Social Worldviews Predict the General Factor of Paranormal and Generic Conspiracist Beliefs

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Abstract

Even though wide access to any warranted information in the modern age, the problem of unfounded belief is still relevant, since these beliefs often lead to negative consequences (e.g., vaccination refusal, homeopathic treatment, etc.). The aim of this study was testing the relationship of social worldviews with paranormal beliefs and conspiracy beliefs. We assumed *dimensionality hypothesis* based on functional standpoint that there should be a general factor (underlying all the domains of paranormal beliefs and generic conspiracist beliefs), which has associations with the social worldviews as well. Derived our analysis from the survey of 228 participants (M_{age} = 30.6, SD = 11.7), we found that (a) the structure of paranormal and generic conspiracist beliefs can be described by a bifactor model; (b) the general factor of paranormal and generic conspiracist beliefs in the bifactor model was positively associated with global belief in just world and dangerous worldview; (c) paranormal beliefs were positively associated with global belief in just world and negatively associated with competitive worldview; (d) generic conspiracist beliefs were positively associated with dangerous worldview, competitive worldview, and zero-sum game belief; (e) contrary to our hypotheses, there was no evidence for any negative association of paranormal beliefs with dangerous worldview or zero-sum game belief and for any negative association of generic conspiracist beliefs with global belief in just world. We claim that the unfounded beliefs can be of some functional nature, demonstrating a connection with social worldviews, which opens up new perspectives for considering this problem within the framework of social psychology.

Prevalent unfounded beliefs, although seemingly innocuous at first glance, sometimes even have some palliative effect (see Chou, 2015), are often very negative in their consequences, including for human health. For example, conspiracy theories, misinformation, and vaccination refusal go hand in hand (Enders et al., 2022), patients seek homeopathic remedies (Shaw, 2010) or magic and folk treatment (Adu et al., 2022) instead of, rather than as well as, professional medicine. Thus, many forms of unfounded beliefs are widely prevalent in across societies and provide personal cost and negative societal impact that make this issue of examining why people believe what they do to vital (Lobato et al., 2014). Some unfounded beliefs as paranormal beliefs and conspiracy beliefs received much attention in the literature (Dean et al., 2022; Hornsey et al., 2023).

Both paranormal and conspiracy beliefs are associated with (a) the single cognitive (van Prooijen et al., 2018) and perceptual (van Elk, 2015) mechanism of illusory perception, (b) emotional mechanism of compensatory control (Whitson et al., 2015), (c) a tendency to seek for pseudo-deep meaning (Pennycook et al., 2015), (d) common biases and reasoning errors (Brotherton & French, 2014; Drinkwater et al., 2012; Lobato et al., 2014; Newton et al., 2023), and (e) common motivations (Marchlewska et al., 2018; Prichard & Christman, 2016). Moreover, some evidence of the '*monologic*' nature of both these phenomena was found (e.g., Dagnall et al., 2010; Drinkwater et al., 2017; Lindeman & Aarnio, 2006; Bruder et al., 2013; Sutton & Douglas, 2014). Thus, if a person believes in one conspiracy theory, then this person is more likely to believe in others (including unrelated theories, fictional theories that were invented by psychologists for the experiment, and even contradictory theories). For paranormal beliefs, if a person believes in spiritualism, then this person is most likely believing in witchcraft as well, and so on. Additionally, it seems that monological thinking is presented not only within one type of unfounded beliefs, but also between different types of ones (Lobato et al., 2014).

The main aim of this study is to test whether there is a relationship between social worldviews, paranormal beliefs, and conspiracy beliefs. At the same time, this study primarily relies on a body of literature that considers their general motivational orientation. We hypothesize (*dimensionality hypothesis*) that there may be a general factor linking these two types of unfounded beliefs, which at the measure-level were significantly positively correlated in previous studies (e.g., Bensley et al., 2020; Dagnall et al., 2010; Lobato et al., 2014; Rizeq et al., 2021), and that this general factor can be explained from a functional perspective as, for example, a consequence of a general adaptive bias in response to external threat and uncertainty.

As opposed to simply observing common features or studying correlations between these beliefs, this paper attempts to direct test our dimensionality hypothesis by a bifactor model within SEM technique. Bifactor models are used to examine the partitioning of variance when it is believed that there are both general and specific sources of variance of manifest variables (Simms et al., 2008). Moreover, our paper suggests some substantive meaning of this general source, which has functional nature. Thus, our contribution echoes with the parallel work, which claims based on error-management theory that conspiracy theories uniquely helped ancestral humans to navigate their social world better and anticipate and overcome imminent dangers in their environment (see van Prooijen & van Vugt, 2018). However, our contribution is different in that it focuses on developed ways by human beings to coping with—and perhaps preventing—feelings of uncertainty, threat, and social isolation that underling the epistemic, existential, and relational needs to achieve certainty, security, and social belongingness (see Jost et al., 2018; cf. Douglas et al., 2017). Moreover, in these terms, we focus on commonalities in both paranormal beliefs and conspiracy beliefs.

Social Worldviews

People's perception of specific situations determines their specific behavior, but expectations from the '*general situation*' (i.e., "how is life in general here?") can also shed light on the characteristic reaction for this. In this sense, individual differences in ultimate general expectations about the social environment can be conceptualized as a generalized situation that provides some kind of guideline for subsequent individual responses (Chen et al., 2016). In this regard, social worldviews are people's representations about what features the surrounding social world has and according to what laws it functions, which implies certain coping strategies. Social worldviews are shaped in people as a result of the influence of the characteristics of individual differences, personal experience of socialization and the impact of a specific real social environment and events (e.g., strong life shocks), as well as the complex interaction of these factors (Duckitt, 2001). There are several examples of social worldviews in the literature that have been fairly well studied: Global belief in just world, dangerous worldview, competent worldview, and zero-sum game belief.

