Kumulative Dissertation

Centrality of Religiosity Scale – Test of Model Configuration, Reliability, and Consistency in Romania, Georgia, and Russia

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Abstract

Measurement is fundamental in science. Social sciences generally and psychology, in particular, depend on objective, valid, and reliable psychometric scales. In the 20th century, the psychology of religion and spirituality spent a long time searching for comprehensive and trustworthy instruments to assess psychological constructs in the field of empirical studies of religion and spirituality. This search has manifold causes and goals, one of them was to find an extensive measurement of the general religiosity. In 2003 a new instrument was introduced to the measurement of religiosity by Stefan Huber. The Centrality of Religiosity Scale (CRS) is based upon a new approach – centrality and content-model of measurement of religiosity. The model designs a comprehensive, integrative way to collect empirical evidence by a self-report scale – the CRS.

Driven by the research question of whether the Centrality of Religiosity Scale is a reliable and constant instrument to assess religiosity, a systematic empirical test of the scale was done in three Eastern European countries i.e., Romania, Georgia, and Russia. The focus lied on the examination of internal consistency and external reliability as well as the configural, metric, and scalar invariance testing via multigroup confirmatory factor analysis of the short versions of the CRS, the Abrahamitic CRS-5 and the interreligious CRSi-7. Special attention was given to the time-invariance of the short versions of the CRS. Apart from methodological interest in psychometric scale performance, attention was given to the ability of the CRS to detect particularities of the local religious traditions in the three predominant Christian Orthodox countries.

Findings suggest acceptable to good internal consistency coefficients with the lowest values of Cronbach's α and McDonald's ω_t being in Georgia and the highest in Russia and Romania. Configural invariance could be observed in all analyzed samples, additionally, metric invariance is found in the Russian and Georgian dataset with the CRS-5 and in the Russian sample with the CRSi-7, as well as scalar invariance with the CRS-5 in Georgia. Correlated indicator residuals that are stable over time imply that the measurement model of the CRS does not include all systematic variance of the core dimensions of religiosity. These findings show that the centrality of religiosity cannot capture the entire dynamic of religiosity, with some variance being left over which is indicative of particularities in the underlying religious tradition.

The empirical results support the multidimensional model configuration, the reliability, and the consistency of the Centrality of Religiosity Scale. The scale seems suitable to assess religiosity as proposed by the theory behind it. However, attention is advised with the association of the residuals of the indicators. Applications in the context of Christian Orthodox tradition e.g., disclose the tendency of believers to partly bypass practical core dimensions of religiosity by carrying out some outward religious behavior. In Romania, the investigation show that highly religious believers tend to focus more on the experiential and intellectual aspects of faith life.

Further, research on religion and spirituality with the CRS should consider more invariance testing while also taking into account the constraints on the indicator residuals to detect particularities of the analyzed samples. The configural invariance should be tested to ensure multidimensionality, while metric invariance is advisable if group comparison is of interest, and scalar invariance should be applied if the changes of latent means should be tracked.

The results encourage further empirical investigations with the CRS e.g., cross-cultural comparisons, longitudinal studies, the examination of new hypotheses regarding the qualitative changes of faith which occur with higher or lower levels of centrality of religiosity, and further hypotheses regarding the inner dynamics of the postulated core dimensions of religiosity.

Zusammenfassung

Messung ist grundlegend für in der Wissenschaft. Die Sozialwissenschaften im Allgemeinen und die Psychologie im Besonderen sind auf objektive, valide und reliable psychometrische Skalen angewiesen. Die Religions- und Spiritualitätspsychologie war im 20. Jahrhundert lange Zeit auf der Suche nach einem ganzheitlichen und vertrauenswürdigen Instrumentarium zur Erfassung psychologischer Konstrukte im Bereich der empirischen Religions- und Spiritualitätsforschung. Diese Suche hat vielfältige Ursachen und Ziele, eines davon war, eine umfassende Messung der allgemeinen Religiosität zu finden. Im Jahr 2003 wurde von Stefan Huber ein neues Instrument zur Messung von Religiosität eingeführt. Die Zentralitätsskala der Religiosität (Centrality of Religiosity Scale, CRS) basiert auf einem neuen Ansatz - Zentralitäts- und Inhaltsmodell der Messung von Religiosität. Das Modell entwirft eine umfassende, integrative Erhebung empirischer Daten mithilfe einer Selbstbeurteilungsskala - der CRS.

Ausgehend von der Forschungsfrage, ob die Zentralitätsskala der Religiosität ein zuverlässiges und konstantes Instrument zur Messung von Religiosität ist, wurde ein systematischer, empirischer Test der Skala in drei osteuropäischen Ländern – Rumänien, Georgien und Russland – durchgeführt. Der Schwerpunkt lag dabei auf der Untersuchung der internen Konsistenz und externen Reliabilität sowie auf der Prüfung der konfigurativen, metrischen und skalaren Invarianz mittels Multigruppen-Konfirmationsfaktoranalyse der Kurzfassungen der CRS, der Abrahamitischen CRS-5 und der interreligiösen CRSi-7. Ein besonderes Augenmerk lag auf der Testung der Zeitinvarianz der Kurzversionen der CRS. Neben dem methodischen Interesse an der psychometrischen Skalenperformanz galt die Aufmerksamkeit der Leistungsfähigkeit der CRS auch die Besonderheiten der religiösen Traditionen in den drei überwiegenden christlich-orthodoxen Ländern zu detektieren.

Die Ergebnisse deuten auf akzeptable bis gute interne Konsistenzkoeffizienten mit den niedrigsten Werten von Cronbachs α und McDonalds ω_t in Georgien und den höchsten in Russland und Rumänien hin. Konfigurative Invarianz konnte in allen analysierten Stichproben beobachtet werden, zusätzlich findet sich metrische Invarianz in den russischen und georgischen Datensätzen mit der CRS-5 und in der russischen Stichprobe mit der CRSi-7 sowie skalare Invarianz mit der CRS-5 in Georgien. Korrelierte Indikatorresiduen, die über die Zeit stabil sind, implizieren, dass das Messmodell der CRS nicht die gesamte systematische Varianz der Kerndimensionen der Religiosität umfasst, wobei eine gewisse Varianz übrig bleibt, die auf Besonderheiten in der zugrunde liegenden lokalen religiösen Tradition hinweist.

Die empirischen Ergebnisse befürworten die mehrdimensionale Modellkonfiguration, die Zuverlässigkeit und die Konsistenz der Skala der Zentralität der Religiosität. Die Skala scheint grundsätzlich geeignet zu sein, Religiosität, wie sie von der ihr zugrunde liegenden Theorie vorgeschlagen wird, zu erfassen. Allerdings ist der Korrelation der Residuen der Indikatoren Aufmerksamkeit zu schenken. Anwendungen im Kontext der christlich-orthodoxen Tradition zeigen z.B. die Tendenz der Gläubigen, einige Kerndimensionen der Religiosität teilweise zu umgehen, indem sie nach außen hin ein religiöses Verhalten an den Tag legen. Die Untersuchung in Rumänien zeigt, dass hochreligiöse Gläubige dazu neigen, sich mehr auf die erfahrungsmäßigen und intellektuellen Aspekte des Glaubenslebens zu konzentrieren. Weitere Forschungen zu Religion und Spiritualität mit der CRS sollten vermehrt Invarianztests in Betracht ziehen, wobei auch die Einschränkungen bei den Indikatorresiduen berücksichtigt werden sollten, um Besonderheiten der analysierten Stichproben zu erkennen. Die Konfigurationsinvarianz sollte getestet werden, um die Mehrdimensionalität sicherzustellen, metrische Invarianz ist ratsam, wenn ein Gruppenvergleich von Interesse ist, und skalare Invarianz sollte angewendet werden, wenn die Veränderungen der latenten Mittelwerte verfolgt werden sollen. Die Ergebnisse regen zu weiteren empirischen Untersuchungen mit der CRS an, z.B. zu kulturübergreifenden Vergleichen, zu Längsschnittstudien, zur Überprüfung neuer Hypothesen über die qualitativen Veränderungen des Glaubens, die bei höheren oder niedrigeren Zentralitätsstufen der Religiosität auftreten, und zu weiteren Hypothesen über die innere Dynamik der postulierten Kerndimensionen der Religiosität.

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List of Symbols and Abbreviations

CRS	Centrality of Religiosity Scale
CRS-5	short Abrahamitic form of the CRS
CRS-10	intermediate Abrahamitic form of the CRS
CRS-15	long Abrahamitic form of the CRS
CRSi	interreligious version of the Centrality of Religiosity Scale
CRSi-7	short form of the interreligious CRS
CRSi-14	intermediate form of the interreligious CRS
CRSi-20	long form of the interreligious CRS
M	mean
SD	standard deviation
R^2	proportion of the variance in a response that is accounted for by its relationship with the predictor(s)
α	Cronbach's coefficient of internal consistency or error level
ω/ω_t	McDonald's coefficient of internal consistency
χ^2	chi-square test statistic
ξ	factor
φ	factor variance
κ	factor mean
λ	factor loading
τ	intercept mean
δ_x	residual variance
δ_{xy}	residual covariance
x_1	statistical parameter related to the core dimension of ideology
x_2	statistical parameter related to the core dimension of intellect
x_3	statistical parameter related to the core dimension of experience
x_4	statistical parameter related to the core dimension of private practice
x_5	statistical parameter related to the core dimension of public practice
Δ	difference of two statistical parameters
SEM	structural equation modeling
EFA	exploratory factor analysis/analyses
CFA	confirmatory factor analysis/analyses
ML	maximum likelihood
CFI	Comparative Fit Index
TLI	Tucker-Lewis Fit Index
RMR	Root Mean Residual
SRMR	Standardized Root Mean Residual
RMSEA	Root Mean Square Error of Approximation
CI	confidence interval
Ro	related to the study in Romania
Ge	related to the study in Georgia
Ru	related to the study in Russia
A	names of tables and figures which contain an "A" relates to tables and figures in the Appendices
adj-	adjusted-

1. Introduction

The aim of this thesis is to test empirically the performance of a psychometrical component of a model which measures religiosity. The main element in question is the centrality-component of the so-called "centrality and content" model (German original: "Zentralität und Inhalt") which was published in the year 2003 (Huber 2003). In contrast to old approaches, this new approach combines psychological, sociological, and theological interests in the study of religiosity. The centrality-component represents the psychological part of the model. The author developed this interdisciplinary model theoretically as well as methodologically, finally presenting a self-report psychometrical tool to assess religiosity. Huber named his new scale the Centrality of Religiosity Scale (CRS). Probably the most striking aspect of the new model lies in how it combines a multidimensional approach to religiosity with the assessment of motivation and the related salience of religious contents within the personal construct system (Kelly 1955b). Furthermore, the operationalization is frugal, containing thought-out formulations of the items and answer-options.

The Centrality of Religiosity Scale was built to study religiosity in various degrees of depth. Therefore, the CRS has a short, intermediate and long version: CRS-5, CRS-10, and CRS-15 respectively. The number in the abbreviation of the scale represents the number of items, giving a first indication of the scalability of the model's operationalization. All versions of the Centrality of Religiosity Scale have the same underlying multidimensional structure, consisting of five core dimensions: ideology, intellect, experience, private practice and public religious practice. In the shortest version, five indicators operationalize each one of these so-called core dimensions of religiosity. Accordingly, the CRS-10 consists of two and the CRS-15 of three indicators per core dimension. However, the CRS-5, -10, and -15 were only suitable for application in the Abrahamic religious context (i.e., Judaism, Christianity, and Islam). Consequently, after some years and numerous empirical applications, a so-called interreligious extension of the basic versions was created by Huber (2008), enabling the examination of non-Abrahamic religious contexts (e.g., Hinduism, Buddhism). Each of the existing versions was extended with additional items resulting in a short CRSi-7 (5 + 2), an intermediate CRSi-14 (10 + 4), and a long CRSi-20 (15 + 5) interreligious version. Thereby, the model was made empirically testable in a wider range of religious contexts, hence, becoming more general and universal. Moreover, the interreligious versions enable the capture of the secularization dynamic present in industrialized countries by assessing alternative religious views and practices. Thus, the five major world religions are covered by the wording of the items of the CRS, including all their traditional and non-traditional manifestations. However, confirmatory tests of the centrality-component, its factorial consistency and reliability have only been tested sporadically and non-systematically. The present thesis closes part of this existing gap.

