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**PERCEPTION OF GOD IN THE LIGHT OF THE COGNITIVE SCIENCE OF
RELIGION: AN OVERVIEW OF THEORY AND EMPIRICAL EVIDENCE**

**PERCEPÇÃO DE DEUS À LUZ DA CIÊNCIA COGNITIVA DA RELIGIÃO: UM
BREVE PANORAMA TEÓRICO E EMPÍRICO**

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Abstract: The present work emerges as a critical-reflective proposal on how the classical theme of the Gods can be approached in the light of the Cognitive Science of Religion, whether in its theoretical aspects or concerning its methodological bases of investigation. To this end, the main perspectives of the study of the Cognitive Psychology of Religion were initially outlined, with a particular emphasis on the Cognitive Science of Religion (CCR), with its main epistemological and methodological characteristics. In a second moment, the theme of the Gods was briefly addressed, and how it can be explored under this prism of investigation. Then, empirical research in the field of CCR on the perception of God within the perspective of the Theory of Mind, the cultural context, and neurotheology were presented. Finally, from the empirical literature analyzed, the main theoretical and methodological links currently adopted are discussed, as well as the main directions for future work.

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Resumo: O presente trabalho surge como uma proposta crítico-reflexiva sobre como a temática clássica dos Deuses pode ser abordada à luz da Ciência Cognitiva da Religião, seja em seus aspectos teóricos como também em relação a suas bases metodológicas de investigação. Para tanto, inicialmente foram traçadas as principais perspectivas de estudo da Psicologia Cognitiva da Religião, sendo dada uma ênfase especial à Ciência Cognitiva da Religião (CCR) com suas principais características epistemológicas e metodológicas. Num segundo momento, foram abordados suscintamente como a temática dos Deuses pode ser explorada sob esse prisma de investigação, sendo apresentado em seguida pesquisas empíricas no campo da CCR sobre a percepção de Deus dentro da perspectiva da Teoria da Mente, do contexto cultural e da neuroteologia. Por fim, a partir da literatura empírica analisada, são discutidos os principais enlances teóricos e metodológicos atualmente adotados, bem como principais direcionamentos para trabalhos futuros.

Palavras-chave: Ciência Cognitiva da Religião, CCR, Deus, processos cognitivos, Teoria da Mente.

1 INTRODUCTION

1.1 The Perspectives of the Cognitive Psychology of Religion

When focusing on the field of Cognitive Psychology of Religion, many possibilities of approaching the object of research are possible and viable. In this sense, the perspective of Religion as a Scheme, the Phenomenology of Religion, and the Cognitive Science of Religion stand out, the latter being more detailed below.

Within the view of Religion as a Scheme, the individual constructs a cognitive structure or mental representation endowed with prior and organized knowledge about a specific domain (in this case, Religion and its aspects of religiosity), including a specification of relations between its attributes (Fiske & Linville, 1980; Gardner, 1985; Taylor & Crocker, 1981 apud McIntosh, 1995). They are built and improved from the interaction with the environment and emerge as an automated strategy that promotes the individual, for example, rapid cognitive processing in the face of coping situations already contemplated by the scheme. From a theoretical point of view, Religion as a Schema proposes an approach that makes it possible to explain/accommodate several phenomena and previous studies in Religion and religiosity, thus bringing a potential characteristic of integrating works from other fields of psychology and social sciences.



It is an approach eminently productive of nomothetic studies, which has as its methodological focus the search for generalizations and general laws.

On the other hand, when we observe the Cognitive Psychology of Religion from the perspective of the Phenomenology of Religion, the epistemological basis, as well as the perspective of investigation of the phenomenon, changes: the focus is now on the individual's particular experience, where an attempt is made to suspend judgments about experience from the adoption of the phenomenological method (Alen, 2005). Thus, it is an idiographic approach based on the study of singularities.