Global Belief in Just World

Global belief in just world is a social worldview that in this life each person gets what this person deserves (e.g., people with a high degree of such faith tend to blame victims of crime for what happened to them and are less likely to be involved in political activity because of the acceptance of what is happening; Lipkus, 1991). This social worldview is a consequence of the 'just world hypothesis', that is, the tendency to attribute consequences of

(or expect consequences of) the outcome of: (a) Either a universal force that restores moral equilibrium; (b) either a universal connection between the nature of actions and their outcome. This belief usually implies the existence of cosmic justice, destiny, divine providence, the presence of global stability and order, and so on. It is positively associated with an internal locus of control. The author of this concept presented global belief in just world as functional—it supports the idea that a person can influence the world in a predictable way (Lerner, 1980).

Dangerous Worldview and Competitive Worldview

The dual-process model also suggested two main ideas about the social world, which are considered in it as consistent social worldviews containing a relatively stable interpretation or idea of the social world and other people in this world (i.e., the 'in general'), where world: (a) dangerous and threatening (*dangerous worldview*) and (b) competitive and violent (*competitive worldview*; Duckitt, 2001). For example, persons with a higher level of belief in a dangerous world perceive life as full of constant struggle for survival and dangers at every turn, which is why they support adaptive outgroup biases (Cook et al., 2018). Competitive worldview ranges from seeing people as having a natural benevolence and cooperation at one extreme, to being manipulative and competitive at the other. Persons with a low level of belief in a competitive world tend to help and share with others on an equal footing, while persons with a high level—strive for power, superiority, and dominance over others because they are involved in a competitive struggle for survival in a world like 'competitive jungle', where for the sake of success 'dog eat dog' and the right of the strong acts (Radkiewic & Skarżyńska, 2021). The two ideological attitudes in this dual-process model, right-wing authoritarianism (RWA) and social dominance orientation (SDO), are adaptive responses to these notions of the social world. Having evolutionary roots, RWA suggests an orientation towards ingroup cohesion and social control that helps to effectively deal with external threat and gain security, while SDO suggests a striving to maintain group hierarchy and exploitation, which helps to adapt and cope with competition and rivalry (Claessens et al., 2020; Duckitt & Sibley, 2016; Sinn & Hayes, 2018).

Zero-Sum Game Belief

Zero-sum game belief was originally proposed as another belief option in a set of social axioms. *Zero-sum game belief* is a social worldview that assumes the antagonistic nature of social relations, when the benefit of one person is possible only at the expense of other persons (Różycka-Tran et al., 2015). Of the set of social axioms, this belief is closest to *social cynicism*, and is associated with a low level of interpersonal trust. Zero-sum game

belief seems to be the result of social interactions shaped by the economic situation in conditions of limited resources and represents a negative vision of the social world as a response to the fundamental requirement of survival and adaptation in such a dysfunctional society. Its essence is expressed in statements such as 'man is a wolf to man' by Thomas Hobbes and is a more particular idea of a competitive and cruel world than competitive worldview. It is positively associated with external locus of control and dependence on others, pessimism, delegitimization of social systems, negative vision of the social world and belief in its injustice, as well as sadness.

Unfounded Beliefs

Among the vast number of bizarre things in human behavior, from pseudoscience acceptance (e.g., Lobato et al., 2014) to bullshit receptivity (e.g., Pennycook et al., 2015), a significant amount of literature devoted to paranormal beliefs (Dean et al., 2022) and conspiracy beliefs (Hornsey et al., 2023; Stasielowicz, 2022).

Paranormal Beliefs

Nowadays, there is still no clear and well-established definition of what is considered 'paranormal'. However, among researchers there is a fairly common approach, in which it is customary to consider any phenomena that contradict the basic limiting principles of science as 'paranormal' (Tobacyk, 2004). Thus, paranormal belief can include belief in a person's extrasensory abilities (e.g., telepathy, levitation, pranoedema, healing, etc.), belief in mythical creatures (e.g., poltergeists, vampires, demons, bigfoots, etc.), belief in the possibility of using supernatural powers (e.g., witchcraft, spiritualism, necromancy, amulets, etc.), belief in anomalous zones (e.g., the Bermuda Triangle, the Molyobka anomaly, geopathogenic zones, etc.), and so on.

Different paranormal beliefs (e.g., belief in witches, in the power of amulets, in astrology, in the influence of the moon, religious beliefs, etc.) can be combined and explained by a general tendency of a person to believe in supernatural phenomena, which, in turn, is associated with a high degree of development of the intuitive type of thinking, a humanistic view of the world, a low level of development of analytical thinking and the need for cognition, as well as emotional instability (Aarnio & Lindeman, 2005; Dean et al., 2022; Lindeman & Aarnio, 2006; Prichard & Christman, 2016). One of the most productive approaches to cover different paranormal belief is the work within the Revised Paranormal Belief scale (rPBS) dealing with seven domains: Traditional religious belief, psi, witchcraft,

superstitions, spiritualism, extraordinary life forms, and precognition (Drinkwater et al., 2017; Tobacyk, 2004).

The functional explanation of the tendency to believe in the supernatural is popular: Such beliefs and superstitious rituals increase a person's sense of hope, a sense of self-efficacy, help this person order the world and make it predictable in complex, unpredictable situations (Lindeman & Aarnio, 2007). A recent study also found that people with lower levels of self-control report significantly more belief in the paranormal than people with higher levels of self-control, even after controlling for a number of key explanatory variables identified in the literature previously (Mowen et al., 2022). Thus, the characteristics of low self-control—the propensity to immediately choose gratifying courses of action while ignoring long-term consequences—may predispose people to maintain a belief in the paranormal.