Further, the current dissertation presents a systematic evaluation of the CRS performance in a specific religious context, the Christian Orthodox tradition within three Eastern European countries i.e., Romania, Georgia, and Russia. The empirical tests of the factorial structure, reliability and consistency of the short versions CRS-5 and the CRSi-7 form the foundation of the thesis, as well as a test of the derivates of the centrality of religiosity-component proposed by Huber (2003, 2008).

Before moving on to the presentation of the empirical examinations in Romania, Georgia, and Russia the central subject of the measurement of religiosity is introduced (definition, development of the CRS, structure of the CRS, religious context in the three countries) followed by a description of the methods used in the empirical part of the articles. The three articles constitute the core of this thesis and are linked by short summaries of the results concerning the centrality of religiosity-component-test. The overall summary of the results is followed by the general discussion which is completed by a general conclusion and an outlook.

1.1. Definitions

Throughout the study of the ultimate concerns, the terms religion and spirituality often occur close to each other, are mixed, and are utilized in a way which is defined by the authors' understanding of the concepts (Hood, Hill, and Spilka 2018, 13-16). Accordingly, the terms religion

and spirituality are used interchangeably by some authors and especially, in everyday language, where the swappable use is most frequently seen in the use of their derivates – the adjectives "religious" and "spiritual". The term religiosity (or religiousness as a variant of it) is used less frequently, which is an advantage regarding its definition and usage in the science-related research disciplines like sociology of religion, psychology of religion, religious science, etc. Even though closely intertwined, the relationship of these concepts, their common ground, and disparities are still lively debated – especially religion and spirituality – and have to be separated to clarify their relations concerning the operationalization in the present thesis. For this study, religion is understood as linked to an institutional, consensual form of faith life, whereas spirituality is a personal and subjective form of faith life, which does not need an institutional framework or a "consensus of minds" (Hood, Hill, and Spilka 2018, 16). Both terms regard the individual as a "carrier". Therefore, in the text, the term religiosity is used to define the individual form of faith life regardless of the institutional bond, orientation, or form. Thereby, spiritual things refer to a transcendent reality and religious things are seen with or by a reference to a group of people.

Using the term religiosity allows for an operational definition from a psychological perspective as it focuses on the individual and its religious behavior, experience, cognition, conviction, or perception. Therefore, throughout the thesis *religiosity* is used as a psychologically conventional term without losing sight of terms religion and spirituality. Once again, the last two concepts are best differentiated from religiosity when a) a human being is seen in a social context as opposed to an individual which relates to religion or b) material as opposed to immaterial reality which demarcates spirituality. Therefore, the term religiosity is preferred as it gives access to both the religious sphere – which refers to the individual in its relationship with others – and the spiritual sphere – which refers to the individual's re-/actions with transcendence. The question that remains is how religiosity can be measured. Many scholars have attempted to answers this question e.g., Hill and Hood Jr. (1999) listed over 100 scales available at the time for the empirical study on the psychology of religion. As it turns out, two of them proved to play a formative role in the empirical study of religion (cf. chapters 2 and 3 in Huber 1996, chapter 2 in Hood, Hill, and Spilka 2018) and therefore, are shortly introduced in the subsequent paragraphs.

1.2. Assessment of Religiosity

Even though personal psychology, sociology of religion, and anthropology are not the center of attention within the given definition of religiosity and the focus of the present study, they form the starting point for ideas that lead to the multidimensional assessment of religiosity. In the origin of this field there are two key players: Charles Y. Glock and Gordon W. Allport. One part of the development starts with Charles Y. Glock when he introduces a comprehensive framework of the multifaceted religious dimensions in the 1960s which are said to be anthropologically universal. The second part is linked with Gordon W. Allport, a well-known personality psychologist. He introduced the intrinsic/extrinsic-concept (I/E-concept) of religiosity which was built around the idea of the development of motivation and the maturation of personality. For a long time, these approaches existed side-by-side, becoming popular, empirically well-tested, debated, criticized and improved. However, somehow their origins influenced the fields in which they gained popularity. While Glock's approach was favored by sociologists of religion, the I/E-concept was broadly used by psychologists of religion. Due to this disciplinary gap, the models were never combined to a comprehensive model of religiosity, until Stefan Huber bridged the gap in the 1990s and the beginning of the 2000s. Stefan Huber, an empirical researcher of religion, not only synthesized the two models in his new model, moreover, he derived an instrument for the assessment of religiosity.

The two complementary approaches by Allport and Glock are shortly presented in the following paragraphs. Thereafter, the centrality of religiosity model, which is a fusion of the two, is introduced in detail (Huber 2003). The field is too broad to go into details, therefore, only the key aspects of the three approaches are presented, giving enough background to understand the empirical part of the thesis.

1.2.1. Allport's I/E-Concept

The idea of empirically examining the personality of believers was introduced by Gordon Allport and originated in his studies of prejudice in the USA in the middle of the 20th century. He noticed that many Christian believers were prejudiced against minorities even though it runs against many Christian creeds e.g., loving thy neighbor, sharing of bread, unity of the Body of Christ etc. These discrepancies sparked thoughts on different motives of believers to be a part of a religious community. While Allport found that some were seeking faith for the sake of faith itself, others were seeking faith to benefit in other ways, while ignoring the teachings of loving others and the like. Therefore, he developed the notion of extrinsically and intrinsically motivated churchgoers which he coined with the term "religious orientations". Although his idea of a unidimensional intrinsic-extrinsic continuum was later proven wrong by empirical investigations, his theory seemed plausible at that time.

Allport's contributions to the psychology of religion are closely linked with his ideas on the development of a human's personality. As stated in the introduction by Allport himself the book "The Individual and his Religion: A Psychological Interpretation" is a refinement of the theoretical framework introduced in the book "Personality: A Psychological Interpretation" (Allport 1950, vii). The theory of functional autonomous motives which forms a part of his concepts on human personality shapes the foundation for the empirical endeavors with the intrinsic-extrinsic-concept (I/E-concept, Allport and von Bracken 1970).

In the time when Behaviorism was the dominant paradigm in psychology in the US, he drafted the idea that conditional processes evolve into higher processes (cognitive processes) and become autonomous within the individual. Moreover, when higher processes become autonomous, they maintain themselves and become a part of the dynamic that drives a person and thus his or her development. In brief, this theory postulates a motivational system composed of diverse autonomous motivational subsystems that interact with each other, maintain themselves independently, while evolving and building new subsystems which themselves become autonomous from their building parts after a while. An example would be a person who starts to do sports for the purpose of losing weight (primary motivation) and continues after reaching his or her goal weight, because of its positive effects on daily life through the emotion regulation opportunities it provides (secondary motivation) or the social support and fun (tertiary motivation). In this simple example, it becomes clear that the secondary and tertiary motives become independent from the primary one with time. Such an evolution of the motivation system leads to the differentiation and maturation of personalities. Interestingly, for Allport the ideal of a mature, developed motivational system was associated with a – as he calls it – maturated religious personality. Knowing this, it becomes apparent why a religious person with prejudice appeared to be a phenomenon worth studying for Allport. The next step included the development of a scale that can distinguish an intrinsic and therefore autonomously motivated religious person from an extrinsically and therefore non-autonomously motivated religious person. He did this, by designing the Religious Orientation Scale (ROS, Allport 1959, 1966).

Thereupon, the newly built ROS was empirically tested by Feagin (1964), who found a two-factorial solution, as opposed to Allport and Ross (1967) who assumed a unidimensional scale. After reanalyzing the data, refining the theory and blending the theory with some new concepts the I/E-continuum was divided into an I-Scale and an E-Scale (see for summary of the development e.g., Huber 2003, 50-86). The notion of two poles with intrinsic motivation on the one extreme and extrinsic motivation on the other proved wrong. Nevertheless, the ROS itself and many improved ROS–derivates remained attractive for a long period in the scientific study of religion (see e.g., Donahue 1985b; Donahue 1985a for an overview and a meta-analysis; see A.B. Cohen et al. 2017 for an invariance test) and are still listed and discussed in recent textbooks on the psychology of religion (e.g., Hood, Hill, and Spilka 2018, 43; Paloutzian and Park 2014, 56; Paloutzian 2017, 120).

In conclusion, the I/E-concept and its further evolution gave the field the possibility of capturing and analyzing religious orientation, with the maturation of the motivational structure being the target for Allport's ideas. However, at least one unsolved issue remains, the religious content is confounded

with motivation. This is best seen when looking at the distinction of extrinsic that is non–mature, underdeveloped religiosity and intrinsic that is a mature, fully developed religiosity even with separated I– and E–Scales. The I/E-concept includes a value judgment, thus, losing objectivity and somehow introducing prejudice about a simply put "mature" and "immature" religious orientation of believers into the measurement.

1.2.2. Glock's Dimensions of Religiosity

Primarily, Charles Glock's scientific approach is built around the idea that every human culture no matter when or where, generates and expresses forms of religiosity that are anthropologically universal. Therefore, his model uses an inductive approach when examining the multifaceted sociological forms of human behavior and experience within the realm of religion and spirituality. The core of Glock's theoretical framework is best described as social expectations that are inherent in human communication and interactions. As a result, the dynamic of social expectations creates distinct forms in which people express their religiosity.

Starting in 1954 Glock develops his theoretical framework in the book "Toward a typology of religious orientation" with the initial question of the expressions and relationships of different forms of religiosity (Glock 1954). In 1959 he published an essay with the title "The religious revival in America?" (Glock 1959) in which four religious dimensions are already listed: ideology, ritual, experience, and consequence. Finally, in 1962 in "On the Study of Religious Commitment" he added the dimension of "intellect and knowledge" completing the set of domains of human religious expressions (Glock 1962). Here is how Glock describes the deducted dimensions:

- experiential dimension (religious feeling): "Religious people will ... achieve direct knowledge of ultimate reality or will experience religious emotion."
- ideological dimension (religious belief): "The religious person will hold to certain beliefs."
- ritualistic dimension (religious practice): "Specifically religious practices [are] expected of religious adherents."
- intellectual dimension (religious knowledge): "The religious person will be informed and knowledgeable about the basic tenets of his faith and its sacred scriptures."
- consequential dimension (religious effects): This covers "what people ought to do and the attitudes they ought to hold as a consequence of their religion." (Glock 1962, S-101-S-108; Hood, Hill, and Spilka 2018, 37)

The empirical test of the multidimensional model took place in the 1960s within a large, US-wide study on antisemitism. Glock's idea behind the multidimensional investigation was that the inconsistent findings on antisemitism and Christian beliefs came about because of the non-comprehensive items used in the assessment of religiosity (Glock and Stark 1966). Grasping evidence showed that believers expressed their faith in all postulated dimensions. Glock called this kind of engagement in religious life "religious commitment" (Glock 1962). After the first empirical test the model was modified, whereby the ritualistic dimension was split into two parts "devotion" and "ritual" and the consequential dimension was dropped from the list. Thus, the list of dimensions contains the ideological, devotional, ritualistic, experiential and intellectual so-called "commitments". According to Glock, the personal, and the ritualistic, which is the public form of religious behavior, constitutes the devotional dimension. In this form, the multidimensional model by Glock has found broad application in sociology and the psychology of religion after its initial inspection by Stark and Glock (1968); (some more recent studies e.g., Tamminen 1991; Eisinga, Konig, and Scheepers 1995; for an overview see Hill and Hood Jr. 1999, 281).

Still, questions remain, for example, how do the relatively autonomous dimensions relate to each other? How do the dimensions interact within an individual? Are the dimensions universal, especially considering that the empirical validation of the model took place in industrialized countries within North America and later Europe? Can the concept of "religious commitment" condense the five dimensions to a single indicator of religiosity? Nevertheless, the sociological

approach by Glock, as well as its refinement and critical revision show a viable typology in various domains of the study of religiosity.

