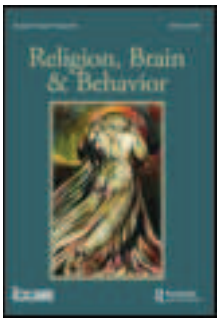
This article was downloaded by: [Rüdiger J. Seitz]
On: 08 April 2014, At: 08:20
Publisher: Routledge
Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Religion, Brain & Behavior
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/rrbb20

Psychology of religion and spirituality: meaning-making and processes of believing

Rüdiger J. Seitz[a] & Hans-Ferdinand Angel[b]
[a] Centre of Neurology and Neuropsychiatry, LVR-Klinikum Düsseldorf, Heinrich-Heine-University, Düsseldorf, Germany
[b] Institute of Catechetics and Religious Education, Karl-Franzens-University, Graz, Austria
Published online: 03 Apr 2014.

To cite this article: Rüdiger J. Seitz & Hans-Ferdinand Angel (2014): Psychology of religion and spirituality: meaning-making and processes of believing, Religion, Brain & Behavior, DOI: 10.1080/2153599X.2014.891249

To link to this article: http://dx.doi.org/10.1080/2153599X.2014.891249

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at http://www.tandfonline.com/page/terms-and-conditions

Psychology of religion and spirituality: meaning-making and processes of believing

Rüdiger J. Seitz[a]* and Hans-Ferdinand Angel[b]

[a]*Centre of Neurology and Neuropsychiatry, LVR-Klinikum Düsseldorf, Heinrich-Heine-University, Düsseldorf, Germany;* [b]*Institute of Catechetics and Religious Education, Karl-Franzens-University, Graz, Austria*

Downloaded by [Rüdiger J. Seitz] at 08:20 08 April 2014

For a long time, psychology of religion did not earn much scientific interest – at least not in Europe. The publication of the *Handbook of the Psychology of Religion and Spirituality* edited by Paloutzian and Park (2005) supported effectively efforts to change this deplorable situation. It is encouraging that the second edition of this *Handbook* (2013) includes a remarkable number of European scholars. Above that, the new *Handbook* is outstanding owing to its comprehensive assembly of well-written and informative contributions that are all of extraordinarily high scientific standard. Foremost, however, the editors Paloutzian and Park have to be congratulated for their in-depth introductory and concluding chapters in which they introduce the topics of the *Handbook*, position them in the current scientific context and explain their vision of this developing new scientific area. We will address here three points that in our view tackle aspects of fundamental importance for the second edition of this *Handbook*.

Semantic aspects

We start with a few remarks on the linguistic or language-related side of the psychology of religion. This might be seen as an immediate reaction to the editors' question "the psychology of what?" (p. 7). Following William James (1985/1902), the matter of the psychology of religion is commonly described as "religious experience." But, both terms, "religious" and "experience," are far from being clearly defined. Here, we only refer to the question: what does "religious" mean? This is one of the most controversially discussed questions in all relevant fields including theology, religious studies, philosophy of religion, and psychology of religion.

One of the problems is the fact that "religious" is an adjective that can be related to two different corresponding nouns. Without empirical evidence the most widespread association to the adjective "religious" is the noun "religion." Here, we encounter a problematic path in the European history of mind whenever it was attempted to address "religion." The term "religion" was shaped in Roman antiquity. It became a central concept for the faith identification, especially in consequence of the Protestant Reformation. "Religion" determined the political landscape in Europe after the Thirty Years' War (1618– 1648). The notion "Cuius regio eius religio" pushed the predominance of "religion" as the politically relevant principle neglecting more or less the individual religious experience of the people. Following the Enlightenment period the term "religion" attracted increasing numbers of scholars prompting scientific interest in a number of related new fields including "history of religion," "philosophy of religion," and even "psychology of religion."

The other noun that is related to the adjective "religious" is "religiosity" or "religiousness." Both terms refer to the involvement of the individual in religious

*Corresponding author. Email: seitz@neurologie.uni-duesseldorf.de

Downloaded by [Rüdiger J. Seitz] at 08:20 08 April 2014

experience. Thus, the adjective "religious" accommodates both the systemic pole "religion" and the anthropological pole "religiosity."

