religious ideology directly conflicts with a scientific stance (e.g., Dawkins, 2006; Zukav, 2001) and empirical evidence examining rates of religious belief within the scientific community would seem to support this view. Leuba (1916) found that 58% of 1000 randomly selected scientists in the United States reported atheist or agnostic views of the existence of a personal god. Amongst those whom Leuba termed 'greater scientists' this rose to almost 70%. Larson and Witham (1997) found similar rates of disbelief in a sample of members of the National Academy of Sciences. More recent research by Ecklund and Scheitle (2007) showed that 52% of scientists in their sample reported no religious affiliation compared to only 14% of the general population in the United States of America. These studies all support the idea that scientists differ from the general population in terms of their propensity for religious belief. The explanatory ideology they follow is an intuitive candidate for such a difference.

In support of this intuition, Preston and Epley (2009) suggest that, at the most basic level, tension arises between science and

* Corresponding author. Address: Department of Psychology, University of Strathclyde, Glasgow G1 1QE, United Kingdom. Fax: +44 141 5484001.
E-mail address: steve.kelly@strath.ac.uk (S.W. Kelly).

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religion through 'competition for explanatory space'. Manipulating the perceived value of either scientific or religious explanations, they examined automatic evaluations of scientific and religious concepts in a semantic priming task. Priming of one explanatory system automatically decreased the influence of the other suggesting that it is indeed difficult to hold conflicting scientific and religious explanations simultaneously.

This apparently automatic conflict between the two explanatory ideologies may account for the fact that scientists are underrepresented in religion but it raises the question of how a scientist can remain religious at all, as it is clear that many scientists do hold a religious conviction. The title of Larson and Witham's (1997) article "Scientists are still keeping the faith" highlights that almost 40% of their sample did hold a belief in a personal god and in human immortality. These data then beg the question: do scientists require a particular cognitive or personality characteristic which affords a belief in a god over and above those characteristics shown in the general religious population?

Generating novel scientific ideas, solutions or procedures requires elements of creative thinking (Segal, 2001) and evidence must be considered in an analytical and evaluative way in order to advance the process of creating, refining or discrediting theories and concepts (Crawford & Stucki, 1990) therefore it is likely that scientists are creative individuals. Creativity is linked to positive schizotypy (PS), a concept that involves 'magical thinking', and is characterised by unusual perceptual/cognitive experiences such as hallucinations, delusions, superstitious belief or magical ideation (Claridge, 1997; Taylor, Zach, & Brugger, 2002; Thalbourne, 1994). PS contributes to creativity in both divergent thinking and analytical type problem solving (Karimi, Windmann, Güntürkün, & Abraham, 2007) and Batey and Furnham (2008) found a significant relationship between PS and creativity in a sample of undergraduate students. PS is able to account for individual differences in terms of creativity (for a full review of the literature see Nettle, 2006) therefore it is likely that scientists will also possess elevated levels of PS compared to the general population.

Unusual perceptual/cognitive experiences can support religious belief (e.g., Hardy, 1979) and therefore high creativity/PS could foster a belief in religion and support such beliefs that would otherwise contradict a scientific thinking style. Confirming this theoretical reasoning, PS has been shown to have a potentially adaptive role in religious belief. Jackson (1997) found high levels of PS in those with 'profound religious-experiences' and suggested that as schizotypy produces heightened-creativity, individuals are able to think of their religious experiences as positive rather than negative. Jackson (1997) coined the term 'benign schizotypy' to describe the beneficial aspects of schizotypy that, in relation to certain classes of religious experience, could be thought of as a type of problem solving and as having adaptive value in reconciling or normalising unusual experiences.

While PS has been shown to be directly associated with mainstream religious beliefs in addition to other 'paranormal' beliefs, the overall picture is confusing as some results limit the association to particular genders or aspects of religiosity. White, Joseph, and Neil (1995) found an association between PS and participants' attitudes towards Christianity and Joseph and Diduca (2001) found that males with high PS had the strongest attitudes towards Christianity. However, Maltby, Garner, Lewis, and Day (2000), in a sample of 308 British students, found that an extrinsic orientation towards religion was significantly related to unusual perceptual experiences (an aspect of PS) in women; though their sample had low levels of religiosity, which may have attenuated the correlations. The current literature suggests some relation between PS and religious belief albeit a relationship that is not straightforward to interpret. An issue with all the studies mentioned thus far, is that when comparing religiosity to schizotypy each study used outdated measures of schizotypy that do not reflect current views on clustering of schizotypy factors (Fonseca-Pedrero et al., 2007). The current study used the O-LIFE scale which is more suitable to the measurement of schizotypy in the general population (Mason, Linney, & Claridge, 2005).

The central question in this study asks what enables someone whose career requires commitment to the scientific method of verifiable empirical data collection also to hold a religious commitment which does not require this level of 'proof'; i.e. to hold two contradictory belief systems together, without continual conflict and competition? It is hypothesised that because of the necessity for creativity in a scientific career and the relationship between creativity and PS, both of these will show elevated levels in the sample of scientists as opposed to non-scientists. Further, PS and creativity will be positively related to religiosity in the scientist population. There is no reason to predict that individuals untrained in scientific enquiry would hold a strong requirement for empirical verification of evidence and consequently have a requisite belief system that conflicts with religious belief. Therefore, in comparison, it is predicted that PS and creativity will not be related to religiosity in a non-religious sample. As religiosity is composed of two major dimensions: extrinsic and intrinsic (e.g., Maltby et al., 2000) the relationship of PS and creativity to these two sub-types will also be examined.

2. Method

2.1. Participants

222 online volunteers (mean age = 27.85 and standard deviation = 8.49) met the criteria of scientists with a Doctoral qualification, (PhD, DPhil, DMus, AMusDEd.D. EngD, D.Clin.Psy, DMedEth, DSc/ScD, DLitt/LittD) and their international equivalents and formed the Scientist group.

The breakdown according to discipline (including allied disciplines) was: chemistry (67), biology (52), physics (54), psychology (14), engineering (15), medicine (11), computer science (3), geography (2), sociology (1), and unspecified (3).

The geographical breakdown was United Kingdom (120), United States of America (37), Luxembourg (13), Germany (8), France (4), Australia (3), and unspecified (37).For the Control group, 193 volunteers (mean age = 29.18 and standard deviation = 8.49) met the stated criteria of being in a self-reported non-scientific role.

The geographical breakdown was United Kingdom (87), United States of America (47), Germany (2), Spain (1), and unspecified (56).

2.2. Measures

2.2.1. Creativity

'Creative personality' was measured using the 'Creative Personality Scale', (CPS: Gough & Heilbrun, 1983). Participants rate themselves on various adjectives, 18 of which are indicative of a creative personality and 12 are contraindicative. Scores range from −12 to 18. This measure has been shown to be valid as a predictor of the 'creative personality', (e.g., Carson, Peterson, & Higgins, 2005; Gough, 1979; Kaduson & Schaefer, 1991; McRae, 1987) and reported reliability coefficients are often about 0.80 (Cropley, 2000). In the current study, coefficient alpha was 0.82 for the Scientist group and 0.85 for the Control group.

2.2.2. Schizotypy

Schizotypy was measured with the O-LIFE-short form (Mason et al., 2005). The unusual experiences sub-scale was used as the measure of PS. Coefficient alpha was 0.81 for the Scientist group and 0.82 for the Control group.