1.2.3. Huber's Centrality and Content-Model of Religiosity

In sum, it can be said, that the core ideas postulated in Allport and Glock's approaches proved to be valuable on different levels. On the one hand, the I/E-concept generates access to the position of the faith in the motivational structure of a believer. On the other hand, Glock's dimensions encompass the relatively autonomous domains in which religious activities take place. The observations from empirical tests conducted with Allport and Glock's models show that some theoretical positions were either modified (e.g., disentangling the ROS into I- and E-Scale) or left untouched (e.g., defining the theoretical role of religious commitment in relation to the five postulated dimensions). It seemed that what was lacking in Allport's approach was a neutral, comprehensive assessment of motivation and Glock's method, on the other hand, was lacking a central unifying concept. These and other critiques lead (Huber 2003, 169-208) to a synthesis of both approaches, resulting in a new methodology of assessment of religiosity.

In his thesis, Huber (2003) begins by presenting Allport and Glock's models in detail, followed by a part in which he highlights the theoretical and methodological problems of the measurement models. Within the I/E-concept he identifies the following three major issues: Firstly, theological contents are often confounded, especially on the E-Scale. Secondly, the interactions of the I- and E-factors are very unclear, and lastly, the question of whether religious orientation is dependent on theological contents and perceptional patterns or the position within the motivational system remains unanswered. In conclusion, the arguments point towards the need for a new conceptualization of what Allport understood as the specific religious motivational subsystem and its integration in a broader framework.

Considering the multidimensional model by Glock, Huber points out some deficits. In the first place – same as for Allport – some theological contents and interpretation patterns in the operationalization of the dimensions are confounded. A further deficit lies in the inappropriately adopted method of dimension-related analysis regarding the contents of faith. The crucial point, however, is that neither Glock (1962) nor Stark and Glock (1968) say something about the relationship between the relatively autonomous dimensions (Huber 2003, 173). Furthermore, an interactive center is missing in their model.

However, if a shared center were added to the five dimensions postulated by Glock the construct would appear to be a scale of assessment of the salience of the specific religious motives. Subsequently, a reconstructed integrated model would enter the stage of measurement of religiosity. Within his synthesis of the reconstructed approaches for measuring religiosity, Huber adopts the theoretical framework of the Psychology of Personal Constructs (Kelly 1955b). This theoretical frame allows for the disaggregation of the motivational approach by Allport from its fixation on specific theological patterns and brings it together with the multifaceted domains of human religious expression. Kelly's theory of Personal Constructs can best be classified as constructivist. His use of the term construct implies perceptional and evaluative patterns or templates that are created and constantly modified by experience. Moreover, constructs can be explicit or implicit, verbally expressed or unarticulated in any form, consistent or inconsistent with each other, logically deduced or just felt (Kelly 1986, 22). By definition, such a framework provides borders in which every individual can develop his or her own worldview, postulate own principles, and fill the 'space' with personal meanings. Kelly himself describes his idea of man as "man as a scientist" (Kelly 1986, 18). Thus, theological patterns of interpretation can be relocated to the subjective realm and are no longer confounded with the measurement of salience or importance of such constructs and the frequency of the derived behavior. Interestingly, the motivational subsystems as Allport saw them, can be put in order with the psychological containers of personal constructs which Kelly postulates as being hierarchical. Furthermore, the various religious dimensions can be summed up in a religious subsystem. Building upon this synthesis, Huber proposes four postulates for the new multidimensional measurement model (Huber 2003, 180-194):

1. The experience and behavior of a human being are controlled by constructs and construct systems.
   Definition: A construct system is religious when its semantics refer to 'something ultimate'.
2. The strength of the experience- and behavior-regulating effects of a religious construct system depend on its centrality in the personality of an individual.
3. The direction of the experience- and behavior-regulating effects of a religious construct system depends on (alternatively constructible) effecting theological contents and patterns of interpretation.
4. Religious experience and behavior (R) are a function of the centrality $(cent)$ and content $(cont)$ of religious construct systems (cs): $R = f(cent_{cs}, cont_{cs})$.

Within Huber's critique and evaluation of the approaches by Allport and Glock one notion appears repeatedly – the separation of the theological content and the strength of the effect which belief unfolds in the motivational system. Despite not being postulated as two components of the new approach such an allocation is reasonable and essential. The title of his book "Centrality and Content" already gives a clue about the new model. When leaving the theological component that is the "content" aside, the psychological component that is the "centrality" becomes available to an empirical test via operationalization. After the analysis of the works of Allport and Glock Huber proposes in the synthesis a way of assessing the centrality-component of the newly postulated centrality of religiosity-model while paying attention to the following parameters: the assessment should be unconfounded with the theological contents, the motivational status should be assessed via intensity and consistency of the representative profile of religious experience and behavior which is covered by Glock's model with its 5 dimensions (Huber 2003, 171-174). The author slightly modifies the designation of the dimensions. The ideological, intellectual and experiential dimensions keep their names, while the devotional one becomes private practice and ritual becomes public practice. Most of all, this modification became meaningful after the introduction of an interreligious extension of the CRS, wherein private practice is not only operationalized by prayer but also by meditation, and public practice not only contains questions about Christian Sunday Service, Friday Prayer for Muslims, or Meetings at the Synagogue but any kind of religious service done in a group. A graphical representation of the model is given in Figure 1.

The core dimensions can be characterized as follows, the short forms which are commonly used in the thesis' text are written in parenthesis:

- ideological core dimension (ideology): the subjects of the ideological core dimension are the beliefs and patterns of plausibility. A major focal point is the plausibility and existence of a non-material, transcendent sphere or reality. A person does not need full, in-depth knowledge about every aspect of the transcendent to believe in it. The more convinced a person is by the plausibility and existence of something transcendent the more important the interactions with it become for that person. The concepts can be theistic or pantheistic, respectively, the existence of God or something divine.
- intellectual core dimension (intellect): the intellectual core dimension revolves around interest, knowledge, and hermeneutical expertise. The more frequently a person thinks about religious issues, the more often the religious matter is activated in their reflections. The more religious a person becomes the more she or he can present, explain, and elaborate on her or his views, simultaneously building more religious knowledge. Therefore, the focal point in this core dimension is cognitive processing.
- experiential core dimension (experience): within the experiential core dimension the focus lies in the "contact with ultimate reality" which leaves traces in the forms of feelings and perceptions. Building a parallel between the two possible patterns of theistic or pantheistic conceptualizations of transcendence, two experiential patterns can be derived, an interactive and a participative one respectively. Prototypical experiences are the feeling of the presence of something holy or taking part in something divine.
- private practice core dimension (private practice): the subject of the private practice core dimension is the devotion of an individual to some kind of individualized religious activities

and rituals in a private space. Two non-redundant forms exist when it comes to addressing the transcendent sphere: prayer and meditation. While prayer corresponds with the interactive pattern of interaction with transcendence, meditation relates to the participative pattern to one's self or a universal principle.

- public practice core dimension (public practice): the core dimension of public practice takes the fact that religious individuals have some kind of relationship with religious communities into consideration. Moreover, religious communities are the place for common religious rituals and communal activities. The frequency and regularity with which someone takes part in common religious activities are archetypal for this core dimension.

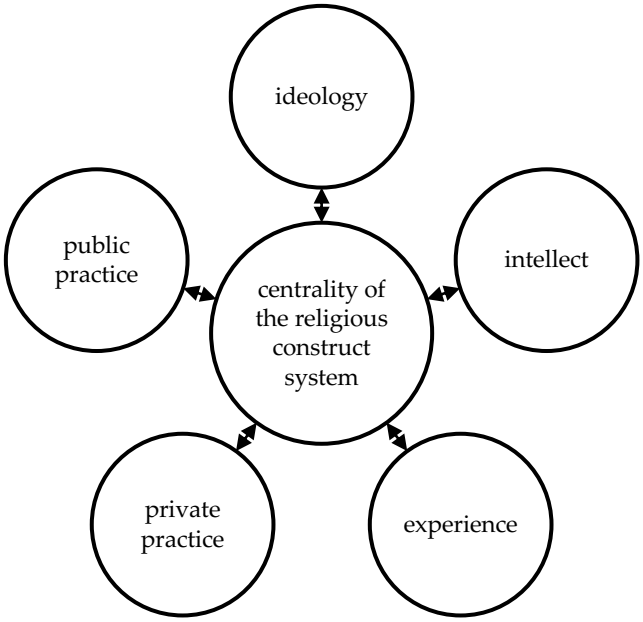


Figure 1. Schematic representation of the centrality-component of the centrality and content-model of religiosity[1].

In the theoretical synthesis passage, Huber proposes an operationalization of the psychological centrality-component of the centrality and content-model which he calls the Centrality of Religiosity Scale (CRS). The CRS is designed to be parsimonious and unconfounded with theological contents of different religious traditions, and form-specific (Huber 2003, 195). The latter characteristic implies that each of the dimensions has its form of expression which has to be captured accurately. Furthermore, an important extension of the basic versions of the CRS was introduced in 2008 by adding three so-called interreligious versions: CRSi-7, CRSi-14, and CRSi-20 (Huber 2008). The three basic and the three interreligious versions are the present state of the development of the CRS. Their building principles, structure and calculations of the composite score are presented in the subsequent paragraphs.

1.3. The Centrality of Religiosity Scale

The Centrality of Religiosity Scale operationalizes the centrality-component of the centrality and content-model of religiosity. The scale distillates the model to a self-report measure with a short, an intermediate, and a long version: CRS-5, CRS-10, and CRS-15 respectively. Their interreligious extensions are named CRSi-7, CRSi-14, and CRSi-20. All versions are built upon the five so-called

[1] The names of the dimensions in the model are slightly modified from the original of Huber (2003, 197), because after the introduction of the interreligious operationalization of the model in 2008 abstracter designations were introduced.

core dimensions of religiosity: ideology, intellect, experience, private practice, and public practice. The link between the assessment of the expressions of religiosity in each of the five relatively independent dimensions and centrality is done through the calculation of a composite score. In order to make the link clearer the logic of the relationship of the core dimensions and the centrality-component can be reverted. The following paragraphs shed more light on this subject matter.

The centrality-component of the centrality and content-model indirectly depicts the importance or salience of the religious construct system within the ensemble of all of an individual's constructs. A direct assessment of the position in the hierarchy is also possible via e.g., the questions "How religious do you think are you?" and "Despite the fact of how religious you think of yourself, what do you think: how spiritual are you?". However, the direct assessment is biased as it is not clear what respondents thinks of when asked these questions. On the one hand, they may think about the frequency of attendance of religious services, or the frequency of prayer or meditation, the strength of belief, or the frequency of reading holy scriptures or some holy experiences. Therefore, a scale that asks about more or less objective occurrences of religious experience and behavior assesses religiosity indirectly but is less biased. In the CRS the centrality-component is mapped within the scale as the composite score of the respondent's ratings. The composite score is calculated as the average of the re-coded item scores. The re-coding shrinks all answer scales that are longer than 5-levels back down to 5-levels (see Table 3, right column). The resulting composite score is called the CRS–index. This index represents the centrality-component, which is derived from all 5 core dimensions via the indicators. After the calculation of the CRS-index, the author suggests three categories that allow for a distinction between different levels of religiosity via the index. Respondents with an index of 1.00-1.99 are considered non-religious. Someone scoring between 2.00 and 4.00 is religious, and an index of higher than 4.00 indicates a highly religious believer.

The items of all CRS–versions are reported in Table 1. In the basic versions, each dimension is represented by an equal number of items. Thus, in the CRS-5 each core dimension of religiosity is represented by one item, in the CRS-10 by two, and in the CRS-15 by three items each. In the interreligious version, the two core dimensions experience and private practice include an additional item differentiating in the interactive and participative patterns. Hence, each has an additional item in the CRSi-7, two additional items each in the CRSi-14, and finally, in the CRSi-20 the core dimension of private practice contains three additional items, while the experiential dimension has two further items, resulting in a total of 20 items. Thus, the 20 items version includes all of the shorter versions. Table 2 explains the composition of the CRS versions.

In the publications that constitute the empirical testing of the centrality-component in this thesis only the CRS-5 and CRSi-7 items are used. In Table 1 these are the items 1; 2; 3; 4; 4b; 5; 5b.