From a theoretical perspective, "religious experience" encompasses three dimensions: (1) religion, (2) religiosity, and most importantly (3) the (individual or collective) relation between religion and religiosity. The subject of psychology of religion is embedded within this frame. As a consequence, the predominance of "religion" provokes a theoretical gap: while "religion" has attracted many scholars, "religiosity" has not received much theoretical attention. This is especially the case in the English-language literature (cf. Angel, 2013a). Since "religiosity" in contrast to the closely related terms "religiousness" and "spirituality" is quite an unusual English word, this linguistic situation has affected our colloquial communications. Thus, it seems understandable that the subject index of the second edition of the *Handbook of the Psychology of Religion and Spirituality* does not include "religiosity" or "religiousness." Notably, this omission deprives the indispensable discussion about the relation of "religion" and "religiosity." In fact, it might be possible to write about the "history of religion," but it would be strange to conceive a "history of religiosity." As a note of interest, the German language allows a book to be entitled "History of Religiosity" (Angenendt, 2000) considering "religiosity" (for the German discussion of *Religiosität* see Angel et al., 2006) as part of a general "history of mentalities," in analogy, for instance, to a "History of Anxiousness" (Delumeau, 1978).

An important question in the context of this *Handbook* is the relation of "religion" (in its English meaning) to human behavior and human brain function, in particular. The same holds for "belief," which is not part of any "religion" but an anthropological concept of human behavior. As far as "belief" is conceived to be predominantly related to "religion" devoid of any theoretical underpinning of "religiosity," one may understand that it is held by representatives of the modern sciences to eliminate belief as a theoretically relevant topic. For example, Stephen Stich (1996) argues "that this concept ought not to play any significant role in a science aimed at explaining human cognition and behaviour." (p. 5) Conversely, Tatjana Schnell's (2003, 2004) proposition of an "implicit religiosity" suggests the possibility of a non-religious (i.e., especially a non-religion-related) religiosity (Schnell 2012). Accordingly, the crucial question is, therefore, what the object or essence of a psychology of religion is. Referring to the three aspects "religion," "religiosity," and "relation between religion and religiosity," the subject of psychology of religion could be understood as how men integrate "religion" into their individual "religiosity" (in the sense of the German *Religiosität*). In a secular sense, this includes every kind of civil religion (Bellah, 1967) or every form of "implicit" religiosity (Schnell, 2003). Note, that the recently introduced concept of "creditions" (Angel, 2006) is not related to "religion," but to "religiosity."

Brain physiological aspects

Paloutzian and Park state as a point of departure that there is no unifying definition of religion and spirituality. Rather, the definitions available reflect the different academic traditions as reviewed by D. Oman (in Paloutzian & Park, 2013). Accordingly, William James was the first to propose that psychological processes underlie religious experiences, comprising cognition, emotions, actions, and perception (Oman, 2013; in Paloutzian & Park, 2013b). Furthermore, in their concluding chapter, Paloutzian and Park describe that there is a lack of a strong theory in the psychology of religion, while a number of psychological propositions have been developed. As an example, the commonly known tripartite model of religion comprises the elements myth (thinking), ritual (action), and

experience of transcendence (feeling). Furthermore, the cognitive aspects of religiousness include dual cognitive processing: an implicit/intuitive and an abstract/rational mode (Watts, 2007). This model concurs with the notion and empirical evidence that religion is a byproduct or process of normal human cognition (Boyer, 2003; Kapogiannis et al., 2009). The increased interest in imaging technology enables a better understanding of the cerebral implementation of the psychology of religion and spirituality in future research (Paloutzian & Park, 2013b). Beyond the relevance for the individual, there is also the cultural dimension of religion that is considered ground-building for faith groups and societies (van Belzen, 2010). Paloutzian and Park (2013b) encourage research in this anthropological area also, since research on religiousness and spirituality ought to be conducted at all levels of analysis with subsequent integration of the various kinds of knowledge achieved.

The core notion promoted by Paloutzian and Park in their introductory chapter is that religion (and even religiosity) can be conceived as a meaning-making system. This system comprises mental core processes that enable a person to evaluate incoming information, to regulate beliefs, affects, and actions, and to live with a sense of personal continuity throughout life (Emmons & Paloutzian, 2003). Furthermore, Paloutzian and Park hypothesize that the processes of sacralization are a subset of the processes of meaning-making and assessment system. With respect to the notion that the brain is a meaning-making device, a fundamental aspect of human brain function is devoted to the analysis of information in terms of personal relevance. The meaning that a person attributes to information from the outside world will guide his or her behavior in daily situations and will affect their engagement in rituals. There are two important aspects in this context. First, as the mass of information that human beings have to deal with comes from the complex outside world, the meaning-making is intimately interwoven with the domain of perception resulting in a conscious interpretation of experience (Mesulam, 2008). Second, the complexity of the outside world will be simplified reflecting the inherent subjective perspective of the individual (Fuchs, 2009). This bold subjective perspective will optimize subsequent actions of the individual concerning predicted reward and expected cost (Friston, 2010; Vlaev, Chater, Steward, & Brown, 2011).