Generic Conspiracist Beliefs

It is considered that *conspiracy beliefs* present the existence of certain actors who are a hidden form of perception and control over certain processes to realize possible (often malicious) interests, and is a form of motivated social cognition (Douglas et al., 2017). There are also several terms related to conspiracy beliefs: Conspiracy theories (explanatory narratives regarding conspiracy beliefs) and conspiracy mentality (a tendency toward conspiracy thinking) (Pilch et al., 2023). As well as paranormal belief, conspiracy beliefs can be different and take on the most acceptable bizarre forms, from belief in 'small' conspiracies (e.g., the legend of the death of Paul McCartney, the evaluation of the program of flights to the Moon, discovery of the attacks on September 11 or the assassination of John F. Kennedy, etc.) and ending with belief in global conspiracies (e.g., Jewish, illuminati, reptilian, or liberal/mondialist, etc.). In other words, it may be a representation of a conspiracy of an external nature and scope. As, for example, the belief that an indefinite group of possibilities exercises control of information (about extraterrestrial cover-up, find a portal into a different dimension, etc.), and belief in group ones that can be secretly taken into account in the course of history (e.g., intimidation of wars and revolutions, control over the population of the country, etc.). In addition, these groups include humans (and not only humans) from different social categories: From employees of a certain one company to members of various religions, governments of different states, and financial institutions (e.g., 'Zurich gnomes'). Thus, persons formulate conspiracy theories to explain, for example, power relations in social groups and the alleged presence of evil forces.

The concept of generic conspiracist beliefs is useful to provide some order in this scope. *Generic conspiracist beliefs* refer not only to the general tendency to believe in conspiracy theories (i.e., conspiracy mentality), but also capture the full spectrum of conspiracy theories from a cross-cultural perspective (Brotherton et al., 2013). They cover five domains: Government malfeasance (e.g., government is involved in the murder of innocent citizens and/or prominent public figures and keeps it secret), global conspiracy (e.g., the power wielded by heads of government is secondary to the power of small groups unknown people who really control world politics), extraterrestrial cover-up (e.g., secret organizations communicate with aliens but keep it secret from the public), personal wellbeing (e.g., the spread of certain viruses and/or diseases is the result of intentional, covert efforts of certain organizations), and control of information (e.g., new and disruptive technologies that could harm an existing industry are suppressed).

Conspiracy beliefs can be evoked by socioecological (e.g., inequality, economic deprivation, low GDP, lack of resources) and historical (e.g., genocide, colonization, repatriation, wars) factors. That is societies that have experienced hardship use conspiracy beliefs to cope (Bilewicz, 2022). Another factor leading to the rooting of conspiracy beliefs is the media broadcasting stories on this topic. However, most studies show that people tend to consume information that matches their internal attitudes, and if a person is not predisposed to conspiracy thinking, then this person will not be influenced by such content (Uscinski et al., 2022). The literature shows that conspiracy beliefs are associated with low interpersonal trust, feelings of alienation and powerlessness, reduced desire to participate in social life, feelings of unhappiness or dissatisfaction with one's situation, psychological projection mechanism, paranoia, schizotypal disorder, anxiety disorders, situational factors such as reaction to fear and insecurity, unstable self-image, collective narcissism, authoritarian attitudes, need for cognitive closure, intuitive cognitive style, and receptivity to other unusual beliefs and magical thinking in general (e.g., Abalakina-Paap et al., 1999; Brotherton et al., 2013; Dyrendal et al., 2021; Marchlewska et al., 2018; Stasielowicz, 2022). As a whole, three basic psychological motivation play role in creating space for conspiracy beliefs: Epistemic (the desire of predictability), existential (willingness to control) and relational (need to bolster a positive self-image) (Douglas et al., 2017).

Common Aspects of Paranormal and Conspiracy Beliefs

As we have mentioned above, paranormal and conspiracy beliefs are related to each other and similarly related to several other variables. For example, both beliefs are examples of what can be defined as epistemically unwarranted beliefs based on intuitive and magical

thinking, as well as tendencies towards major ontological fallacies (e.g., mentalization of matter, physicalization or biologization of the mental; Dyrendal et al., 2021); moreover, intuitive cognitive style likely increases ontological confusion which, in turn, strengthens unfounded beliefs (Lobato et al., 2014). In addition, both beliefs are associated with various cognitive biases, such as illusory correlation and lack of developed analytical thinking (Aarnio & Lindeman, 2005; van Prooijen et al., 2018; Newton et al., 2023).

We believe that the mere fact that, for example, these cognitive biases have survived to this day and can be easily observed both in laboratory conditions and in everyday life globally, suggests in favor of they were once somehow associated with the adaptation of the ancestors of modern human to the environment (e.g., directly helping them survive in conditions of danger or uncertainty, or simply accompanied by something else that contributed to this). Thus, they evolved to solve recurring legacy problems. Indeed, thinking prone to believing in paranormal (Dean et al., 2022) and conspiracy theories (van Prooijen & van Vugt, 2018) differs in the frequency of occurrence of Type I error (i.e., 'false positive conclusion'). In its turn, Type I errors are well-explained from an evolutionary standpoint and can be also connected to belief in a dangerous world (Cook et al., 2018). Therefore, this line of reasoning looks promising.

Within the framework of the model of conservatism as motivated social cognition, three types of motives are distinguished that are initially associated with the experience of a feeling of fear and uncertainty and determine human behavior and thoughts: (a) *Epistemic motives* that allow maintaining an unambiguous picture of the world; (b) *existential motives* that make the world understandable and controllable; and also (c) *relational motives*, which make it possible to maintain a positive image of one's group and oneself within it (Hennes et al., 2012). These same motives are highlighted in the literature as a functional aspect of conspiracy beliefs (Douglas et al., 2017; Krekó, 2015). The functional aspects of paranormal belief are less studied (Betsch et al., 2021). In this study, we use these findings to explore the relationship between social and unfounded beliefs and their functional aspects.