Table 1. Overview of the CRS items.

Item	Dimension	Item Text	Answer Pattern
1	Intellect	How often do you think about religious issues?	b
2	Ideology	To what extent do you believe that God or something divine exists?	a
3	Public pr.	How often do you take part in religious services?	c
4	Private pr.	How often do you pray?	d
4b	Private pr.	How often do you meditate?	d
5	Experience	How often do you experience situations in which you have the feeling that God or something divine intervenes in your life?	b
5b	Experience	How often do you experience situations in which you have the feeling that you are in one with all?	b
6	Intellect	How interested are you in learning more about religious topics?	a
7	Ideology	To what extent do you believe in an afterlife—e.g., immortality of the soul, resurrection of the dead, or reincarnation?	a

Item	Dimension	Item Text	Answer Pattern
8	Public pr.	How important is to take part in religious services?	a
9	Private pr.	How important is personal prayer for you?	a
9b	Private pr.	How important is meditation for you?	a
10	Experience	How often do you experience situations in which you have the feeling that God or something divine wants to communicate or to reveal something to you?	b
10b	Experience	How often do you experience situations in which you have the feeling that you are touched by a divine power?	b
11	Intellect	How often do you keep yourself informed about religious questions through radio, television, internet, newspapers, or books?	b
12	Ideology	In your opinion, how probable is it that a higher power really exists?	a
13	Public pr.	How important is it for you to be connected to a religious community?	a
14	Private pr.	How often do you pray spontaneously when inspired by daily situations?	b
14b	Private pr.	How often do you try to connect to the divine spontaneously when inspired by daily situations?	b
15	Experience	How often do you experience situations in which you have the feeling that God or something divine is present?	b

Note. CRS—Centrality of Religiosity Scale; pr.–practice. Items marked with "b" e.g., "4b" in the left column of the table are additional items for the constitution of the interreligious form of the CRS, see Table 2 for scale versions' construction. Answer patterns are coded as letters and can be looked up in Table 3.

Within Table 2, it becomes apparent that the construction of the various versions of the CRS follow certain rules. The short versions (CRS-5 and CRS-7, items 1–5b) only contain questions of frequency with the exception of the core dimension of ideology, which asks for salience. In the intermediate versions (CRS-10 and CRSi-14, items 1–10b) the scope is broadened by e.g., adding questions concerning the importance and some key-concepts of religiosity like interest in knowing more or revelation. In the long versions (CRS-15 and CRSi-20, items 1–15) the items examine concrete forms of expression of religiosity, for example, the search for information in media or spontaneous prayers in everyday life. Therefore, short versions of the CRS create the base of the centrality-component while the additional items extend the configuration. The last part of the scale regards the answer patterns which are discussed before the transition to the context of the empirical studies.

Table 2. Composition of the short, intermediate and long version of the CRS.

Format	Basic	Interreligious
Short	1; 2; 3; 4; 5	short basic + 4b; 5b
Intermediate	above + 6; 7; 8; 9; 10	intermediate basic + 4b; 5b; 9b; 10b
Long	above + 11; 12; 13; 14; 15	long basic + 4b; 5b; 9b; 10b; 14b

Note. CRS—Centrality of Religiosity Scale. See Table 1 for an overview of the items.

The re-coded answers of the respondents give access to the underlying hermeneutics of the presence of the personal construct or religiosity. When the respondent answers on the frequency and importance-scales (Table 3) the presence of the personal constructs in personality is captured. Therefore, the higher the score the clearer the presence. A score of 1 or 2 indicates no or only a marginal presence. A score of 3 specifies the transition area to clear presence which is linked with scores between 4 and 5 (Huber and Huber 2012, 720). Two of the answer patterns are kept objective ("c" and "d" in Table 3) by asking for frequencies relative to a weekly or annual cycle. The other two answer patterns are bound to a 5-level subjective scale of either frequency (pattern "b" in Table 3) or

importance (pattern "a" in Table 3). The author of the scale states that empirical tests have shown that the subjective patterns in questionnaires do not differ substantially from objective patterns (Huber 2003, 232-236).

Table 3. Answer options for the CRS items.

Pattern		Wording	Numerical Code
Importance /Salience	a	very much so—quite a bit—moderately—not very much—not at all	5-4-3-2-1
Frequency	b	very often—often—occasionally—rarely—never	5-4-3-2-1
	c	more than once a week—once a week—one to three times a month—a few times a year—less often—never	5-5-4-3-2-1
	d	several times a day—once a day—more than once a week—once a week—one to three times a month—a few times a year—less often—never	5-5-4-3-3-2-2-1

Note. Answer options "a" and "b" are subjective, while answer options "c" and "d" are objective. The numerical code is used in the re-coding of the items to a 1 to 5-numerical scale. The first answer option corresponds with the first number in the chain, the second answer option with the second and so on.

To shortly characterize and classify the CRS in the light of other scales available in the study of the psychology of religion, there are plenty of scales with many different purposes. For example, Hill and Hood Jr. (1999) identified 125 scales on "measures of religiosity"–as they call their book. Since then, the field has evolved and in 2014 Hill conservatively estimated a further 100 new scales for assessment in the psychology of religion and spirituality (Hill 2014). The wealth of measuring instruments at some point has led to some consensus in the field. The interest in assessing the phenomena in the psychology of religion bears what scholars in the field call the *paradigm of measurement* (Gorsuch 1984). This means that in recent decades (mid 20th century to the beginning of the 21st century) scales were the driving force of the psychology of religion. Phenomena in the field were dominantly studied by empirical assessments rather than the development of new theories while of course adopting new paradigms from neurocognitive or evolutionary psychology. At the beginning of the 21st century a suggestion was made by Emmons and Paloutzian (2003) to shift the standard toward a *multilevel interdisciplinary paradigm*. The CRS makes a suitable contribution to this paradigm as it integrates two approaches that are widely known and spread in the literature of sociology and the psychology of religion.

Going back from paradigms to the measurement itself and taking the categorization of 13 common domains in the measurement of religiosity, i.e., scales that assess:

1. general religiousness or spirituality,
2. religious or spiritual well-being,
3. religious or spiritual commitment,
4. religious or spiritual beliefs,
5. religious or spiritual development,
6. religious attachment,
7. religious social participation or religious/spiritual support,
8. religious or spiritual private practice,
9. religious or spiritual history,
10. religious or spiritual experiences,
11. religion or spirituality as a motivating force,
12. religious or spiritual coping with adversity,
13. religious or spiritual meaning and values.

The CRS falls into the first category: scales that assess general religiousness or spirituality. This position belongs to level I-measurements on a more abstract level which means that it is suitable for

studies on a dispositional rather than functional (level II-measurements) religiousness or spirituality (Hill 2014).

Recently Herzog et al. (2020) applied an ecological view to the three levels of macro-, meso-, and microlevel and thereby classified the CRS as a representant of what they call a *combinational micro-level-approach*. Thus, showing that the scale fits its purpose in operating on an individual level and giving access to the dimensions captured by it and their psychological implications.

1.4. Religious and Cultural Contexts of the Scale Examination

1.4.1. Applications of the CRS Worldwide

The first empirical application of the CRS was done within a sample of university students where the first constructed CRS version, the CRS-10 showed acceptable to good psychometrical properties per subscales (Huber 2003, 238). In a sample of $N = 644$ students, the subscale of ideology had a Cronbach's α of $\alpha = 0.74$, the subscale of ideology $\alpha = 0.79$, the subscale of private practice $\alpha = 0.88$, the subscale of experience $\alpha = 0.84$, and the subscale of public practice $\alpha = 0.89$.

Table 4. List of applications of the CRS worldwide including studies and qualification theses.

Category	Country	Application Count	Category	Country	Application Count
I. more than ten applications	Germany	166	II. more than one but less than ten applications	Tanzania	3
	USA	75		Georgia	3
	Switzerland	38		Finland	2
	Indonesia	33		Nigeria	2
	Pakistan	33		South Africa	2
	Poland	31		Spain	2
	Austria	27		Romania	2
	Philippines	22		Croatia	2
	UK	21		Israel	2
	India	20		South Korea	2
	Malaysia	15		Belarus	2
	Australia	11		Norway	2
	Canada	11		Ghana	2
II. more than one but less than ten applications	Russia	7		Japan	2
	Greece	6	III. one application	Argentina	1
	Ireland	5		Bulgaria	1
	Turkey	4		Chile	1
	Brazil	4		Guatemala	1
	France	4		Latvia	1
	Thailand	4		Morocco	1
	China	4		Singapore	1
	Lithuania	4		Serbia	1
	Netherlands	3		Slovenia	1
	Belgium	3		Ukraine	1
	Italy	3		Portugal	1
	Sweden	3		**Total**	**598**

Note. CRS–Centrality of Religiosity Scale. The list is based on a systematic search of publications as well as personal communication of the author of the scale with interested researchers worldwide. The left part of the table is the beginning of the list and the right part is its continuation. The list is sorted in descendent order and was last updated in September 2020. The table contains applications of all versions of the CRS (i.e., CRS-5/-10/-15, CRSi-7/-14/-20).

Since then, the scale was applied several hundred times in all kinds of research areas and genre of empirical studies. The most systematic application was integrated into the project "What the World Believes" run by the Bertelsmann Foundation since 2007. Table 4 shows a list of countries with a corresponding count of CRS applications. See also Figure 15 in the general Appendix for a graphical representation of the data.

The collection of application in Table 4 is based on a literature search as well as records of personal communication of the author of the scale with interested researchers from all over the world. There are some hotspots like Germany, the US, and Switzerland and a total of 13 countries that count more than 10 applications of the scale. The scale is widespread in Germany and Switzerland as both countries are linked to the biography of the author of the scale and because the language in which the scale was originally published is German. Interestingly, the USA has 75 applications although the first translation into English was available in 2008 and despite there being no major textbooks in the field of psychology of religion and spirituality reviewing the CRS in the last decade (2010-2020, Paloutzian and Park 2014; Paloutzian 2017; Hood, Hill, and Spilka 2018; Pargament, Exline, and Jones 2013).

1.4.2. CRS in Romania, Georgia, and Russia

From the list in Table 4 three countries are of special interest as they form the background for the empirical examination of the centrality-component with the CRS. All of them fall into category II – countries with more than one but less than ten applications of the CRS. The three countries are:

- Romania: with two empirical applications of which one is a validation of the CRS by Huza (2018) and the other one took place within the project on religion and human rights among adolescents lead by Hans-Georg Ziebertz et al. (2017).
- Georgia: with three empirical studies of which two were run in collaboration with the author of the scale. The data of these two projects is analyzed in the publication "Validation of the Short Forms of the Centrality of Religiosity Scale in Georgia" included in this thesis. The last one is an application within the project on religion and human rights, same as in Romania (Ziebertz et al. 2017).
- Russia: with seven empirical studies Russia has more than Romania and Georgia. Out of seven, two applications are linked with the cumulative dissertational thesis written by Irina Bulanova (Буланова 2014a, 2014b, 2015). One study was done by Vorozheykina (Ворожейкина 2014), another one by Prutskova and Markin (Пруцкова and Маркин 2017) and yet another one by Prutskova alone (Пруцкова 2017). The common topic of the mentioned studies is the investigation of the religious identity, its decomposition, and typology. The last two out of seven studies were run in cooperation with the author of the scale and their databases are included in the present thesis in the article "Validation of the Short Forms of Centrality of Religiosity Scale in Russia".

From the perspective of total applications, the studies in Georgia, Romania, and Russia constitute a very small part. Nevertheless, studying religiosity in them contributes to the research on religiosity with the CRS.