Human beings perceive the physical nature of their environment with their different senses. While much of this incoming information will remain below the level of explicit awareness, humans can turn their window of attention to certain objects or events in their environment to explore their physical properties. That is, they see or hear events and manually explore or taste objects. There is accumulating evidence that the processing of information imposed on a subject involves a number of different computations. First, there are parallel sensory-processing streams dedicated to the elaboration of what is being perceived and where (Ungerleider & Haxby, 1994). The different processing streams mediate the analysis of the physical properties of objects, their use, and their spatial configuration concerning the objects themselves and their relation to adjacent objects and temporal order of events (Tsuchiya, Kawasaki, Oya, Howard, & Adolphs, 2008). The amount of information maintained in working memory is coded by electric brain oscillations in the gamma frequency range (Roux, Wibral, Mohr, Singer, & Uhlhaas, 2012).

In addition to the sensory information about the physical properties of the objects and events, humans estimate to what extent the objects and events have a personal value for them. The personal value is coded in terms of desire or satiety (Rolls, 2006). Furthermore, subjects value objects and events in the outside world in terms of personal relevance (Seitz, Franz, & Azari, 2009). This probabilistic judgment is the default first person perspective of "what does it mean to me?" The relevance is coded implicitly with the emotional categories happiness, anger, fear, surprise, and disgust. Specifically, subjects value the quality of what

Downloaded by [Rüdiger J. Seitz] at 08:20 08 April 2014

they perceive as good, beautiful, or adverse and dangerous (Grabenhorst & Rolls, 2011). These emotions can induce immediate reactions in the subject and typically induce internal sensations such as increased and strong heartbeat, trembling, and heat in the head. In fact, it has been argued that emotions are read by the physiological reactions of the body (Damasio, 1998). Importantly, personal relevance is based on memories of prior experience and reflects personal standards and predispositions such as attitudes, desires, and hope. And finally, humans may attribute abstract categories of general value such as moral, justice, and ethics to what they perceive. Importantly, the personal judgment can eventually become consciously accessible to the subject and is critical for guiding their behavior (Seitz et al., 2009). It should be noted that the subject's conclusion about the physical properties of objects and events is generally assumed to be virtually identical among different subjects, while in contrast it is well known that the personal relevance of the same object or event may be considered profoundly different among subjects. Evidence from functional imaging shows that physical properties and subjective beliefs are represented in different brain circuits with a prominent involvement of the medial frontal cortex (d'Acremont, Schultz, & Bossaerts, 2013; Seitz & Angel, 2012)

Meaning-making has a number of important properties. It involves the mental process through which humans make patterns, connections, or implications out of ambiguity in the outside world and extrapolate continuity (Park & Folkman, 1997). Further, there is the meaning appraisal through which organisms assess new information in the way that they have processed information in the past (Park, 2005). Importantly, meaning-making of what has been perceived and thought allows for the making of logical predictions about future events. These processes are interrelated and operative in all human psychological functions including perception, learning, and social interaction. Empirical studies show that judgment using personal perspective is an early stage of processing sensory information (Prochnow et al., 2013; Seitz et al., 2008; Smith, 2012; van Gaal, Ridderinkhof, Fahrenfort, Scholte, & Lamme, 2008; van Gaal et al., 2011).