1.2 The Cognitive Science of Religion

Emerging gradually after the publication of Lawson's and McCauley's *Rethinking Religion* (1990) and Boyer's *The Naturalness of Religious Ideas* (1994), the term "Cognitive Science of Religion" (CCR) has as its basic proposal to make use of the theoretical and methodological field of Cognitive Science and Cognitive Psychology to explore the cognitive foundations of religious concepts and beliefs (Pyysiäinen, 2013). Thus, it can be seen as a field that seeks to understand which constructs and cognitive processes are related to the development of religions in the most diverse cultures over time, based on the principle that human populations share a set of concepts and mental biases that guide the relationship with the divine (Whitehouse, 2008 apud Rocha et al., 2022).

Based on this premise, CCR prioritizes the study of religious constructs under their invariable aspects, that is, what is similar and independent of sociocultural peculiarities. Therefore, Religion and all related behaviors and beliefs are seen only from the perspective of mental processes, with the science of cognition being the theoretical background for this epistemic view. Following this logic, interdisciplinary and multicultural studies have shown promise in the area, especially those that seek to comparatively investigate aspects of religious cognitive processes common to various religions and sociocultural contexts.

It is clear here that the field of investigation of CCR is not interested in the study of the singularities of the individual but in what can be observed as aspects inherent to the universality of human cognition. The idea of constructing reasoning based on intuitive systems (the concept of intuitive belief being contemplated here) reinforces



this thinking well, as they are based on fast/automatic processes that do not require prior evaluation, are composed of innate/universal information, and taken from the environment and previous experiences (Rocha et al., 2022).

In this sense, the distinction between religious beliefs (which arise independently of formal education and are present since childhood; usually endowed with low variability between cultures; and considered as ontological beliefs precisely because they generally remain immutable and linked to cognitive structures) and theological beliefs (related to the theoretical, dogmatic and ritualistic deepening generally linked to the specificities of each society and religion) (Rocha et al., 2022).

Among some areas that study religion and cognition based on the precepts of CCR, the following stand out: 1) the neurobiology of religion, where the focus of the study is to identify the effect of prayer on brain activation; 2) experimental science of Religion and Anthropology; and 3) simulation approaches, based on computer tasks and economic games applied in the laboratory and in the field (Pyysiäinen, 2013).

Also, for research purposes, CCR divides religious systems into several constituent components, such as divine punishment processes, extraordinary minds/Theory of Mind, rituals, and concepts of non-visible agents, such as the notion of God (Rocha et al., 2022).

2 BRIEF THEORETICAL AND EMPIRICAL OVERVIEW OF CCR

2.1 Epistemological and Methodological Implications

From the characteristics already brought so far, it is noted that among the fields of study of the Cognitive Psychology of Religion, it is perhaps the one that sees the phenomenon from the "hardest" perspective, based on the classical concepts of cognitive information processing.

Unlike the approach of the Phenomenology of Religion, which focuses its investigations on the scope of experiences in their affects and meanings, prioritizing the perception of singularities as a crucial explanatory component of the phenomenon, the epistemological basis of CCR eminently follows the precepts of critical rationalism imported from the natural sciences. It is positioned to identify standard innate cognitive processes of the human being. Therefore, the search for generalizations and laws brings to this approach its nomothetic/quantitative characteristic.



Concerning the methodological plan, CCR's vocation in developing experimental research is also evident, highlighting its versatility to accommodate an immense range of themes and methods of the nomothetic school, a fact reinforced by its multidisciplinary profile.

It is important to note that although Religion as a Schema also has eminently nomothetic characteristics with a strong vocation in the experimental field, CCR differentiates itself by evidencing its naturalistic roots deeply linked to the classical concepts of the science of cognition. Another aspect that differentiates them: while Religion as a Schema reveals its claim to be a robust theoretical model that brings together a significant range of phenomena in the field of Cognitive Psychology of Religion, CCR, in turn, adopts as a criterion of accommodation research that nomotetically investigates the relationship between cognition and Religion (a much broader perspective, in theory, the very research of the theory of schemas in Religion can also be seen within the scope of CCR).