Globally seen, these three countries have some interesting aspects in terms of religion. Romania with a total population of around 21.5 million of which 98.5% self-identify as Christians, has the second-highest Christian population (in percent) worldwide, with Samoa being number one with 98.8% (Johnson and Grim 2013, 15). Georgia, with a population of 4.3 million is the smallest country among the three. It has an 85,1% share of Christians who predominantly belong to the Georgian Orthodox confession. Last but not least, Russia is the largest country among the three under investigation. It ranks third among the countries with the most Christians in absolute numbers. With a population of around 143.0 million, it has 116 million Christian believers (81.2%) with Brazil and the USA in second and first places in this ranking (Johnson and Grim 2013, 15). On the other hand, Russia has a high religious diversity with respect to the size of the country. On a normed scale of zero to one for religious diversity, it counts 0.88, e.g., Australia, Canada, the UK, and the US have 1.00 and

places like the Holy See (Vatican City) 0.00. Moreover, for the sake of relativity, island states such as Tuvalu, Tokelau, St Helena all have 0.04 (Johnson and Grim 2013, 103). Russian is the fourth-most spoken language among Christians with Spanish being the first, English the second, and Portuguese third (Johnson and Grim 2013, 18). When regarding the global shift of Christianity from the northern to the southern hemisphere (Latin America and Africa), Russia is one of the three countries (US, Russia, Germany) which are still in the list of the top 10 countries with the most Christians. Russians are rated third place among those with large diasporas worldwide (Johnson and Grim 2013, 326). Thus, studying the main country will help understand the people in the diaspora too.

1.4.3. Christian Orthodoxy in Romania, Georgia, and Russia

Romania, Georgia, and Russia share common ground in terms of religion in that their populations are predominantly Christian Orthodox. The Orthodox branch within Christianity consists of about 219 million believers, with Russia, Romania and Georgia containing more than 50% of them.

Regarding Orthodox Christianity, in the context of this thesis, it is important to know that all Russian, Romanian, and Georgian Orthodox Churches were under the communist regime between 1917 and 1990/1991. Therefore, despite long-lasting roots going back to the first apostles, the 20th century is marked by persecution, demolition, and eradication of the parishes and churches in these countries. Since the end of the Soviet Union, the Orthodox Church regained the area of its former reach and influence in the countries. Anecdotical evidence of the turn towards Christian Orthodoxy lies in the baptism of the former minister for foreign affairs of the USSR Eduard Shevarnadze in 1992 who at that time was the president of Georgia (McGuckin 2008, 71). Therefore, studying the change in religiosity in Russia, Georgia, and Romania offers the possibility to track an interesting local, Eastern European shift in Christianity. Whether the CRS is suitable for this or not, is investigated in the studies included in this thesis.

1.5. Research Goal and General Hypotheses

Since the introduction of the multidimensional model of centrality of religiosity, a comprehensive model test in the realm of Eastern Europe's Orthodox Christianity has not been done yet. The model's ability to encompass and function with highly religious Christian Orthodox believers has also not been examined so far. Combined with the two previous points a third merely methodological issue arises. The model has not yet been tested for consistency in time. Therefore, this scientific investigation combines three studies in which the performance of the centrality of religiosity model is addressed under various conditions. First, the model is compared within two denominations in Romania regarding its performance in a highly religious setting, one of them is Christian Orthodoxy. Second, the model is tested within two representational samples in Georgia concerning its consistency and ability to show changes in religiosity in the population in Georgia. Third, the centrality of religiosity model is examined regarding its performance in two Russian samples for model consistency over time.

In short, the application of the multidimensional structure with its operationalization in 1) cross-sectionally highly religious believers of different denominations and 2) in predominantly Christian Orthodox representative samples of Georgia and Russia with two time-points is the object of the present thesis. Hypotheses linked with the examination of the CRS were 1) to find at least configural invariance in all samples, 2) to find metric invariance with the CRS-5 in the studies in Georgia and with the CRS-5 and CRSi-7 in Russia, and 3) to find scalar invariance with the CRS-5 in the study in Georgia. The hypotheses are shown in detail in the respective studies in the main part of the thesis.

2. Method

Throughout the examination of the centrality-component of the centrality and content-model in Romania, Georgia, and Russia some statistical methods are used repeatedly and some only once. Therefore, the techniques which are central to this thesis are listed and described shortly in the following paragraphs. They should only give a general orientation of the statistical processes and their purposes in the concrete analyses.

2.1. Reliability

Reliability has at least a twofold meaning as a statistical term. Often, reliability is used in the meaning of precision of an instrument to capture a theoretical concept(s) accurately, meaning the state of being free from random error in terms of the classical test theory. This first meaning is often referred to as internal consistency. However, the other important aspect is the external consistency of a psychometrical tool, meaning the degree of change from one application to another. The former meaning is of high importance for this thesis and is discussed in 2.5. Confirmatory Factor Analysis. The latter meaning is no less important. Two different reliability coefficients are used in Romania, Georgia, and Russia to report the internal consistency of the CRS-5 and CRSi-7:

- τ–equivalent: Cronbach's α (Cronbach 1951) is a popular parameter for internal consistency. It assumes that there is a generic factor that explains all indicator variances while the factor loadings are set to be equal, in other words, to be τ–equivalent. Because of its popularity, Cronbach's parameter was calculated in each of the three studies included in the main part of this thesis.
- τ–congeneric: an alternative way of assessing the reliability of a scale is the family of congeneric reliability parameters. Compared to Cronbach's α they do not assume a general factor and equal factor loadings but examine the factorial structure of the indicator variances and covariances and calculate a value of internal consistency based on the hierarchy and the loadings of the factors. The congeneric parameter used in the studies of the CRS-5 and CRSi-7 in Romania, Georgia, and Russia is McDonald's ω_t (McDonald 1999, 90).

The calculation of internal consistency with both introduced coefficients is done with all samples available in all included articles. If somewhere in the text only ω is mentioned, it is used to depict ω_t (t for total). There is another McDonald's ω–coefficient the hierarchical ω_h which assumes a multifactorial structure of a scale. This is not the case with the CRS-5 and CRSi-7, therefore, the ω_t is used.

2.2. Missing Value Procedure

Different approaches are possible in handling missing values in the data. In two of three studies (Romania and Russia) included in this thesis missing data was an issue. Georgia was an exception because the data was collected via interviews and all respondents had answered the CRS-items. In the Romanian sample, only data with no missing values was used for the analysis. This is equal to a listwise deletion. In the Russian datasets, a multiple imputation (Schafer 1997, 194-245) via stochastic regression imputation (Rubin and Little 2020, 73-76) was done with IBM AMOS version 26 to replace missing values in the data.

2.3. Matching

Matching of cases between two samples according to some predefined variables in the data represents a data preprocessing procedure which leads to less bias in the results due to control of covariates to a certain degree (Ho et al. 2007). The matching procedure includes the calculation of propensity scores according to different mathematical algorithms of which the researcher can choose one. The parallelization of the covariates age, gender, and religious affiliation with the "optimal match"-algorithm (Hansen and Klopfer 2006; Rosenbaum 1989) was used for the data preprocessing with two Russian datasets in *R* (R Development Core Team 2020).

2.4. *Exploratory Factor Analysis*

In two of three studies (Georgia and Russia) exploratory factor analysis (EFA) with Maximum Likelihood estimator (ML) is calculated in IBM SPSS versions 26 and 27 as a preceding step of the confirmatory factor analysis (CFA). The goal is to explore the underlying structure with the given indicators of the five core dimensions of ideology, intellect, experience, private and public practice. If more than one factor should be identified oblique varimax factor rotation would apply. The EFA is omitted in the study in Romania because a one-factor structure was not only identified within data from Russia and Georgia with the short forms of the CRS but in other recent studies in other countries as well (del Castillo et al. 2020; Esperandio et al. 2019; Kambara et al. 2020).

2.5. *Confirmatory Factor Analysis*

All confirmatory factor analyses are based on the same statistical model of one general factor represented by one latent variable and five reflective indicators represent the core dimensions of the centrality of religiosity (see Figure 2). The presented configuration is called the measurement model of the CRS. Its configural invariance is assumed in all six samples in the included studies. An important difference between the CRS-5 and CRSi-7 statistical models can be found in the indicators of the core dimensions of experience and private practice. In the CRSi-7 there is an additional item per aforementioned dimension. Therefore, prior to any further analyses, the maximum value of the two items is taken and placed into the indicator of private practice and experience.

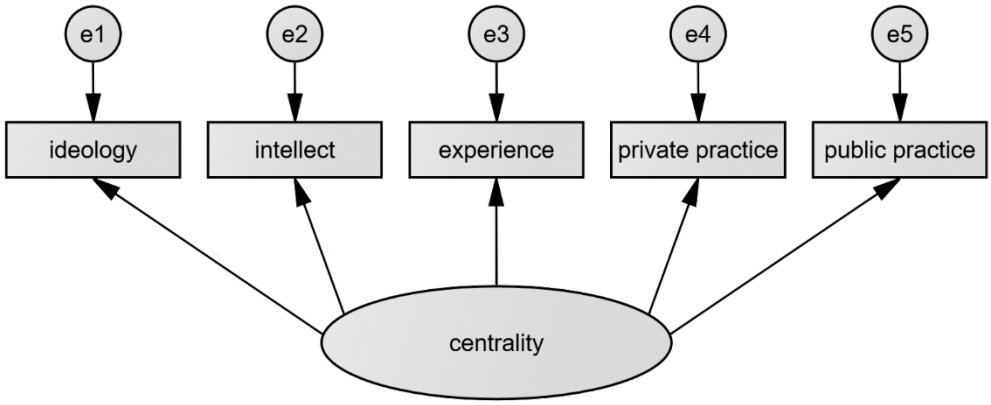


Figure 2. Measurement model of the centrality of religiosity-component of the centrality and content-model[2].

The CFAs in all three studies are done with the iterative ML estimator. In the analyses with the Georgian and Russian but not with the Romanian datasets, the multigroup technique is used to model the time-invariance of the statistical model. The distinct groups represent different samples from different time points. The CFAs constitute the core of the examination of whether the centrality-component and the five core dimensions of the centrality and content-model are prone to a statistical test of their time-invariance. Restrictions are put on the model parameters to compare the models in distinct samples. The grade of restrictions differs in the studies. In the multigroup–CFA in the models for Russian data, restrictions are only put on the factor loadings, as well as the variances and covariances of the residuals. Whereas in the models for Georgian data, restrictions are also put on the mean structure of the latent variable and indicator means resulting in restrictions on the means of the factor, factor loadings, indicator means, variances and covariances of the residuals. The constraints

[2] Small circles represent the residuals of the indicators which themselves are depicted as rectangles. The oval represents the latent variable of centrality of religiosity with five arrows which stand for the factor loadings.

in the CFA with Russian data represents a test of metric invariance and the CFA with the data from Georgia a test of scalar invariance. Therefore, it was possible to test for a change in the latent mean in Georgia which represents the mean of centrality of religiosity and thus the change in centrality of religiosity in Georgia itself.

In all three studies included in the thesis recommendations by Hu and Bentler (1999) are used for the evaluation of the global goodness of fit criteria in the CFA. Hence, acceptable fit of the models is stated by following criteria: $RMSEA(\leq 0.06, 90\%\, CI \leq 0.06, pclose > 0.05)$, $SRMR(\leq 0.08)$, $CFI(\geq 0.95)$, and $TLI(\geq 0.95)$. The chi-square test of model fit is not included in the model evaluation criteria as it is sensitive to sample size and tend to reject good fitting models with high numbers of cases (Cochran 1952; Gulliksen and Tukey 1958, 95-96; Jöreskog 1969, 200; Bentler and Bonett 1980, 591). However, the chi-square with the corresponding p-value is reported for every model in the thesis as it is the basic coefficient for many goodness of fit indices.

The selected goodness of fit keys represent three different families of indices. The chi-square and the standardized root mean residual (SRMR) values give an estimation of the absolute model fit based on the chi-square difference between the observed and the model implied covariance matrices while the SRMR is based on the difference of the residuals of these matrices respectively. The Comparative (CFI, Bentler 1990) and the Tucker-Lewis Fit Indices (TLI, Bentler and Bonett 1980) are from the family of relative fit indices and show the model performance compared to a null model. Hence, their values show the relative position of the model. The root mean square error of approximation (RMSEA, Browne and Cudeck 1993) is a fit index adjusted for model parsimony and therefore, penalizes for model complexity when multiple models should be compared and one is to be selected.

Considering the nomenclature in the results section of the confirmatory factor analyses, a latent-X notation is used throughout the text (Brown 2015, 48).