Three different levels of human meaning-making have been proposed that will lead to self-related attributions to the environment (Park, 2005; Suguria, 2013). First, at the most immediate level, subjects have the ability to understand the meaning of physical events in their environment. For example, a rock rolling toward a person will be understood as a dangerous situation. The meaning of such a situation may be recognized by the experience of a similar earlier situation that was harmful to the subject, or by analogy to similar situations witnessed in other people or circumstances. Second, from social interactions, humans are accustomed to infer the meaning of a body movement. Humans are capable of rapidly identifying the emotional state of another person behind their facial expressions, gestures, and whole body movements (Conty, Dezecache, Hugueville, & Grèze, 2012; Lindenberg, Uhlig, Scherfeld, Schlaug, & Seitz, 2012; Peelen, Atkinson, & Vuilleumier, 2010). Particularly concerning emotional facial expressions, humans make inferences about the affect of the person with whom they are interacting and they make predictions about his/her future acts (Behrens, Hunt, & Rushworth, 2009). Furthermore, the meaning-making of an emotional facial expression by a person comprises both the understanding of the emotional state of the other person and the probabilistic interpretation of the cause for his/her emotional state and behavior. Thus, bodily expressions of emotion are paradigmatic for the predisposition of humans to reason about the meaning behind another person's behavior. In fact, humans guide their behavior according to the meaning that they read from the body movements of the people with whom they interact. Clearly, that comprises prior experience of what a certain body movement means. There is the notion that infants already have the capability to read the

Downloaded by [Rüdiger J. Seitz] at 08:20 08 April 2014

affect of people in their environment and to adapt their behavior accordingly (Meltzoff & Decety, 2003). At the third level, understanding the meaning of pronounced or read words is a cognitive dimension of meaning-making. People are used to judging other people's speech or written material and to make probabilistic inferences about verbal material to get a grasp on its meaning. With respect to speech, the way of presentation or intonation is essential for a successful conveyance of the text's meaning from one person to another (Schultz von Thun, 1981). It will allow the subject to see the various and possible implications and to predict their logical consequences. In consequence, the meaning system has an ultimate survival value (Paloutzian & Park, 2013a).

A limitation of meaning-making is that subjects judge the credibility of their inferences and predictions in terms of trustworthiness, convincingness, and substantiating evidence. In the positive case, the subject arrives at the conviction that he/she accepts their personal interpretation as true or granted and, thus, personally relevant. Consequently, the subject believes it, since or although he/she does not know whether the information is really true. There is empirical evidence that repetitively occurring stimuli induce an illusion of truth (Chang, Doll, van 't Wout, Frank, & Sanfey, 2010; Henkel & Mattson, 2011). Furthermore, explicit beliefs have been proposed to represent interpretations of one's own mental state (Boyer, 2003). Based on observations of delusional belief, it was hypothesized that there are three mental processes of normal belief generation: (1) attentional monitoring systems of ambiguous perceptions leading to first-person experience; (2) the bias of individual attributions to perceptions for causal explanations; and (3) belief evaluation processes giving priority to indirect sources of information (Langdon & Coltheart, 2000). Another possibility that is not mutually exclusive to this hypothesis is that sensory and likewise mental information are processed in parallel channels, one of which results in a mental representation of the "what" and "when" properties and the other computing the "why" and "what for" aspect in the sense of "what does it mean to me?" (Seitz et al., 2009). According to Morewedge and Kahneman (2010), there is a type 1 process that is intuitive and implicit and overrules the abstract and rational type 2 process. In fact, it was hypothesized that type 1 processes represent a faulty intuition system that gives major biases of intuitive judgment controlling the rational operations. Such a dual pathway was shown to engage different brain areas (Kuo, Sjöström, Chen, Wang, & Huang, 2009) and may apply also to religiousness, which has been proposed to include dual implicit/intuitive and abstract/rational cognitive processing (Watts, 2007).

Procedural aspects

Cognitive neuroscience aims at understanding human behavior with respect to interior mental processes. The generally held narrow conceptual link between "religion" and "belief" persuades the conception of belief as a "state" rather than a mental process. This might be influenced by the history of theology and ecclesiastical thinking of the third and fourth century that favored the dogmatic aspects of belief over the affective processes of "believing" (Theobald, 2007). This corresponds to the recent argument that facts and knowledge are stored in the human brain (Krueger, Barbey, & Grafman, 2009). In contrast, the notion of creditions introduced by Angel (2006) emphasizes the procedural aspect of belief as "process of believing" similarly to other psychological processes. Specifically, credition has been conceived as a psychological term in analogy to emotion and cognition denoting the mental activity related to what we call "he/she believes." In fact, creditions are understood as processes that are interrelated with emotions and cognitions.