Present Study

Paranormal and conspiracy beliefs are *monological*, as we have mentioned above, which means that within each of them there is a connection between different domains. If a person tends to support one conspiracy theory, such as extraterrestrial cover-up, this person is very likely to believe in control of information as well (Brotherton et al., 2013; Drinkwater et al., 2012). The same is true for paranormal belief (Dagnall et al., 2010; Drinkwater et al., 2017; Rizeq et al., 2021). These both beliefs are also connected with each other that people

who believe in conspiracies, are more likely to support other unfounded beliefs including paranormal (Darwin et al., 2011; Lobato et al., 2014; Newton et al., 2023; Ståhl & van Prooijen, 2018; Swami et al., 2011).

Paranormal and conspiracy beliefs, as also mentioned above, have another similarity. Both beliefs have been shown in research to be associated with illusory correlations (van Prooijen et al., 2018) and lower ability to judge the likelihood of random events (Dagnall et al., 2007; Drinkwater et al., 2012). Together, this accompanies conclusions about what is happening in the world, when people confuse intentional processes with unintentional ones. The confusion of the main properties of ontological categories implies a concept of the general essence of categories and, thus, leads to thinking in terms of non-random connections and indivisible wholes (Lindeman & Aarnio, 2007). This can be considered a necessary *cognitive prerequisite* for paranormal and generic conspiracist beliefs (Rizeq et al., 2021).

On the other hand, one of the main reasons for the existence of paranormal and conspiracy beliefs is traditionally considered to be people's motivated search for causal explanations, as well as a meaningful and consistent picture of the world, in order to bring order, predictability, a sense of control and security into their lives. This sets the general motivational orientation for paranormal and generic conspiracist beliefs (i.e., *motivational prerequisite*). That is, epistemic, existential, and relational motives, in the presence of the cognitive prerequisite described above, can find their expression in these unfounded beliefs. Thus, the first hypothesis concerns the general monological nature and the correlation between paranormal and generic conspiracist beliefs: There is a general factor that expresses the shared cognitive basis and motivational orientation of both sets of unfounded beliefs (Hypothesis 1).

The next issue concerns what drives this general motivational orientation. Basic social beliefs, being chronically active and highly generalized schematic representations of the nature of the social environment, should serve as an anchor for various kinds of disparate beliefs about the social environment, predisposing people to give additional weight to information that is consistent with their worldview (Zeigler-Hill, 2019). Thus, global belief in just world can help to maintain a consistent picture of the world in uncertain conditions, when there is no unambiguous data about the situation (Hafer & Choma, 2009). While dangerous worldview can be associated with the shaping of intergroup bias, relevant in the face of a threat (Cook et al., 2018). Summarizing, global belief in just world and dangerous worldview can be considered as proxy-variables for evaluating the threat and uncertainty of the surrounding social environment, which activate *epistemic* and *existential* motives. Thus, we

11

suggest that a general factor that expresses the shared motivational orientation of paranormal and generic conspiracist beliefs is positively associated with global belief in just world and dangerous worldview (Hypothesis 2).

Unlike global belief in just world and dangerous worldview, competitive worldview and zero-sum game belief can logically be considered related to *relational* motives, since they are primarily associated with the search for social status (Różycka-Tran et al., 2015; Zeigler-Hill, 2019), which helps to maintain a positive image of oneself and one's group in the face of social inequality (Duckitt & Sibley, 2016). Therefore, it is difficult to claim how the general factor that expresses the shared motivational orientation of paranormal and generic conspiracist beliefs will be associated with these social beliefs, if at all.

The very structure of the bifactor measurement model suggests that, in addition to commonalities, there must be differences between paranormal and generic conspiracist beliefs. In particular, it is likely that these unfounded beliefs are associated in various ways with social worldviews. That is, global belief in just world also implies paranormal beliefs—beliefs in certain forces that ensure justice in the world (Lerner, 1980; Lipkus, 1991). On the other hand, competitive worldview and zero-sum game belief are in many ways a cynical view of the world as an unjust place where there is no higher moral law (Duckitt & Sibley, 2016; Różycka-Tran et al., 2015). In addition, this also suggests of a certain secondary nature of dangerous worldview in relation to global belief in just world—if any divine or universal rules exist, then a person can follow them and be safe. Therefore, we suggest that paranormal beliefs are positively associated with global belief in just world and negatively associated with dangerous worldview, competitive worldview, and zero-sum game belief (Hypothesis 3).

Conspiracy beliefs were positively correlated with RWA and SDO, and also apparently with dangerous worldview and competitive worldview (these relationships with social worldviews were estimated but not directly reported; see Wilson & Rose, 2014). As and zero-sum game belief, conspiracy beliefs are associated with an external locus of control (Abalakina-Paap et al., 1999), whereas global belief in just world is associated with an internal locus of control (Lerner, 1980). In addition, it is logical to think that an image of the world that includes generic conspiracist beliefs suggests the presence of malevolence, not necessarily of a supernatural nature, and as a result, the presence of general injustice and danger in the world. Thus, we hypothesize that generic conspiracist beliefs are positively associated with dangerous worldview, competitive worldview, and zero-sum game belief, and negatively associated with global belief in just world (Hypothesis 4).

To sum up, our present study tests four hypotheses (two main and two additional ones) about motivation for paranormal and conspiracy beliefs. Hypothesis 1 (dimensionality hypothesis) is that the structure of paranormal and generic conspiracist beliefs can be described by a bifactor measurement model: Presumably, there is a general factor associated with all the domains of paranormal and generic conspiracist beliefs. Hypothesis 2 claims that this general factor is positively associated with dangerous worldview and global belief in just world. According to Hypothesis 3, paranormal beliefs are positively associated with global belief in just world, and negatively associated with dangerous worldview, competitive worldview, and a zero-sum game belief. While the opposite pattern is expected under Hypothesis 4, generic conspiracist beliefs are positively associated with dangerous worldview, competitive worldview, and zero-sum game belief, and negatively associated with global belief in just world.