2.2 The interaction of CCR with positions in the conflict Religion *versus* Science

A fascinating debate proposed by Barbour (2004) lies in the possible positions on how the phenomenon of religion interacts with the scientific field. From this perspective, the author proposes four theses that seek to characterize the relationship between religion and science, namely:

- **conflict thesis** – there is an irreparable conflict while both the religious and scientific aspects do not admit the simultaneous defense of the theory of evolution and the existence of God. The coexistence between evolution and God is not possible, and very forceful rhetoric is built on both sides to defend that point of view considered the only correct one;
- **independence thesis** – starts from a compartmentalization perspective, where Religion and Science deal with fields of knowledge that do not touch each other and, therefore, show themselves to be independent in developing their theories without any mutual interference between them. Thus, in the same way that the idea of conflict does not fit here, the conception of any theoretical interaction between Religion and Science does not seem to fit either;



- **dialogue thesis** – seeks to emphasize the similarities between assumptions, concepts, methods, and concepts between Religion and Science, fostering a constructive and bilateral interaction of knowledge and
- **Integration Thesis** – There is an attempt to build a single theoretical system encompassing theological and scientific theories in the same explanatory model.

From the above reading, it is evident, for example, that scientific studies in the field of religion are impossible in the light of the conflict thesis, given the solid ontological incompatibility between the views of science and God. However, regarding the other theses proposed by Barbour (2004), it is possible to build clearer bridges of interaction between religion and science in the theses of dialogue and integration. Curiously, researching within the integration thesis scope is more challenging given the need to seek models simultaneously contemplating scientific and theological aspects.

That said, CCR seems more aligned with the dialogue thesis since, despite looking at the phenomenon only under the emphasis on mental processes, it recognizes the thematic relevance of religion. To the extent that CCR brings to the investigative core questions of religiosity, even asserting its naturalistic emphasis, it ends up focusing even marginally on concepts from the field of religion. Thus, although the CCR does not necessarily promote an intense dialogue with the theological field, the thematic intersection is valid and should be emphasized.

2.3 CCR and Studies on God(s)

Studies that involve the conception of non-visible agents (such as spirits and Gods) can be approached in various ways according to the epistemological and methodological lines adopted.

While this conception of God in the Phenomenology of Religion can be related to a set of meanings observable from ritualistic experiences, the idea of God can also be linked to a robust scheme of Religion built from the experiences of the individual, looking at the conception of God from the CCR means investigating the cognitive processes (especially those that are more universal/intuitive) in search of similarities in the way of thinking about this God. These aspects remain invariable ontologically independent of the sociocultural and religious nuances involved.



As the individual constructs his conception of God, it involves predictive cognitive processes about how this divinity can present and/or behave, thus being associated with the cognitive process of Theory of Mind (mind reading, mentalization, empathy), which can be represented as the ability to attribute mental states (for example, goals, intentions, beliefs, desires, thoughts, feelings) to others (Gallagher & Frith, *apud* Morin, 2021). This construction of perceptions about a deity also permeates a set of cognitive self-processes (such as autobiographical and self-esteem), which, in turn, are strongly shaped developmentally by the interaction of the individual in his sociocultural context (Nascimento et al., 2022).

However, to what extent can the mental construction of God be valuable for the field of CCR? It is assumed that such a cognitive construction of the theory of mind is carried out from the same bases, regardless of whether this reading occurs in relation to an individual or a deity. Thus, understanding how the subject develops such cognitive processes about divine minds can help us understand the processes of the theory of mind in general (Nascimento et al., 2022).

2.4 Empirical Works on God(s) from the Perspective of CCR

In order to illustrate the conceptual and methodological points of CCR presented so far, some recent studies developed in the field of culture and cognition that emphasize the perceptions and relationships of the individual with the divine figure will be briefly analyzed. Such a view presents how the CCR field has appropriated its methods for the cognitive investigation of God, demonstrating the potential investigative paths in this area and promoting inspiration for future empirical directions, especially in the Brazilian context, which is still relatively incipient.

2.4.1 Cultural Influence on the Perception of God's Mind

Considering that the way humans conceptualize the minds of supernatural agents provides interesting opportunities to understand the way we think about minds in general, and considering that the understanding of human minds acts as the basis for understanding supernatural minds, Willard & McNamara (2019) sought to examine the mental perception of man and God—or how people conceive of the mind—in two North American and two Fijian samples.