Downloaded by [Rüdiger J. Seitz] at 08:20 08 April 2014

Although emotion and cognition are considered as two different domains covering separate and different aspects of brain function, there is empirical evidence from neuroimaging findings that emotion and cognition are processed in overlapping areas of the lateral prefrontal cortex meaning that both can contribute to the control of thought and behavior (Gray, Braver, & Raichle, 2002). Moreover, current data provide converging evidence that working memory and neural activity in the lateral prefrontal cortex can be influenced by affective variables (Cabeza & Nyberg, 2000; Decety & Chaminade, 2003; Seitz et al., 2008). While emotions have been shown to involve the amygdala and the orbitofrontal cortex (Rolls, 2006), cognition comprises different aspects of mental activity, such as speech production, memory processes, attention, and learning processes, that are processed across widespread circuits in parietal, temporal, and frontal cortical areas as well as in the amygdala (Toga & Mazziotta, 2000; Schaefer & Gray, 2007). Beliefs are important to consider, as they have been shown to influence reasoning and brain activity related to reasoning (Goel & Dolan, 2003).

A given proposition, therefore, can differ in its personal emotional meaning. Our (European) languages do not have a term to express the overlap of cognition and emotion in a meta-theoretical sense. Therefore, the term "bab" has been proposed (Angel, 2013b, 2014a) to express that the same proposition can differ in its emotional relevance or meaning in analogy to the well-known Russian toy "babushka" (which in some regions might be referred to as Matryoschka). Similarly to a babushka doll that accommodates several figures of the same shape but of different sizes, the same abstract proposition can occur with different emotional loadings (which might be called "Babushka-Effect" or "bab"). Furthermore, the so-called enclosure function is a cognitive process constituting or modifying "bab-configurations" in the sense of emotionally shaped propositions, such as vague ideas, confirmed knowledge, values, moral claims, and intuitions. Thus, bab-configurations are subsets of mindsets that are activated when a process of believing starts (Angel, 2013a). This concept can give new perspectives on vivid discussions such as, for instance, "religious fundamentalism" (Hood, Hill, & Williamson, 2005).

Conclusion

The attempt to understand the processes of believing raises many still unresolved questions like: what is the starting point and end point of such process (Runehov & Angel, 2014)? What is the implication of a process of believing for human behavior? Specifically, as creditions are to be understood as an applied process theory, there is the question: what is the theoretical concept of a mental "process" that underpins the concept of creditions? Paloutzian and Park are most likely right in stating that modern methods of neurophysiological investigation such as brain imaging and systems neurophysiology will be important in addressing these questions in terms of the involved brain structures and the timing of their activity. The answers to these theoretical and neuroscientific questions will have implications for the empirical and anthropological study of individuals and of the modifying influence of the cultural environment on the performance of ritual behavior. The second edition of the *Handbook of the Psychology of Religion and Spirituality* outlines the directions of such future research strategies.

References

Angel, H-F. (2006). Religiosität als menschliches Potential. In H-F. Angel, H.U. Bröking-Bortfeld, J. M. Kunstmann Joachim, & R.M. Pirner Manfred (Eds.), *Ein anthropologisches Modell der*