Method

Participants

The total sample consisted of 228 participants from Russia, among whom there were 30.7% women and 69.3% men aged from 16 to 67 (*M* = 30.6, *SD* = 11.7). At the same time, 48% of them had a higher education (3% an academic degree, 10% graduated from a master's degree, 25% a specialist, 10% a bachelor's degree), 13% had an incomplete higher education, 22% had a secondary specialized or vocational education, and 12% and 5% secondary and incomplete secondary education, respectively; in addition, 31.1% were Orthodox Christians; and 20.2% were students.

Procedure

We used secondary data that had previously been collected online in 2018 (Grigoryev et al., 2022). Participation was voluntary, no remuneration was provided. The study recruited participants using targeted, paid ads in 'VK', the most popular social network in Russia. Participants had to fill out a questionnaire and read the instructions, which included basic information about the research problem, information about confidentiality, as well as contact information for the researchers.

Power Analysis

Power analysis was performed to determine the required sample size using the G*Power 3.1 package with the recommended alpha = .05 and power = .80 (Faul et al., 2009). Our study focused on an effect size of *r* = .20. For structural equation modeling, we took into account that we use 3 latent and 16 manifest variables; we used the procedure according to

Westland's approach (2010). According to the results of our calculations, the projected sample size was 191 people, with this effect size.

Measures

The questionnaire containing measures and questions about socio-demographic characteristics (gender, age, education, religion, etc.) was presented to participants in Russian (Grigoryev et al., 2022).

Independent Variables

Global Belief in Just World. Seven items of the measure with a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) were designed to assess global belief in just world (α = .87), with sample items: "I feel that people get what they are entitled to have," "I feel that a person's efforts are noticed and rewarded" (Lipkus, 1991).

Dangerous Worldview. Ten items of the measure with a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) were designed to assess dangerous worldview (α = .81), with sample items: "There are many dangerous people in our society who will attack someone out of pure meanness, for no reason at all," "It seems that every year there are fewer and fewer truly respectable people, and more and more persons with no morals at all who threaten everyone else" (Perry et al., 2013).

Competitive Worldview. Ten items of the measure with a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) were designed to assess competitive worldview (α = .75), with sample items: "It's a dog-eat-dog world where you have to be ruthless at times," "My knowledge and experience tells me that the social world we live in is basically a competitive 'jungle' in which the fittest survive and succeed, in which power, wealth, and winning are everything, and might is right" (Perry et al., 2013).

Zero-Sum Game Belief. Twelve items of the measure with a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) were designed to assess zero-sum game belief (α = .83), with sample items: "Life is so devised that when somebody gains, others have to lose," "When some people are getting poorer, it means that other people are getting richer" (Różycka-Tran et al., 2015).

<H3> *Dependent Variables*

Paranormal Beliefs. Twenty six items of the measure with a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) were designed to assess paranormal beliefs, including seven domains: Traditional religious belief (α = .85), psi (α = .85), witchcraft (α = .96), superstition (α = .76), spiritualism (α = .89), extraordinary life forms (α = .69), precognition (α = .86), with sample items: "A person's thoughts can influence the movement of a physical

14

object," "Through the use of formulas and incantations, it is possible to cast spells on persons" (Tobacyk, 2004).

Generic Conspiracist Beliefs. Fifteen items of the measure with a 5-point Likert scale (1 = *Definitely not true*, 5 = *Definitely true*) were designed to assess conspiracy beliefs, including five domains: Government malfeasance (α = .83), global conspiracy (α = .88), extraterrestrial cover-up (α = .82), personal wellbeing (α = .81), and control of information (α = .52), with sample items: "Certain significant events have been the result of the activity of a small group who secretly manipulate world events," "Experiments involving new drugs or technologies are routinely carried out on the public without their knowledge or consent" (Brotherton et al., 2013).

Data Processing

Data Preparing

The reverse items were recoded and then Cronbach's α values for internal consistency were calculated for all the scales. Further, the means values were calculated, and since the response scales in the used measures had a different number of points (i.e., 5 and 7), a rescaling procedure was carried out in the range from .01 to 1, where 1 = *maximum severity of the trait/quality*, and .01 = *minimum severity of the trait/quality*. Further data preparation for analysis was carried out according to the existing recommendations in the relevant literature (Tabachnick & Fidell, 2018).

Preliminary Analysis

At the preliminary analysis stage, descriptive statistics (means, standard deviations, and medians) and McDonald's ω values were calculated, where a value ω > .70 indicates adequate scale reliability. Further, Pearson's bivariate correlation analysis was run to estimate the relationships between the considered variables.

Measurement and Structural Models

Four measurement model were tested: (a) A model in which the latent factors of paranormal beliefs and generic conspiracist beliefs were orthogonal; (b) a model in which these factors were correlated with each other; (c) a model in which these factors were measured by a second-order latent factor; and finally (d) a bifactor model in which the manifest variables, in addition to their orthogonal factors, were also loaded with a general orthogonal factor (see Figure 1 below). Structural models were evaluated (a) with latent variables in the case of a bifactor model with a general factor for paranormal beliefs and generic conspiracist beliefs and (b) in the form of a path model on calculated factor scores to remove the variance of the general factor for paranormal beliefs and generic conspiracist

beliefs. The models were evaluated using a maximum likelihood estimator with robust Huber-White standard errors and adjusted chi-square (MLR) statistics. Decision-making was guided by common recommended cut-offs for complex SEM models: CFI > .90, SRMR < .08, and RMSEA < .08 (e.g., Kline, 2011; van de Schoot et al., 2012). The selection between the nested models was carried out by the difference in the chi-square statistic.