The North American samples comprised Canadian and American university students from the Mechanical Turk of Amazon (composing an individualistic social profile predominantly of Protestant and non-religious Christians). In contrast, the Fijian samples (highly collectivist) were formed by Indigenous iTaukei (eminently Christians with some traditional beliefs, such as the Kalou-vu) and Indo-Fijians (Hindus or Muslims). The hypothesis constructed by the authors is that the cultural component could interfere in the variability of the conception of the Gods, even among participants of a single religious tradition (Willard & McNamara, 2019).

The research used the statistical method of Factor Analysis, initially seeking to replicate the dimensions "agency" and "experience", identified in a similar study by Gray et. Al apud Willard & McNamara, 2019. In this way, we sought to verify whether the Americans and Finjians use similar factor dimensions to conceive the minds of humans and Gods differently. It also sought to evaluate the relationship between factors and beliefs about the perception of reward and punishment of men and Gods, as well as whether the factors of the mind of God relate to which physical/mentalist supernatural agent is considered to be a supernatural agent (Willard & McNamara, 2019).

As the main results, it was found that Americans built a highly agentic perception of the divine mind so that intentional actions to cause harm are seen as more worthy of punishment than unintentional ones. In addition, they start from a more anthropomorphic conception of God as a being endowed with many human characteristics. The population of Fiji has a less direct relationship between mental states and expectations of reward and punishment, mainly due to the cultural effect of the "Opacity of the Mind"⁴ in this social group, indicating the exercise of mental inference as inappropriate. Statistically, while the North American sample revealed two dimensions related to the perception of minds (agency and experience), the results in Fiji pointed to a three-factor structure (with the advent of a dimension associated with social experience) (Willard & McNamara, 2019). Given the results and analyses, the authors emphasize that culturally defined social expectations can shape the perception

⁴ "People in societies that have Opacity of Mind beliefs claim that referring to the contents of another person's mind is impolite or impossible, and many show a preference for interpreting people's actions based on observable behaviors and explicit statements, rather than non-visible intentions or motivations." (Willard & McNamara, 2019, pg 04).



of the mind, and it is recommended to carry out more cross-cultural/more culturally nuanced studies in order to examine better the interaction between culture and social cognition (Willard & McNamara, 2019).

In this sense, Burdett et al. (2021) also sought to investigate the development of understanding of extraordinary and ordinary minds among children aged 3 to 5 years from four different cultures (United Kingdom, Israel, Dominican Republic, and Kenya), in order to identify the cultural influence on these cognitive processes. From an experiment (a ToM task) with a total sample of 243 participants, the children's knowledge or ignorance about ordinary or extraordinary minds⁵ was coded and subsequently submitted to logistic regression analysis to identify significant interaction effects between the samples from different countries. The study's main findings pointed out that children showed significant variations in the attribution of knowledge and ignorance of ordinary and extraordinary minds according to cultural context, even at younger ages. In this sense, the authors assert that the development of the Theory of Mind (ToM) does not seem to be a universal fixed standard, whether considering God, humans, or "intermediaries".

2.4.2 Studies in CCR on the Divine Representation through Drawings in the Children's Context

Seeking to promote a multidisciplinary dialogue between psychology, anthropology, and cognitive sciences and responding to the need to understand the diverse conceptions of deities beyond the Western and Christian context, the international project "Drawings of Gods: A Multicultural and Interdisciplinary Approach to Children's Representations of Supernatural Agents" sought to undertake a set of studies in order to investigate how children in different cultural and religious contexts represent the divine through their artistic productions (Brandt et al., 2023). Among several of these studies, Cocco et al. (2023) sought to investigate the use of colors in images produced by the child population to represent the divine. To this end, the researchers developed an automated computational method, which identifies the colors of the image through a scanning process, associating each pixel with one of the ten predefined colors (red, orange, yellow, green, cyan, blue, purple, pink, white and

⁵ The children were asked if different minds (human and extraordinary) would know what was inside an unmarked container. Next, the children were asked to tell a little about God (Burdett et al., 2023, pg. 215).