Downloaded by [Rüdiger J. Seitz] at 08:20 08 April 2014

Religiosität im neurowissenschaftlichen Horizont [An anthropological model of religiosity with neuroscientific horizon] (pp. 62–89). Stuttgart: KOHLHAMMER.
Angel, H-F et al. (2006). *Religiosität. Anthropologische, theologische und sozialwissenschaftliche Klärungen* Religiosity. Anthropological, theological and social scientific clarifications. Stuttgart: Beltz.
Angel, H-F. (2013a). Religiosity. In *Encyclopedia of sciences and religion*, http://www.springerreference.com/docs/html/chapterdbid/357427.html
Angel, H-F. (2013b). Credition. In *Encyclopedia of sciences and religion*, http://www.springerreference.com/docs/html/chapterdbid/357430.html
Angel, H-F. (2014a). Die creditive Basis wirtschaftlichen Handelns. Zur wirtschaftsanthropologischen Bedeutung von Glaubensprozessen [The creditive basis of oeconomical behaviour. Oeconomicoanthropological meaning of processes of believing]. In U. Hemel (Ed.), *Wirtschaftsanthropologie - auf dem Weg zu einer neuen Disziplin* [Oeconomical anthropology - on its path to a new discipline] [in press].
Angel, H-F. (2014b). Creditions – a contribution to a theory of mind in process. In M. Weber (Ed.), Proceedings of the 9th International Whitehead Conference 2013, in press.
Angenendt, A. (2009). *Geschichte der Religiosität im Mittelalter* [History of religiosity in the middle ages] (2nd ed.). Darmstadt.
Behrens, T.E.J., Hunt, L.T., & Rushworth, M.F.S. (2009). The computation of social behavior. *Science*, *324*, 1160–1164. doi:10.1126/science.1169694
Bellah, R.N. (1967). Civil religion in America. *Journal of the American academy of arts and sciences* (vol. 96, pp. 1–21). Boston, MA.
Boyer, P. (2003). Religious thought and behavior as by-products of brain function. *Trends in Cognitive Sciences*, *7*, 119–124. doi:10.1016/S1364-6613(03)00031-7
Cabeza, R., & Nyberg, L. (2000). Imaging cognition: An empirical review of PET studies with normal subjects. *Journal of Cognitive Neurosciences*, *9*, 1–26. doi:10.1162/jocn.1997.9.1.1
Chang, L.J., Doll, B.B, van 't Wout, M., Frank, M.J., & Sanfey, A.G. (2010). Seeing is believing: Trustworthiness as a dynamic belief. *Cognitive Psychology*, *61*, 87–105. doi:10.1016/j.cogpsych.2010.03.001
Conty, L., Dezecache, G., Hugueville, L., & Grèze, J. (2012). Early binding of gaze, gesture, and emotion: Neural time course and correlates. *Journal of Neuroscience*, *32*, 4531–4539. doi:10.1523/JNEUROSCI.5636-11.2012
d'Acremont, M., Schultz, W., & Bossaerts, P. (2013). The human brain encodes event frequencies while forming subjective beliefs. *Journal of Neuroscience*, *33*, 10887–10897. doi:10.1523/JNEUROSCI.5829-12.2013
Damasio, A.R. (1998). Emotion in the perspective of an integrated nervous system. *Brain Research Reviews*, *26*, 83–86. doi:10.1016/S0165-0173(97)00064-7
Decety, J., & Chaminade, T. (2003). Neural correlates of feeling sympathy. *Neuropsychologia*, *41*, 127–138. doi:10.1016/S0028-3932(02)00143-4
Delumeau, J. (1978). *La peur en Occident – XIV^e^– XVIII^e^ siècle* [Anxiousness of the occident in the 14th to 18th century]. Paris: Fayard.
Emmons, R.A., & Paloutzian, R.F. (2003). The psychology of religion. *Annual Review of Psychology*, *54*, 377–402. doi:10.1146/annurev.psych.54.101601.145024
Friston, K. (2010). The free-energy principle: A unified brain theory? *National Review of Neuroscience*, *11*, 127–138.
Fuchs, T. (2009). Embodied cognitive neuroscience and its consequences for psychiatry. *Poiesis Prax*. doi:10.1007/s10202-008-0068-9
Goel, V., & Dolan, R.J. (2003). Explaining modulation of reasoning by belief. *Cognition*, *87*, B11–B22. doi:10.1016/S0010-0277(02)00185-3
Grabenhorst, F., & Rolls, E.T. (2011). Value, pleasure and choice in the ventral prefrontal cortex. *Trends in Cognitive Sciences*, *15*, 56–67. doi:10.1016/j.tics.2010.12.004
Gray, J.R, Braver, T.S., & Raichle, M.E. (2002). Integration of emotion and cognition in the lateral prefrontal cortex. *Proceedings of the National Academy of Sciences*, *99*, 4115–4120. doi:10.1073/pnas.062381899
Henkel, L.A., & Mattson, M.E. (2011). Reading is believing: The truth effect and source credibility. *Consciousness and Cognition*, *20*, 1705–1721. doi:10.1016/j.concog.2011.08.018
Hood, R.W, Jr., Hill, P.C., & Williamson, W.P. (2005). *The psychology of religious fundamentalism*. New York, NY: Guilford.