Results

Data Preparing

All the scales showed adequate internal consistency, except for the subscale for control of information (α = .52), in which all items correlated rather weakly with each other. However, considering that the scale contains only 3 points (i.e., is very short for which α > .50 is acceptable; Nunnally, 1978), and in the future structural equation modeling was used, this case was not a serious problem to the obtained results (it is just worth keeping in mind the possible attenuation effect when conducting the correlation analysis). The distribution of variables was close to normal, the skewness values ranged from –0.86 to 1.34, and the kurtosis values from –0.99 to 0.66, which together indicates the admissibility of using parametric statistics.

Preliminary Analysis

The descriptive statistics and the McDonald's ω values are shown in Table 1. The reliability indices ranged from .56 to .96 (in average .83) and were close to Cronbach's α values, which generally indicates adequate reliability for the measurements. As can be seen from the means, participants scored the lowest on the subscale for superstition (*M* = .20, *SD* = .26) and highest on the subscale for government malfeasance (*M* = .69, *SD* = .26), with a trend towards that responses on the scale of the paranormal beliefs have less than half the possible scores, while on the scale of generic conspiracist beliefs, on the contrary, closer to half or more. The responses to the scales of social worldviews were quite close to the middle of the scale, except for general belief in just world (*M* = .34, *SD* = .19), which had a relatively low value.

<center>**<Insert Table 1 Here>**</center>

Bivariate Correlations

The bivariate correlations indicated that overall generic conspiracist beliefs were significantly positively correlated with dangerous worldview (.39), zero-sum game belief (.32), and competitive worldview (.21), while paranormal beliefs were significantly positively correlated with global belief in just world (.23) and dangerous worldview (.21), but negatively

correlated with competitive worldview (–.21). At the same time, the variance of both scales themselves overlapped by approximately a quarter. In addition, dangerous worldview, competitive worldview, and zero-sum game belief were positively correlated (between .22 and .50) and were all negatively correlated with global belief in just world (between –.26 and –.39).

Dangerous worldview was significantly positively correlated with all the domains of paranormal beliefs and generic conspiracist beliefs (from .15 to .41). Zero-sum game belief was significantly positively correlated with all the domains of generic conspiracist beliefs (from .16 to .36). The other two social worldview variables showed some mixed results. Global belief in just world was significantly positively correlated with all the domains in the paranormal belief (from .14 to .24), except extraordinary life forms, and negatively correlated with only one domain in generic conspiracist beliefs (government malfeasance; –.29). Competitive worldview was significantly positively correlated with the most domains of generic conspiracist beliefs (from .15 to .32), except for malevolent global conspiracy and extraterrestrial cover-up, and negatively correlated with most of the domains of paranormal beliefs (from –.17 to –.27), except for superstition and extraordinary life forms.

All the domains of paranormal beliefs were significantly positively correlated (.39 to .85), as were all the domains of generic conspiracist beliefs (.21 to .79). Moreover, all the domains of paranormal beliefs were significantly positively associated with all the domains of generic conspiracist beliefs (from .16 to .54), except for government malfeasance.

Measurement Models

The model fits of the estimated measurement and structural models are shown in Table 2. The first model with orthogonal factors showed unsatisfactory model fit. The second model with oblique factors had the fit to the data better, with the two latent factors, paranormal and generic conspiracist belief, quite strongly correlated with each other ($r = .61$, $p < .001$). Despite the warning that the variance-covariance matrix of the estimated parameters was not positive definite, the estimation of the parameters and model fit was still provided for the third model with a latent factor of the second order, which was generally not better than the second. The fourth, the bifactor model, as expected (Hypothesis 1), showed the best model fit.

<Insert Table 2 Here>

Structural Models

Adding the main predictors of the study to the bifactor model showed that this structural model had adequate model fit, while, in accordance with Hypothesis 2, dangerous worldview ($\beta = .48$, $p < .001$) and global belief in just world ($\beta = .35$, $p = .003$) were positive

predictors of the general latent factor for paranormal beliefs and generic conspiracist beliefs. These predictors were associated with 26% of the variance of the explained variable and were negatively related to each other ($r = -.32$, $p < .001$). Competitive worldview and zero-sum game belief were not significant predictors in the model. This structural model is shown in Figure 1.

<center>**<Insert Figure 1 Here>**</center>

The factor loadings from the latent factor of paranormal beliefs ranged from .38 for the subfactor for extraordinary life forms to .70 for the subfactor for precognition (in average .53), and from the latent factor of generic conspiracist beliefs from .27 for the subfactor for extraterrestrial cover-up and to .73 for the subfactor for government malfeasance (in average .46). However, factor loadings from the general latent factor for the domains of paranormal beliefs ranged from .49 for superstition and .66 for spiritualism (in average .59), whereas for the domains of generic conspiracist beliefs from insignificant for government malfeasance (–.02) and to .80 for personal wellbeing (in average .58, without government malfeasance .63). The variance of manifest variables associated with latent factors for paranormal beliefs ranged from 42% for superstition to 89% for precognition (in average 64%), and for generic conspiracist beliefs ranged from 54% for government malfeasance and 80% for personal wellbeing (in average 64% as well). Thus, the proposed bifactor structure of latent variables was associated with more than half the variance of paranormal beliefs and generic conspiracist beliefs.

The results of a path analysis in which social worldviews predicted factor scores for paranormal beliefs and generic conspiracist beliefs based on the bifactor model are available in Table 3. After clearing the common factor variance, 11% of the variance of paranormal beliefs was significantly associated with competitive worldview (–.23) and global belief in just world (.18), 24% variance of generic conspiracist beliefs with zero-sum game belief (.25), dangerous worldview (.21) and competitive worldview (.18). It is particularly noteworthy that the general factor was predicted by both global belief in just world and dangerous worldview (see Figure 1), however, as can see in Table 3, this combination was not characteristic of the factor score for paranormal beliefs (only the association with global belief in just world) and the factor score for generic conspiracist beliefs (only the association with dangerous worldview).