achromatic colors (gray and black)) (Cocco et al., 2023). Drawing from four different cultural backgrounds – Japanese (Buddhism and Shinto), Russian-Buryat (Buddhism, Shamanism), Russian-Slavic (Christian Orthodoxy), and French-speaking Swiss (Catholic and Reformed Christianity) – it was identified that children often imagine and represent God using the same colors: mainly yellow and blue. The results were consistent with the hypotheses outlined in that the color blue would be associated with the sky, a place children often associate with the dwelling place of God. Yellow, in turn, provides a connection with light, which, as attested in the literature, is associated with the divine representation in the drawings (Cocco et al., 2023).

In the same line of research with children, Cocco and Ceré (2023) used computer vision and mathematical algorithms to analyze in the drawings of divine representations a broader set of characteristics that, in addition to colors, included the position of God in the image, gravity, and the existence of anthropomorphic representations. For this, based on the extracted characteristics, the calculation of dissimilarities between the drawings was adopted, and the method applied K-means to map homogeneous groups of images, using multidimensional scaling (MDS) to graphically represent the differences between the drawings (Cocco & Ceré, 2023).

In another study of this research program and based on the collection of drawings from 1156 children from four different cultural groups (Japan, Russia-Buryat, Slavic Russia, and Switzerland), Dandarova-Robert et al. (2023) investigated the representation of the divine in children's works of art from the perspective of embodied cognition⁶, a field little explored in religious research. The results converged with evidence from previous studies. They pointed out that children tend to position their representations of God at the top of the drawings, supporting the hypothesis that spatial location is linked to the perception of the divine (Dandarova-Robert et al., 2023).

Finally, also in this area of research, the study carried out by Küntgen-Nery et al. (2023) focused on the investigation of the representations of gods among children in Brazil, considering the influence of Christianity in children's artistic productions,

⁶ According to Wilson (2000), "the main idea of the embodied and grounded cognition approach is that the mind must be understood in the context of its relationship with a physical body that interacts with the world. This idea goes against the classical cognitive paradigm, in which the mind has been seen as an abstract processor of information, whose connections with the outside world were of little theoretical importance" (cited in Dandarova-Robert et al., 2023, pg. 172).



being the pioneer in this investigative field in the national context. The research was based on the collection of 116 drawings between the years 2014 and 2015, with children aged 7 to 14 years old from the city of São Paulo (the largest and most urbanized city in the country) and the Guajajara indigenous village (located in Maranhão, one of the least developed states in Brazil). After the collection procedure, the drawings were digitized and classified qualitatively, with attention to categorization according to recurring themes related to the representations of god. The results showed many representations influenced by Christianity, such as anthropomorphic representations of god. Regarding the differences between the groups studied, the children's drawings from São Paulo produced a more varied repertoire, where anthropomorphic representations were more prevalent than the indigenous group. On the other hand, among the Guajajara, there was a higher incidence of non-anthropomorphic representations of god, including animist representations (Küntgen-Nery et al., 2023).

2.4.4 The Relationship with God from Neurocognitive Studies

Considering the methodological basis and epistemological scope of CCR, the perception of God and its relationship with cognitive processes has also been studied from the perspective of neurosciences, being part of a field called neurotheology, neuroscience of religion or neurobiology of religion (Klemm, 2020; Pyysiäinen, 2013). As Klemm (2020) points out, it is a discipline that emerged from findings from brain scans, which demonstrated greater activity of specific areas of the brain while people lived religious experiences. Some jokingly point out such areas as "God's points" (or *God's spots*) in the brain (Klemm, 2020). Despite possible criticisms of its reductionist approach, the fact is that studies in this area have sought to test the selectivity of the religious and spiritual cognition of these "points," especially with the coexistence of non-religious processing. Thus, investigations in this direction are believed to contribute to a better understanding of these underlying non-religious cognitive aspects (Klemm, 2020).