Downloaded by [Rüdiger J. Seitz] at 08:20 08 April 2014

James, W. (1985). *The varieties of religious experience: A study in human nature*. Cambridge MA: Harvard University Press (Original work published in 1902).
Kapogiannis, D., Barbey, A.K., Su, M., Zamboni, G., Krueger, F., & Grafman, J. (2009). Cognitive and neural foundations of religious belief. *Proceedings of the National Academy of Sciences*, *106*, 4876–4881. doi:10.1073/pnas.0811717106
Krueger, F., Barbey, A.K., & Grafman, J. (2009). The medial prefrontal cortex mediates social event knowledge. *Trends Cognitive Sciences*, *13*, 103–109. doi:10.1016/j.tics.2008.12.005
Kuo, W-J, Sjöström, T., Chen, Y-P., Wang, Y-H., & Huang, C-Y. (2009). Intuition and deliberation: Two systems for strategizing in the brain. *Science*, 324, 519–522. doi:10.1126/science.1165598
Langdon, R., & Coltheart, M. (2000). The cognitive neurophysiology of delusions. *Mind Language*, *15*, 184–218. doi:10.1111/1468-0017.00129
Lindenberg, R., Uhlig, M., Scherfeld, D., Schlaug, G., & Seitz, R.J. (2012). Communication with emblematic gestures: Shared and distinct neural correlates of expression and reception. *Human Brain Mapping*, *33*, 812–823. doi:10.1002/hbm.21258
Meltzoff, A.N., & Decety, J. (2003). What imitation tells us about social cognition: A rapprochement between developmental psychology and cognitive neuroscience. *Philosophical Transactions of Royal Society London B*, *358*, 491–500. doi:10.1098/rstb.2002.1261
Mesulam, M. (2008). Representation, inference, and transcendent encoding in neurocognitive networks of the human brain. *Annals of Neurology*, *64*, 367–378. doi:10.1002/ana.21534
Morewedge, C.K., & Kahneman, D. (2010). Associative processes in intuitive judgment. *Trends in Cognitive Sciences*, *14*, 435–440. doi:10.1016/j.tics.2010.07.004
Oman, D. (2013). Defining religion and spirituality. In R.F. Paloutzian., & L. Park (Eds.), *Handb psychology of religion spirituality* (2nd ed., pp. 23–47). New York, NY: Guildford Press.
Paloutzian, R.F., & Park, C.L. (2005). *Handb psychology religion spirituality*. New York, NY: Guildford Press.
Paloutzian, R.F., & Park, C.L. (2013a). Recent progress and core issues in the science of the psychology of religion and spirituality. Chapter 1. In R.F. Paloutzian, & C.L. Park (Eds.), *Handb psychology spirituality* (2nd ed., pp. 3–22). New York: Guilford Press.
Paloutzian, R.F., & Park, C.L. (2013b). Directions for the future of psychology of religion and spirituality: Research advances in methodology and meaning systems. Chapter 33. In R.F. Paloutzian, & C.L. Park (Eds.), *Handb psychology spirituality* (2nd ed., pp 651–665). New York: Guilford Press.
Park, C.L. (2005). Religion and meaning. In R.F. Paloutzian, & C.L. Park (Eds.), *Handb psychology religion spirituality* (pp. 295–314). New York, NY: Guildford Press.
Park, C.L., & Folkman, S. (1997). Meaning in the context of stress and coping. *Review of General Psychology*, *1*, 115–144. doi:10.1037/1089-2680.1.2.115
Peelen, M.V., Atkinson, A.P., & Vuilleumier, P. (2010). Supramodal representations of perceived emotions in the human brain. *Journal of Neuroscience*, *30*, 10127–10134. doi:10.1523/JNEUROSCI.2161-10.2010
Prochnow, D., Kossack, H., Brunheim, S., Müller, K., Wittsack, H-J., Markowitsch, H-J., & Seitz, R.J. (2013). Processing of subliminal facial expressions of emotion: A behavioral and fMRI study. *Social Neurosciences*. doi:10.1080/17470919.2013.812536
Rolls, E.T. (2006). Brain mechanisms underlying flavour and appetite. *Philosophical Transaction of the Royal Society London B Biological Sciences*, *361*, 1123–1136. doi:10.1098/rstb.2006.1852
Roux, F., Wibral, M., Mohr, H.M., Singer, W., & Uhlhaas, P.J. (2012). Gamma-band activity in human prefrontal cortex codes for the number of relevant items maintained in working memory. *Journal of Neuroscience*, *32*, 12411–12420. doi:10.1523/JNEUROSCI.0421-12.2012
Runehov, A. L. C., & Angel, H. F. (2014). The Process of Believing: Revisiting the Problem of Justifying Beliefs. *Studies in Science and Theology*, *14*, 195–210.
Schaefer, A., & Gray, J.R. (2007). A role for the human amygdala in higher cognition. *Reviews in the Neurosciences*, *18*, 355–363. doi:10.1515/REVNEURO.2007.18.5.355
Schnell, T. (2003). A framework for the study of implicit religion: The psychological theory of implicit religiosity. *Implicit Religion*, *6*, 86–104.
Schnell, T. (2004). *Implizite Religiosität – Zur Psychologie des Lebenssinns* [Implicit religiosity - psychology of meaning of life]. Lengerich.
Schnell, T. (2012). Spirituality with and without religion—differential relationships with personality. *Archive for the Psychology of Religion*, *34*, 33–61. doi:10.1163/157361212X644495