<center>**<Insert Table 3 Here>**</center>

Concerning the tested hypotheses, the conducted research allows us to draw the following conclusions: Hypothesis 1 was fully supported, the structure of paranormal and

generic conspiracist beliefs can be described by the bifactor model; Hypothesis 2 was fully supported, the general factor of paranormal and generic conspiracist beliefs in the bifactor model was positively associated with global belief in just world and dangerous worldview; Hypothesis 3 was partly supported, paranormal beliefs were positively associated with global belief in just world and negatively associated with competitive worldview; Hypothesis 4 was partly supported, generic conspiracist beliefs were positively associated with dangerous worldview, competitive worldview, and zero-sum game belief.

Discussion

The aim of this study was to test the relationship between social worldviews and unfounded beliefs in terms of paranormal beliefs and conspiracy beliefs. We suggested that there should be a general factor associated with all the domains of paranormal beliefs and generic conspiracist beliefs (dimensionality hypothesis), which, in addition, can have associations with social worldviews (viz., global belief in just world, dangerous worldview, competent worldview, and zero-sum game belief). This suggestion about the existence of such a factor, which is hypothetically associated with a common adaptive bias and corresponding motivation, was based on the existence of common grounds for both types of unfounded beliefs. The dimensionality hypothesis that the structure of paranormal beliefs and generic conspiracist beliefs is described by the bifactor measurement model was supported by the data. Dangerous worldview and global belief in just world also turned out to be positively associated with this general factor. Together, this supports our interpretation that the monological nature of paranormal beliefs and generic conspiracist beliefs are motivated by the desire to bring predictability, a sense of control, and safety into one's life in accordance with the chronic ideas about the world as a fair and dangerous place.

There was no evidence to link the general factor with competitive worldview and zero-sum game belief. It is also consistent with the idea that these beliefs about the world are related to relational motives rather than the epistemic and existential ones that are important to the general factor underlying the paranormal beliefs and generic conspiracist beliefs. However, it seems that some contribution of the relational motives can be found in our results for the factor score for generic conspiracist beliefs (see Table 3), which are fit the suggestion about another functional explanation that belief in conspiracy theories emerges from a natural, inborn suspiciousness of potentially dangerous coalitions (see van Prooijen & van Vugt, 2018).

An interesting point is that the general factor was not associated with government malfeasance, and in general this domain of generic conspiracist beliefs stood out from the rest. It is noteworthy that the mean value on this scale was the highest of the participants. Apparently, this can be attributed to a rather low level of institutional trust, which is associated with this perceived malevolence on the part of the authorities (see Grigoryev et al., 2022). That is, conspiracy theories about government can be confounded with a general source of skepticism in relation to authorities.

It is very important to note that a study previously testing the main predictors of paranormal beliefs in according to the literature (e.g, ontological confusion, understanding of causation, cognitive ability, etc.) found that in the regression model these predictors were associated with 19% of the variance of paranormal beliefs (Betsch et al., 2020). By comparison, the model in our study, which included social worldviews as predictors, was associated with 11% of variance in paranormal beliefs, which is comparable to an explanatory power of 10% variance in paranormal beliefs for a regression model that includes cognition and Big Six personality traits (i.e., HEXACO-PI-R). This suggests that social worldviews are important grounds for paranormal beliefs. Moreover, it is necessary to take them into account for a comprehensive explanation of this phenomenon in the future.

Regarding social worldviews the nature of the observed relationships looked like that, in general, the most general idea of the social world is global belief in just world, and the most particular is zero-sum game belief. It is quite logical that just world does not seem dangerous and competitive, on the contrary, an unjust world is dangerous, it can have fierce competition, which most often resembles a zero-sum game. This is consistent with the idea of a hierarchical organization of such worldviews (see Clifton et al., 2019). At the same time, it is likely that for various unfounded beliefs, a certain aspect of the idea of the social world is found to be more important depending on its content side.

People may think that supernatural forces are responsible for justice (Stroebe et al., 2015). This is probably the main point that explains the positive relationship between paranormal beliefs and global belief in just world, and the negative relationship between paranormal beliefs and competitive worldview. At the same time, dangerous worldview and zero-sum game belief can be secondary to this, in accordance with the logic of hierarchical nesting of beliefs about the world, outlined above. However, the lack of evidence for any negative association of generic conspiracist beliefs with global belief in just world may well indicate that the malevolent conspiracy, by contrast, is not of a supernatural nature. This is consistent with the negative correlation between the factor scores based on the bifactor model:

The factor score for paranormal beliefs and factor score for generic conspiracist beliefs, adjusted for the common variance of the general factor, were already moderately negatively correlated ($r = -.29$, $p < .001$), rather than strongly positive as in the model without the general factor ($r = .61$, $p < .001$). More research is needed to support this line of reasoning.

In the framework of this study, the direction of the links is very important. However, in the empirical part of the work, a correlation design was used, and therefore there is no firm possibility to claim about significant support for a causal interpretation of the observed relationships. It is also important to directly test that together these social and unfounded beliefs are caused by the desire to bring predictability, a sense of control and security into life. In addition, the present study considered only four social worldviews, which were also measured using highly variable measures. However, today there is a new approach to measure worldviews, which includes many different worldviews and specially developed measuring tools (see Clifton et al., 2019). Finally, the social worldviews may share a common variance with several other variables (e.g., personality traits; see Duckitt & Sibley, 2016). Therefore, in future studies, it would be useful to consider more complex models that combine these variables. It is important to establish a clear relationship between the shared hypothetical cognitive basis and the motivational orientation of both sets of unfounded beliefs.