2.6. Bootstrapping

Bootstrapping is a statistical procedure of repeated sample drawing with replacement from an already drawn populational sample. Simply put, it is a resampling procedure. This approach allows estimating the standard error for a point-estimator of a parameter in the model and thus the confidence interval of such a parameter (Chernick 2008, 1). The parameter can be any specific part of the model for example a factor loading or covariance of the residuals etc. Bootstrap procedures are used in all articles in this thesis to provide 90% bias-corrected confidence intervals of point estimates in the statistical models. A further important function of the bootstrap procedure used in the analyses is to counteract the non-normal multivariate distribution where it applies.

2.7. Notation

Parameter estimates in factor analyses are labeled with Greek letters: λ—factor loading, τ—intercept of the indicator, κ—factor mean, φ—factor variance, δ—with one-digit subscript designates variance of residual, δ—with two digits subscript designates covariance of residuals, ξ represents the factor. Parameter estimates for the core dimensions receive subscripts with a numbered x: x_1 for ideology, x_2 for intellect, x_3 for experience (interactive and participative), x_4 for private practice (prayer and meditation), and x_5 for public practice. Parameter estimates are reported with two decimals sometimes with three decimals if it is important for differentiation and comparison.

All three articles included in this cumulative thesis have been published in a peer reviewed journal by the time of printing of the dissertation (investigation in Romania: Ackert, Plopeanu 2020c; in Georgia: Ackert et al. 2020a; investigation in Russia: Ackert, Prutskova, and Zabaev 2020b). The paper containing the examination in Romania was the last to be published but is the first one presented in the empirical part of the thesis followed by the studies from Georgia and Russia.

3. Examination in Romania: "Short Forms of the Centrality of Religiosity Scale: Validation and Application in the Context of Religious Individualism of Orthodox and Pentecostal Christians in Romania"

Abstract: This article presents a validation study of the short forms of the Centrality of Religiosity Scale (CRS) in Romania, followed by an examination of religious individualism among Orthodox and Pentecostal Christians. In a first step, the validity and reliability of the short forms of the CRS, namely the Abrahamitic CRS-5 and the interreligious CRSi-7, are tested in Romania. In a second step, the differences in attitudes regarding calling—a Weberian concept—are examined between Orthodox and Pentecostal Christians in Romania. For these examinations, we used data from a survey conducted in Romania in 2018 ($N = 547$). The results show that the CRS performs well in the Orthodox ($n = 273$) and Pentecostal subsamples ($n = 274$). Moreover, based on the applied confirmatory factor and path analyses, on the one hand, we propose that calling attitudes stand out among Pentecostal Christians compared to Orthodox Christians. On the other hand, the Orthodox Christians make more use of religious advisers (priests), hereby expressing a different individual religious attitude of preferring to be advised rather than called. Furthermore, path analyses suggest that calling has neither a direct nor an indirect effect on religiosity among the Orthodox Christians while Pentecostal Christians' religiosity is not directly linked to an adviser but to calling. The gender of the respondents is identified as a factor that is, directly and indirectly, related to religiosity. The results are discussed in the frame of religious individualism.

3.1. Introduction

This study makes use of the concept of "religious individualism". Taking into account the particular characteristics of both Orthodoxy and Pentecostalism Christianity, a few brief explanations are needed for further interpretations. Religious individualism is used in the text in the meaning of ideas, such as autonomy from a hierarchical religious community, personalization of religion, and religious identity which develops via personal experience with transcendence. Thus, religious individualism embraces the dynamics of religiosity—an individual characteristic—and not of the social interactions among the religioners.

3.1.1. Emerging Religious Individualism

Within the Protestant Church, the idea of religious individualism stems from the self-understanding as a common priesthood of the believers. In comparison to medieval Catholicism, the connection between priesthood and any form of prophethood acquires new valences in Protestantism, a fact highlighted by Weber in the Sociology of Religion (1963, pp. 46–47): "the personal call is the decisive element that distinguishes the prophet from the priest. The latter lays claim to authority by virtue of his service in a sacred tradition, while the prophet's claim is based on personal revelation and charisma. It is no accident that almost no prophets have emerged from the priestly class... The priest, in clear contrast, dispenses salvation by virtue of his office."

According to Weber, Protestantism (particularly Calvinism) and Catholicism differ in one integral aspect. Protestantism is marked by the uncomfortable pressure, even anxiety, regarding damnation without the possibility of change through the priest or sacraments. This concept strongly contrasts Catholic ideas. Additionally, this inner tension is underlined by the doctrine of predestination, which generated the need for a systematic, rationalized and diligent ethical code of conduct for everyday issues: "The rationalization of the world, the elimination of magic as a means to salvation, the Catholics had not carried nearly so far as the Puritans (and before them the Jews) had done. To the Catholic, the absolution of his Church was a compensation for his own imperfection. The priest was a magician who performed the miracle of transubstantiation, and who held the key to eternal life in his hand. One could turn to him in grief and penitence. He dispensed atonement, the hope of grace, the certainty of forgiveness, and thereby granted release from that tremendous tension to which the Calvinist was doomed by an inexorable fate, admitting no mitigation. For him, such

friendly and human comforts did not exist. He could not hope to atone for hours of weakness or of thoughtlessness by increased goodwill at other times, as the Catholic or even the Lutheran could. The God of Calvinism de-manded of his believers not single good works, but a life of good works combined into a unified system. There was no place for the very human Catholic cycle of sin, repentance, atonement, release, followed by renewed sin. Nor was there any balance of merit for a life as a whole which could be adjusted by temporal punishments or the Churches' means of grace."

This new religious "status" implied a different path to salvation for every true believer. In this new system, salvation could solely be attained through true belief, without any direct "magical" help, with no need for the priest and sacraments, the Church, or even God (Weber 2005, p. 61). The rejection of any institutional intermediation went so far that even the most common funeral rituals and ceremonies were eradicated: "The genuine Puritan even rejected all signs of the religious ceremony at the grave and buried his nearest and dearest without song or ritual in order that no superstition, no trust in the effects of magical and sacramental forces on salvation, should creep in." (Weber 2005, p. 61).

Moreover, it is clearly stated that "Combined with the harsh doctrines of the absolute transcendentality of God and the corruption of everything pertaining to the flesh, this inner isolation of the individual contains, on the one hand, the reason for the entirely negative attitude of Puritanism to all the sensuous and emotional elements in culture and in religion, because they are of no use toward salvation and promote sentimental illusions and idolatrous superstitions. Thus, it provides a basis for a fundamental antagonism to a sensuous culture of all kinds. On the other hand, it forms one of the roots of that disillusioned and pessimistically inclined individualism which can even today be identified in the national characters and the institutions of the peoples with a Puritan past, in such a striking contrast to the quite different spectacles through which the Enlightenment later looked upon men." (Weber 2005 pp. 61–62).

In contrast to Lutheranism, a very obvious reference to religious individualism (the circumvention of the private confession) and inner isolation, Calvinism captures a radically new perspective towards a mundane life, in the sense that every believer should have increased their level of morality in the absence of the regular confession of sins (Weber 2005, pp. 62–63). Furthermore, in terms of guiding each life to salvation, Weber insisted on the fact that "In practice, this means that God helps those who help themselves. Thus, the Calvinist, as it is sometimes put, himself creates his own salvation, or as would be more correct, the conviction of it. But this creation cannot, as in Catholicism, consist in a gradual accumulation of individual good works to one's credit, but rather in a systematic self-control which at every moment stands before the inexorable alternative, chosen or damned." (Weber 2005, pp. 69–70). Therefore, this newly introduced religious perspective based on uncertainty and isolation was not seen as fatalism. On the contrary, it was seen as a psychological trigger and stimulus for a more diligent, rational, and systematic way of acting successfully in a mundane environment. In short, this presented the only way a believer could ensure his or her possible election (Holton 1985, p. 110).

Taking together the ideas of Max Weber, one can conclude that he considered that capitalism may have developed based on the new understanding of the position a believer has had toward God by adopting the concept of calling (German original: Berufung, the term is written in italic in the text for discrimination of the concept from any other English meaning). He appealed to the Pauline idea of calling, emphasizing one of the best-known Biblical references for the later Calvinist idea of predestination (Ghosh 2014, p. 233): "For many are called, but few are chosen." (Matthew 22: 14).

For instance, the root of the term "Beruf" has a double meaning in its original German language. The first one relates to religious calling, while the second one stems from carrying out an economic profession (Ghosh 2014, p. 239). In this sense, Weber (2005, p. 63) stated that "Already with Luther, we found that work in a calling, within an economy with a division of labor, was derived from the ideal of "brotherly love". However, what remained for Luther an unstable, purely conceptual construction became, for the Calvinists, a central component of their ethical system. "Brotherly love", because it can only be in service to God's glory and not to fulfill physical desires, is expressed primarily in the fulfillment of the tasks of a calling, tasks that are given by lex naturae (natural law).

In the process, work in a calling becomes endowed with a peculiarly objective, impersonal character, one in the service of the rational formation of the societal cosmos surrounding us. The marvelously purposeful construction and furnishing of this cosmos, which is apparently designed to serve the usefulness of the human species (according to the revelation of the Bible as well as natural insight), in fact, allows work in the service of all impersonal, societal usefulness to promote the glory of God—and hence to be recognized as desired by Him.

Another noteworthy concept we have to deal with is humility. It was noted that Weber made a clear distinction between humility among Lutherans and calling in the case of Calvinists or between "asceticism-mysticism" (Zabaev and Prutskova 2019). Accordingly, Weber (2005, p. 58) stated that "the church fathers of Lutheranism took a firm stand on this doctrine: salvation can be lost (amissibilis), but it can be won back through penitent humility and faithful trust in the word of God and the sacraments." Moreover, while humility "is commonly equated with a sense of unworthiness and low self-regard, true humility is a rich, multifaceted construct that is characterized by an accurate assessment of one's characteristics, an ability to acknowledge limitations, and a 'forgetting of the self'." (Tangney 2002, p. 411). The same author underlines the six facets of humility: "the key elements of humility seem to include: an accurate assessment of one's abilities and achievements (not low self-esteem, self-deprecation); an ability to acknowledge one's mistakes, imperfections, gaps in knowledge, and limitations (often vis-a-vis a "higher power"); openness to new ideas, contradictory information, and advice; keeping one's abilities and accomplishments - one's place in the world—in perspective (e.g., seeing oneself as just one person in the larger scheme of things); a relatively low self-focus, a "forgetting of the self," while recognizing that one is but part of the larger universe; an appreciation of the value of all things, as well as the many different ways that people and things can contribute to our world" (Tangney 2002, p. 413). Similarly, Powers et al. (2007) define humility as conduct that should promote the relinquishment of every haughty, conceited, arrogant, egotistical, and narcissistic trait in favor of a rational-objective observation of an individual in relation with other people, while implying respect and forgiveness. Other scholars found that humility or being humble is highly linked with positive psychology (Peterson and Seligman 2004), job performance (Johnson et al. 2011), the capacity to strengthen social relationships (Davis et al. 2013), the inner desire to accept criticism (Delbecq 2006), the ability to be more helpful (LaBouff et al. 2012), generous (Exline and Hill 2012), thankful to others (Dwiwardani et al. 2014) and, extremely important, cooperative (Hilbig and Zettler 2009). Therefore, humility emerges as another personal characteristic of believers which should at least facilitate or even support the adaptation to new situations without emphasizing the inner command to become active as in contrast to calling. Hence, humility is a further alternative for religious individualism for a believer according to a certain tradition of which Orthodoxy is one example.

Between Eastern Orthodoxy and Western religious paradigms, there are important differences in the sense that the first one also promotes salvation through humility, following the words of Paul: "This saying is trustworthy and deserves full acceptance: Christ Jesus came into the world to save sinners. Of these I am the foremost." (1 Timothy 1: 15) and "Nothing is to be done out of jealousy or vanity; instead, out of humility of mind everyone should give preference to others." (Philippians 2: 3). Therefore, an Orthodox Christian may cultivate the virtue of considering himself/herself the worst among all. However, this is done with a pedagogical purpose, without any kind of despair. On the contrary, it is done with joy and hope in the face of a merciful, powerful, and omniscient God (Gassin 2001) and the belief that the ultimate task of a faithful person is life in the afterlife. Further, it underlines a dissonance between Eastern Orthodoxy and Western secular psychology based on the fact that the latter emphasizes justice and individual rights and not the spiritual act of forgiveness of the sinner (Gassin 2001).