Downloaded by [Rüdiger J. Seitz] at 08:20 08 April 2014

Schultz von Thun, F. (1981). *Miteinander reden 1: Störungen und Klärungen. Allgemeine Psychologie der zwischenmenschlichen Kommunikation* [Talking to each other 1: disturbances and clarifications. General psychology of interpersonal communication.]. Reinbek bei Hamburg, Germany: Rowohlt-TB.
Seitz, R.J., & Angel, H-F. (2012). Processes of believing - a review and conceptual account. *Reviews in the Neurosciences*, *23*, 303–309. doi:10.1515/revneuro-2012-0034
Seitz, R.J., Franz, M., & Azari, N.P. (2009). Value judgments and self-control of action: The role of the medial frontal cortex. *Brain Research Reviews*, *60*, 368–378. doi:10.1016/j.brainresrev.2009.02.003
Seitz, R.J., Scherfeld, D., Friederichs, S., Popp, K., Wittsack, H-J., Azari, N.P., & Franz, M. (2008). Valuating other people's emotional face expression: A combined fMRI and EEG study. *Neuroscience*, *152*, 713–722. doi:10.1016/j.neuroscience.2007.10.066
Smith, M.L. (2012). Rapid processing of emotional expressions without conscious awareness. *Cerebral Cortex*, *22*, 1748–1760. doi:10.1093/cercor/bhr250
Stich, S. (1996). *From folk psychology to cognitive science. The case against belief* (2nd ed.). Cambridge MA: MIT Press.
Suguira, M. (2013). Associative account of self-cognition: Extended forward model and multi-layer structure. *Front Human Neuroscience*, *7*, 1–13.
Theobald, C. (2007). *Le christianisme comme style, Tome 1* [Christianity as style]. Paris: Cerf.
Toga, A.W., & Mazziotta. J.C. (2000). *Brain mapping – the systems*. San Diego, CA: Academic Press.
Tsuchiya, N., Kawasaki, H., Oya, H., Howard, M.A., & Adolphs, R. (2008). Decoding face information in time, frequency and space from direct intracranial recordings of the human brain. *PLOS one*, *3*, e3892 doi:10.1371/journal.pone.0003892
Ungerleider, L.G., & Haxby, J.V. (1994). "What" and "where" in the human brain. *Current Opinion in Neurobiology*, *4*, 157–165. doi:10.1016/0959-4388(94)90066-3
van Belzen, J. (2010). *Towards a cultural psychology of religion principles, approaches, applications*. New York, NY: Springer. doi:10.1007/978-90-481-3491-5
van Gaal, S., Ridderinkhof, K.R., Fahrenfort, J.J., Scholte, H.S., & Lamme, V.A.F. (2008). Frontal cortex mediates unconsciously triggered inhibitory control. *Journal of Neuroscience*, *28*, 8053–8062. doi:10.1523/JNEUROSCI.1278-08.2008
van Gaal, S., Scholte, H.S., Lamme, V.A., Fahrenfort, J.J., & Ridderinkhof, K.R. (2011). Pre-SMA gray matter density predicts individual differences in action selection in the face of conscious and unconscious response conflict. *Journal of Cognitive Neuroscience*, *23*, 382–390. doi:10.1109/42.906424
Vlaev, I., Chater, N., Steward, N., & Brown, G.D.A. (2011). Does the brain calculate value? *Trends in Cognitive Sciences*, *15*, 546–554. doi:10.1016/j.tics.2011.09.008
Watts, F. (2007). Emotion regulation and religion. In J.J. Gross (Ed.), *Handb emotion regulation* (pp 504–520). New York, NY: Guildford Press.

Downloaded by [Rüdiger J. Seitz] at 08:20 08 April 2014

The psychology of religion/spirituality and the study of religion

Michael Stausberg*

Department of Archaeology, History, Cultural Studies and Religion, University of Bergen, Bergen, Norway

Let me start with a disclaimer: I am not a psychologist (of religion or anything else). So, if you want to have an assessment of the second edition (2013) of the *Handbook of the Psychology of Religion and Spirituality (HPRS)* by an insider and expert in this field, this commentary is not for you. I am a historian or scholar of religion\s with an interest in the

*Email: Michael.Stausberg@ahkr.uib.no