An example of research in this area lies in investigating prayer to interact with God. In this sense, Schjoedt et al. 2009 sought to analyze - based on functional magnetic resonance imaging (fMRI) with 20 members of the Danish Lutheran Church



(*Inner Mission*) - how different forms of prayer could activate specific parts of the brain. As a result, the authors identified that the improvised prayers were associated with the exact neural correlates required in "theory of mind" processing. It was also found that religious participants recruited areas related to social cognition during personal prayer, suggesting that praying to God is an intersubjective experience comparable to "normal" interpersonal interaction (Schjoedt et al., 2009, pg 205). Another finding corroborating the previous one is that the participants associated God with the image of a human being (and not an abstract being) as an intentional agent endowed with beliefs and desires (Schjoedt et al., 2009, pg. 204).

In a more recent study, Cohen-Zimmerman et al. (2020) aimed to understand how lesions in the regions of the ventromedial prefrontal cortex (vmPFC) could influence the perception of the relationship with God and the sense of control in the lives of individuals. From a sample of 84 individuals with focal brain lesions and 22 healthy (control) participants, the researchers applied the Voxel-based lesion-symptom mapping (VLSM) neuroimaging technique to identify the areas of the brain related to the relationship with God and the sense of control. Next, participants answered self-report instruments to measure their perception of their relationship with God and sense of control in life⁷. Based on the relationships between imaging exams and behavioral variables, the results demonstrated that lesions in the right vmPFC region are associated with a greater perception of the personal relationship with God and the sense of control among participants concerning healthy individuals, suggesting that a strong relationship with God can act as an important instrument of psychological support, in a way that positively affects the sense of control (Cohen-Zimmerman et al., 2020).

3 FINAL CONSIDERATIONS

From the brief exposition of aspects of the CCR and its epistemological and methodological bases, it sought to contextualize the realization of studies on the classical theme of the Gods. With a "harder" view in doing the science of a nomothetic aspect, studies in CCR are based on the classical approaches to information

⁷ Scales were used to measure personal relationship with God (Personal relationship with God scale, with 17 items with $\alpha=0.94$); and the subjective sense of control (assessed based on the answers to the question: "How often do you feel powerless to achieve what you want in life?", to be answered on a 7-point Likert scale ((Cohen-Zimmerman et al., 2020, pg. 578).



processing in cognitive science, thus allowing a broad adherence to multidisciplinary study programs that address religion under aspects of cognition.

From this investigative perspective of the Cognitive Psychology of Religion, it was noticed that the development of research that explores the perception of the mind of supernatural agents with a focus on the cognitive processes associated with the Theory of Mind emerges. Examples of work in this direction are presented in section 2.4, such as the research undertaken by Willard & McNamara (2019) and Burdett et al. (2021), which analyzed the perception of the mind of God(s) and Humans in the adult and child contexts, respectively.

Empirically, CCR also seems to find good adherence in studies that explore the different perceptions of the divine from the link between culture and cognition, thus assuming a cross-cultural and/or interreligious methodology based on different countries or religions for a better understanding of what is invariable in human cognition (Nascimento et al., 2022, p. 69). This was also the tone of most research presented here, such as the works on divine representation through drawings in the children's context, described in section 2.4.2.

From a perspective closer to the biological sciences and the technological advances promoted by the growing field of neurosciences, CCR finds fertile ground in the field of the neurobiology of religion, seeking to make efforts in the neurocognitive aspects of religious experience, including the relational process with God (Klemm, 2020).

Given all the above, it is evident that CCR is receptive to carrying out a significant range of studies in the field of religion, being a promising storehouse for future research in cognitive psychology. However, at the same time that the methodological rigor provides the CCR with aspects of scientific reliability, its highly focused view of the phenomenon only as a mental process cannot obscure the transcendental peculiarities so characteristic in the field of religion that, in our view, also deserve to be investigated. In this sense, and based on the teachings of Barbour (2004), in the face of a sea of investigative possibilities of CCR, there will undoubtedly be paths that will make friendly contact between science and religion unfeasible and will culminate in the thesis of conflict or independence. However, there are also reliable paths to the dialogue thesis, enabling a mutually useful construction of knowledge in



Science and Religion. Thus, in our view, the potentialities and limitations for this interaction seem to be much more related to the researcher's assumptions than to the ontological and epistemological attributes of CCR.

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