Zabaev (2015) found that humility and obedience are essential moral ingredients that influence the economic thinking of Russian monastic Orthodoxy. In the Christian Orthodox tradition, humility, as well as the sense of regret over sin, play an important role in the way that a person enriches their spiritual life through purification and redemption (Chirkov and Knorre 2015).

Zabaev (2015, pp. 162–63) emphasized the aspect that "the specific character of Orthodoxy is that it regards not vocational or professional activities as a means to salvation, but obedience and humility in relation to a (spiritually) more experienced person or a person at a higher place in the hierarchy." Such a person with a higher position in the hierarchy in the Orthodox church is represented by a priest. Thus, humility as a kind of conduct implies that its religious facet involves the omnipotence of an omniscient God (Templeton 1997). Interestingly enough, other scholars emphasized that humility can be compared to an open-minded perspective about life and salvation and a true desire to learn from mistakes (Hwang 1982).

3.1.2. Religious Individualism and Collectivism in Orthodox Christianity

Orthodox Christianity preaches the unity between salvation and the Church, as stated in the old Latin principle "Extra Ecclesiam nulla salus". The Orthodox Church has been organized hierarchically since ancient times and transmitted its tradition, above all the revelation embedded in the human community, the Church (Stăniloae 1997a). Different new religious denominations challenged the roles of priests; however, one can find verses from the Bible supporting the significance of the hierarchy, e.g. "And in the same way, let the younger men be ruled by the older ones. Let all of you put away pride and make yourselves ready to be servants: for God is a hater of pride, but he gives grace to those who make themselves low." (1 Peter 5: 5).

The older ones are represented by the more experienced and educated believers who took the office to serve the community. Deacon David concludes on the legitimation of the priest by pointing to the fact that through the Holy Spirit, Jesus gave his Apostles the power to help correct sins and finally, to offer their forgiveness through Eucharist. This power was later passed on to the bishops and priests (David 1994, p. 278): "Then he breathed on them and said, Receive the Holy Spirit; If you forgive anyone's sins, they will be forgiven. But if you don't forgive their sins, they will not be forgiven." (John 20: 22–23). Thus, in the Orthodox Church the priest is vested with the power to perform all of the Church's holy mysteries. Moreover, in Matthew (28: 19), the priests' mission is obvious: "Go then, and make disciples of all the nations, giving them baptism in the name of the Father and of the Son and of the Holy Spirit". Hence, the mission has been put in the hands of a legitimate individual but to build up a community. While building up is the first step, the maintenance of a religious community is always a threat by a division. In deacon David's book (1994, p. 286), he sums up the teaching of the bible by saying that there should not be any division between the Church and priesthood, as was experienced by Jesus through His Apostles. After His Resurrection, Jesus instituted for all His teachings to be transmitted around the world and also that the believers should take care of the communion and not be divided by individual aspirations. A striking passage to this notion is written by Apostle Paul to the Corinthians: "For even as the body is one and yet has many members, and all the members of the body, though they are many, are one body, so also is Christ. For by one Spirit we were all baptized into one body, whether Jews or Greeks, whether slaves or free, and we were all made to drink of one Spirit. For the body is not one member, but many." (1 Corinthians 12: 12–14).

Believers should consider that they have their path and freedom for salvation. Nonetheless, the path alone is not enough, efforts should only be assessed within the Body of Christ, the Church, and through the grace of the Holy Trinity (Stăniloae 1997c). Thus, individuals' efforts for salvation through faith and good deeds should be complemented with a regular and reasonable struggle to receive the benefits given by Holy Sacraments within the Church (Stăniloae 1997b). A believer receives the grace of salvation which should, however, be further accompanied throughout life by spiritual effort, perseverance, and will. In sum, it is considered that Orthodox believers need to behave according to their faith and good deeds, to receive inside the Church, in community, the divine grace which, further, could be kept only through an active personal spiritual struggle and effort (Stăniloae 1997b). Moreover, the priest has an important role in this process.

3.1.3. Hypotheses and Study Goals

The hermeneutical analysis so far has let us contrast two ideas. In the first place, Christian Orthodox tradition will rather let believers follow an authorized religious person even when they feel the calling of God. In the second place, Christian Protestant tradition will detach a believer from religious authorities and let him or her follow God's calling rather than being guided by a religious leader. Therefore, we expect that for an Orthodox believer, a priest will play (directly and indirectly) a greater role than a pastor to a Protestant one. Conversely, calling for a Protestant will be more salient than for an Orthodox. Finally, we expect that the Orthodox have more humility, i.e., higher values than Protestants.

To analyze these hypotheses, we resort to the measurements of religiosity, humility and calling, and assessment of the presence of religious authority in the social realm of the believer. The variables are analyzed via path analyses, which means that path regression coefficients will be consulted to test the formulated hypotheses. In the present study, Orthodox Christians are represented by the Romanian Christian Orthodox parishioners and as an instance, for the Protestants, we aimed at the Romanian minority of Pentecostal Christian parishioners.

In brief, this study aims to validate the short forms of the Centrality of Religiosity Scale and explore the pathways of religious traditions of Orthodoxy and Pentecostalism in their effects on the religiosity of a believer. To achieve the goal, in the first step, the two short forms of the Centrality of Religiosity Scale (CRS-5, CRSi-7, Huber 2012) are validated via factorial analysis. In a second step, the version that performs better is used for a path analysis of the religious traditions with the identified relevant religious and demo-graphical variables.

3.2. Method

Throughout the method, results, and discussion sections, we will make use of specific abbreviations in the subscription, such as "Orth." (with and without a capitalized "O/o") and "Pent." (with and without a capitalized "P/p"), to mark the Orthodox and Pentecostal Christians subsamples.

3.2.1. Sample

Table Ro-5. The demographic composition of the sample in Romania split in Orthodox and Pentecostal Christians.

		Orthodox	**Pentecostals**	**Total Sample**
Area of living	urban	92.3%	89.8%	91.0%
	rural	7.7%	10.2%	9.0%
Gender	female	71.4%	49.6%	60.5%
	male	28.6%	50.4%	39.5%
Being a student	yes	52.7%	17.9%	35.3%
	no	47.3%	82.1%	64.7%
Living with a partner	yes	32.2%	62.0%	47.2%
	no	67.8%	38.0%	52.8%
Being a parent	yes	23.8%	52.2%	38.0%
	no	76.2%	47.8%	62.0%
Educational level	basic secondary	0.7%	6.9%	3.8%
	high school	40.3%	55.5%	47.9%
	master's degree	50.2%	36.5%	43.3%
	doctorate	8.8%	1.1%	4.9%
Religiosity	non-religious	2.9%	1.1%	2.0%
	religious	26.4%	2.9%	14.6%
	highly religious	70.7%	96.0%	83.4%

Note. $n_{pent} = 274,\ n_{orth} = 273,\ N_{total} = 547$. Level of religiosity is calculated by the index of the CRS-5.

In total, 643 participants ($n_o = 326$ and $n_p = 317$) from different Romanian counties in the East and North-East, such as Iași, Suceava, Botoșani, Bacău, Neamț, Vaslui, Vrancea, and Galați, were questioned for our analysis. From this total number, only 547 participants were analyzed ($n_o = 273$ and $n_p = 274$). See Table Ro-5 for more details on the demographic composition of the final sample. Some participants were excluded because the analyses were intentionally restricted to only those respondents who answered all CRS-5 items, the whole Calling-Scale, and the items on making use of religious advisers, as well as their advice on everyday issues.

The data were collected in 2017 and 2018 within the "Project on Religion and Economics in Russia, Georgia, Romania, and Switzerland". The sample is a convenience sample, consisting of respondents who were neither pre-selected by any strategy nor part of a group of already available people, e.g., university undergraduates or social survey pools. While this type of sampling strategy bears the major problem of limiting the main results to the targeted Orthodox and Pentecostal subsamples provided in our analysis, we consider the main findings vital for interreligious studies between Orthodox and Pentecostal traditions.

The paper-pencil questionnaires were physically distributed and collected in parishes or churches by the research team members and assistants or through the support of priests and pastors. The questionnaires were completed following the ethical norms regarding the assurance of total anonymity and confidentiality. The reason for the survey was clearly emphasized to the interviewees, especially in the case of those belonging to a minority denomination, like Pentecostalism, who proved to be a little bit reserved towards the scientific investigation.

Most of the respondents live in urban areas (91%). Women represent 60.5% of the total sample. Moreover, 35.3% of the interviewees are currently students, 47.2% of the respondents live together with a spouse or partner, and 38% have one or more children.

In this sample, the mean age of Orthodox respondents was $M = 27.27$ ($SD = 9.79$) and $M = 33.61$ ($SD = 12.65$) within the Pentecostal subsample. In terms of the level of education, the Orthodox sample contains more individuals with higher levels of education in comparison to the Pentecostal one. Nonetheless, across the board, both groups had individuals with at least basic secondary up to academic education completed.

3.2.2. Instruments and Analyses

3.2.2.1. The Centrality of Religiosity Scales CRS-5 and CRSi-7

In the case of the Romanian samples, we refer to both the CRS-5 and CRSi-7 scales (Huber and Huber 2012). The CRS-5 is suitable for research in Abrahamitic contexts, i.e., Judaism, Islam, Christianity, whereas the CRSi-7 is designed to be applied within religious traditions that do not only acknowledge one God but many deities and different images of Gods, e.g., like in Hinduism or Buddhism to name a few. In short, all items on the CRS-5 are included in the CRSi-7, but not vice-versa.

The CRS is widely used in various studies related to religiosity (e.g., some recent publications, Zarzycka et al. 2020; Riegel 2020; Ackert et al. 2020a; Ackert et al. 2020b; Esperandio et al. 2019; Huza 2018; Fradelos et al. 2018). The Centrality of Religiosity Scale has a comprehensive and economic way of assessing personal religiosity by including the dimensions associated with ideology, intellect, religious experience, private, and public religious practices. In the CRS-5, each of these five dimensions is linked to a particular item, while the CRSi-7 contains two additional items related to private practice (meditation along with prayer) and religious experience (participative along with interactive pattern). The items are formulated concerning the salience or frequency of the religious attitudes, experience, and behavior. The answers are given on 5 to 7-point Likert scales depending on the items (see Table Ro-A1 in Appendix Ro-1 for more details) which are finally transformed to a 5-level scale according to the recommendations made by the authors (Huber and Huber 2012). After the transformation and recoding, the items have the same standard interpretation from low to high with a minimum of 1 and a maximum of 5. Therefore, the interpretation of the answers becomes

straightforward with a higher score showing higher levels of the Centrality of Religiosity when condensed to an index.

3.2.2.2. Core Dimensions of the CRS

The dimension of ideology deals with the probability of the existence of transcendence. The item associated with it is "To what extent do you believe that God or something divine exists?".

In terms of the intellectual dimension of religiosity, an individual who often thinks about religious issues is more predisposed to increase the stock of religious knowledge and, thus, to facilitate the ease of acquiring hermeneutical skills. Accordingly, the corresponding item is "How often do you think about religious issues?".

When it comes to the dimension of religious experience, it is considered that a person who often feels or perceives the existence of God or something divine intervening in his or her life is more open to understand and practice religiosity. The associated question from the CRS-5 is: "How often do you experience situations in which you have the feeling that God or something divine intervenes in your life?". Additionally, the CRSi-7 includes a further item for this dimension: "How often do you experience situations in which you have the feeling that you are one with everything?".

The dimension of private practice concerns behaviors, such as prayer or meditation, aimed at connecting with something superior to worldly, material reality. If an individual uses such practices more frequently, then he/she is more connected with the divine. The corresponding question on the CRS-5 is: "How often do you pray?", and "How often do you meditate?" on the CRSi-7.