Thus, taken together, these findings demonstrate the usefulness of the proposed interpretation of the general factor of paranormal and generic conspiracist beliefs, as reflecting epistemic motives (allowing to maintain a consistent picture of the world) and existential motives (making the world understandable and controllable). Generally speaking, the evidence that unfounded beliefs are associated with some kind of adaptive function and are related to social worldview opens up new perspectives for considering this problem within the framework of social psychology. In particular, the data obtained should be taken into account when conducting further research within the framework of a functional approach to unfounded beliefs. We hope that further unpacking and clarification about general and specific sources of variance in unfounded beliefs helps advance the field.

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Table 1.

Descriptive Statistics and ω-McDonald's Values

	M	SD	Md	McDonald's ω
Independent variables				
Social worldviews				
Global belief in just world	.34	.19	.34	.87
Dangerous worldview	.50	.20	.50	.81
Competent worldview	.45	.18	.44	.76
Zero-sum game belief	.50	.18	.48	.84
Dependent variables				
Paranormal beliefs				
Traditional religious belief	.37	.31	.30	.91
Psi	.34	.26	.30	.88
Witchcraft	.28	.30	.17	.96
Superstition	.20	.26	.05	.77
Spiritualism	.28	.26	.22	.89
Extraordinary life forms	.37	.20	.34	.74
Precognition	.24	.23	.17	.88
Generic conspiracist beliefs				
Government malfeasance	.69	.26	.75	.84
Malevolent global conspiracy	.55	.31	.59	.89
Extraterrestrial cover-up	.34	.27	.34	.82
Personal wellbeing	.51	.27	.50	.81
Control of information	.67	.21	.67	.56

Table 2.

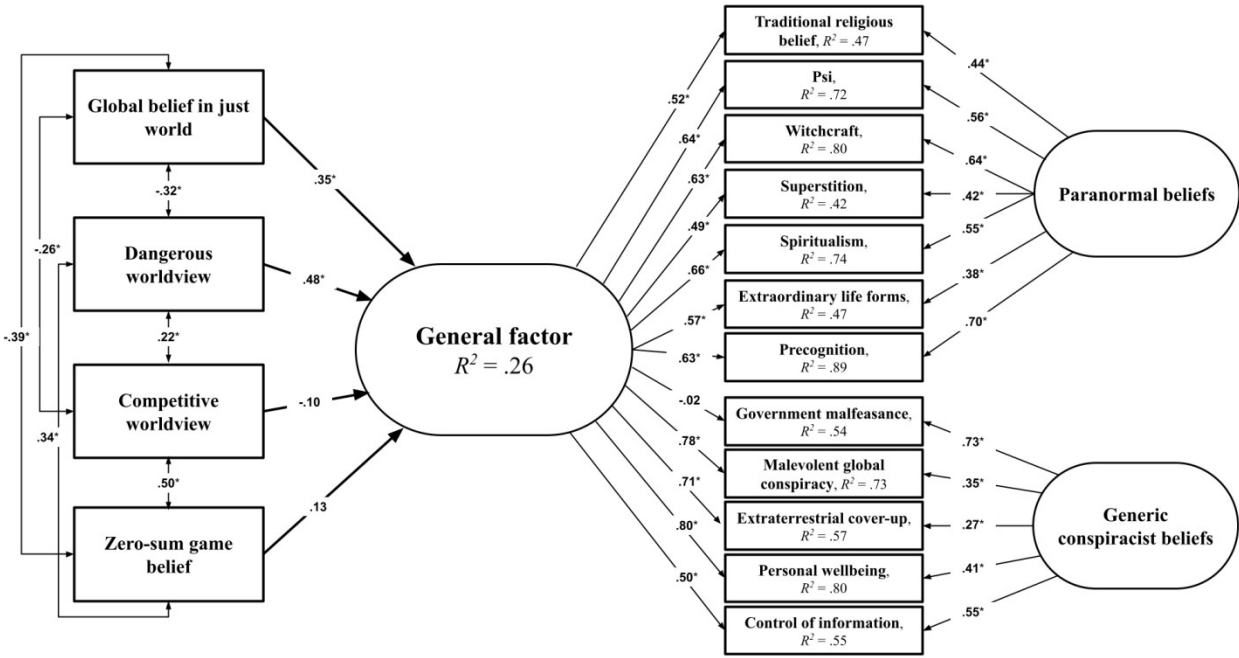*Model Fits for the Estimated Measurement and Structural Models* ($N = 228$)

	CFI	RMSEA 90% CI	SRMR	MLR χ^2 (df)	Diff. ML Satorra.2000 χ^2 (df)
Measurement models					
Model with orthogonal factors	.897	.109 [.094, .124]	.248	199.92(54), $p < .001$	
Model with oblique factors	.948	.078 [.062, .094]	.077	126.66(53), $p < .001$	118.26(1), $p < .001$
Model with second order factor	.949	.078 [.062, .094]	.077	124.27(52), $p < .001$	2.00(1), $p = .157$
Bifactor model	.973	.064 [.044, .083]	.034	80.72(42), $p < .001$	35.90(10), $p < .001$
Structural models					
Model with latent variables	.948	.068 [.055, .082]	.089	173.06(84), $p < .001$	
Path model	1.000	.001 [.001, .001]	.001	282.54(21), $p < .001$	

Table 3.
Standardized Coefficients of the Path Model (*N* = 228)

Social worldviews	Factor score for paranormal beliefs	Factor score for generic conspiracist beliefs
Global belief in just world	.18*	.01
Dangerous worldview	.11	.21**
Competitive worldview	–.23**	.18*
Zero-sum game belief	–.04	.25**
R^2	.11	.24

Note. **p < .001. *p < .01.

Figure 1. The Estimated Structural Model with a Bifactorial Form of Paranormal Beliefs and Generic Conspiracist Beliefs (*N* = 228)

Note. *$p < .05$