The last dimension on the Centrality of Religiosity Scale concerns the public practice of religiosity. The more frequently a person participates in religious services, the more connected his/her religious life is with a social body. The associated item for this dimension is: "How often do you take part in religious services?". The English-Romanian translations of the items of the CRS-5, the CRSi-7 are presented in Table Ro-A1 in Appendix Ro-1.

3.2.2.3. CRS-Index

The items of the CRS can be summed up in a unifying index. The CRS-5 index is the average score of all 5 items and can range from 1 to 5.

Two additional items are needed to compute the CRSi-7 index: "How often do you meditate?" and "How often do you experience situations in which you have the feeling that you are one with all?". Therefore, the core dimensions of experience and private practice have two items each in the CRSi-7, rather than one item like the other dimensions. To compensate, only the item with the higher value is taken into account in further analysis. The CRSi-7 index is then calculated as the average of the remaining 5 values resulting in a possible range of 1 to 5. The authors of the scale proposed to divide the scores into 3 categories. Individuals with a score ranging from 1.00 to less than 2.00 are considered *not religious*, from 2.00 to 4.00 *religious*, and those with a score of 4.00 to 5.00 as *highly religious*. These three CRS index categories facilitate the description of the sample and comparisons concerning religiosity.

3.2.2.4. Translation of CRS

The translation of the original items of the CRS-5 into Romanian received special attention. Previously, Huza (2018) made the first attempt to translate the long version of the Centrality of Religiosity Scale (CRS-15) into Romanian. As can be seen below, the Romanian translation presented in this article differs from Huza's in several ways. The changes mainly stem from the desire to address a model with a higher generality and a lower religious specificity related to concepts and terms of different religious traditions, therefore, making it more broadly applicable. We propose that the items are worded in a more general manner and can hence, not only be understood by the parishioners belonging to certain religious denominations but by any spiritual and religiously unaffiliated person.

Moreover, we took three requirements for the operationalization of the specific items of the CRS into consideration. The first one is based on the consideration that each of the five dimensions of the

CRS should be extremely concise and precise. Secondly, one must take a crystal-clear distinction between indicators and different theological contents into account, to systematically analyze the distinct effects of these two components of religiosity. Finally, the third requirement concerns the general methodology of self-report measures in social sciences. From the initial scale construction on, one of the key aspects was the frugality of the scale (Huber 2003, pp. 228-230), which was considered in the present translation. Thus, the translation shown in Table Ro-A4 in Appendix Ro-1 was done in an interactive consultation with the author of the scale to fulfill the requirements.

3.2.2.5. Calling and Humility Scale

As shown in Table Ro-A2 of Appendix Ro-1, the scale for Calling and Humility consists of 25 specific items presenting different perspectives an individual can have towards economic exchange. The respondents were asked to rate various statements about characteristics of persons (Zabaev and Prutskova 2019), with answer options ranging from 1 to 6 (1—"very much like me"; 2—"like me"; 3—"moderately like me"; 4—"a little like me"; 5—"not like me"; 6—"not at all like me"; 99—"hard to answer").

The Calling and Humility Scale has 4 distinct subscales, namely Calling, Humility, Careerism, and Ressentiment, nonetheless, in the path-analyses we only use the Calling subscale scores. In a preliminary data check, the Humility subscale has proven not useful in our sample as it did not distinguish between the two denominations and therefore was excluded from path-analyses $t(545) = -1.185,\ p = 0.237$. Thus, we renounce the description of the subscale's calculation but report the items of it for transparency in Table Ro-A3 of Appendix Ro-1. The computation of the Calling subscale is an elementary average of its component items.

3.2.2.6. Questions on Religious Adviser and Advice

The survey included certain items particularly related to the practice of asking a priest or pastor for advice on everyday issues. Firstly, the respondents indicated by a dichotomous option (yes–1; no–0) whether they had a religious adviser. Secondly, they stated how often they seek advice on a 5-step scale (1–"never", 2–"rarely", 3–"occasionally", 4–"often", 5–"very often", and 99–"hard to answer"). Besides the Calling subscale, both previous items operationalize the concept of religious individualism, an element that was under investigation in this article.

A person who is sincerely and consently attached to a priest or pastor, asking for real advice in different contexts, is naturally considered a religious one. With caution, it could be stated that such a person is attached to an exogenous factor and therefore, does not present the same values as an individualist person, understood in the Protestant way. More specifically, it is possible that a non-religious person would ask for religious services if he/she were superstitious and thought such a person could fulfill or accomplish various desires (winning a lottery or a better job) or emotional needs and expectations.

3.2.2.7. Demographic Variables

The survey included a set of demographic variables (i.e., gender, age, completed level of education, current educational status, main occupation, relationship status, marital status, number of children, cohabitation with the partner, and area of living). From this set, gender was chosen as an exogenous variable for personal religiosity in the path analyses by examining the results of the correlational analyses among the demographic and religiosity related variables.

3.2.2.8. Psychometric Properties of the CRS

Descriptive statistics (i.e., means and standard deviations) are reported, along with the τ-equivalent reliability estimate of internal consistency, widely known as Cronbach's alpha for the CRS-5 and the CRSi-7. Besides τ-equivalent reliability, McDonald's omega (ω_t) is reported as an estimate of congeneric reliability. The core dimensions of the scales are correlated and presented in tables to demonstrate the inner associations of the scale's indicators. The dichotomous variables of

gender and the presence of a religious adviser are correlated by point-biserial correlations, while Bravais-Pearson correlations are calculated for the variables of Calling and the use of advice with the total scores of the CRS-5 and the CRSi-7.

3.2.2.9. Confirmatory Factor Analyses

The CRS has undergone confirmatory factor analyses many times in different linguistic and cultural contexts (some recent examples: e.g., Esperandio et al. 2019; Huza 2019, Ackert et al. 2020a; Ackert et al. 2020b). In Huza's case, the CRS-15 was tested in Romania with 4 different confessions (Orthodox, Catholic, Pentecostal, and Seventh-day Adventist), whereby the Orthodox element comprised 68% of the total sample ($n = 215$). In the present study, the focus lies on both the Abrahamitic and the interreligious short forms, compared to the long Abrahamitic form used by Huza. This analysis supplements the previous and current empirical investigation with the analysis of the CRS in Romania.

The authors intentionally leave out the exploratory factor analysis of the short forms of the CRS in this study before the confirmatory factor analysis (CFA) because of the empirical evidence of the one-factor model with the CRS-5 and the CRSi-7 in the literature (e.g., Ackert et al. 2020a, 2020b; Kambara et al. 2020). Nevertheless, the correlations of the core dimensions are reported and checked for suitability for the CFA. This means that they should be neither too high, which would signal collinearity, nor too low, so as not to indicate independence of the core dimension from each other.

As the short forms both result in 5 manifest indicators with one per core dimension (ideology, intellect, experience, private, and public practice) and one latent variable of Centrality of Religiosity, the postulated models for the CRS-5 and CRSi-7 are built around the centrality, as a latent variable with 5 reflective indicators with uncorrelated residuals (see Figure Ro-3 for a schematic depiction). The models are identified with the factor weight of public practice restricted to equal 1. Starting with a model with uncorrelated residual modification indices greater than $\chi^2 = 3.84$ per degree of freedom (which is round up to 4.00 for practical reasons) leads to an iterative model modification. Model modification is repeated until the global fit indices are met. The final models of the CRS-5 and CRSi-7 with the Orthodox and Pentecostal subsamples should comply with the recommendations by Hu and Bentler (1999). Thus, the CFI (Comparative Fit Index), the TLI (Tucker-Lewis Index), the RMSEA (Root Mean Square Error of Approximation), the SRMR (Standardized Root Mean Residual) are examined to meet the following values: $CFI \geq 0.95$, $TLI \geq 0.95$, $RMSEA \leq 0.06$ with a 90% confidence interval of $CI \leq 0.06$ and a non-significant closeness of fit test statistics ($pclose > 0.05$). The SRMR should be less than or equal to 0.08 ($SRMR \leq 0.08$). Absolute, relative, and parsimony-related indices are combined to achieve a comprehensive, conservative, and reliable evaluation of the calculated statistical models.

With a sample size of $n_{orth} = 273$ and $n_{pent} = 274$ in the subsamples, the non-significant χ^2-test ($p > 0.05$) seems plausible. The reason for that is that the χ^2-test statistics are sensitive to sample size and, therefore, do not work as an absolute normed standard. Considering the χ^2-test statistics, the focus of the evaluation of the global model fit primarily lies in the characteristics listed above the χ^2-test.

Models are computed with raw data and the bootstrap procedure is applied in the CFA with a $B = 200$ to obtain 90% bootstrap corrected confidence intervals for the parameter estimates. The confidence intervals are reported along with the point estimates throughout the result and discussion sections, where possible. The following designation with Greek letters is used in the result and discussion section: λ—factor loading, δ—with one-digit subscript for the variance of a residual and with two digits subscript for the covariance of residuals. Any statistical parameter linked to ideology receives an x_1, intellect x_2, experience x_3, private practice x_4, and public practice x_5 subscripts. For example, the correlation of the residuals of ideology and public practice will appear as $\delta_{x_1 x_5}$ in the text sections.

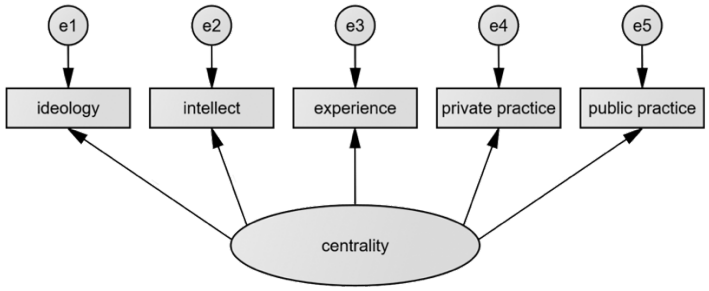


Figure Ro-3. The scheme of the confirmatory factor analysis model of the CRS short forms[3].

The analyses are run with the IBM SPSS (version 27) and AMOS (version 26) software packages. The calculations of the scale reliability are done with the "psych"-package (Revelle, 2020) in *R* (R Core Team 2020).

3.2.2.10. Path Analyses

The path analyses are split in two. Identical models are run with the Orthodox and Pentecostal subsamples. The models comprise 5 manifest variables: gender, *calling*, presence of a religious adviser, advice, and the target variable of religiosity, which is the CRSi-7 score, because of its more general-purpose compared to the CRS-5 and a slightly better model fit in the CFA. Gender is the only exogenous variable, with both direct and indirect paths to religiosity. The indirect channels are mediated by *calling* on the one hand, and religious adviser with advice on the other one. The residuals of *calling* and the presence of a religious adviser are allowed to correlate in the model after an iterative model modification process. The final model is shown in Figure Ro-4.

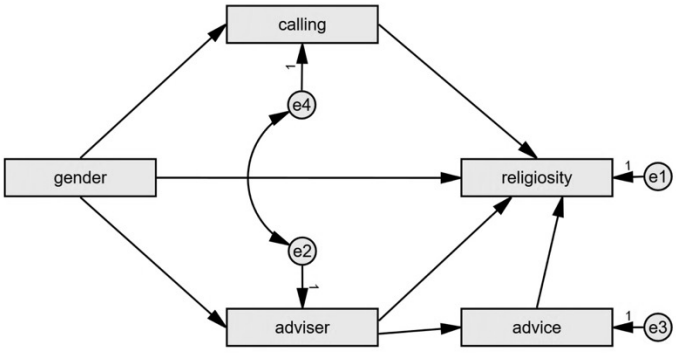


Figure Ro-4. Path analytical model of religious individualism for Orthodox and Pentecostal Christians in Romania[4].

In the case of the Orthodox subsample, the direct paths from gender to *calling* and from *calling* to religiosity are restricted to zero (upper part of the model in Figure Ro-4). For the Pentecostal model, the direct channels from gender to religious adviser and from religious adviser to religiosity, as well as the correlation between the residuals of *calling* and religious adviser are set to zero (lower part of the model in Figure Ro-4). These changes were introduced to the models after an iterative process by

[3] The rectangles show indicators, the circles depict residuals, the oval represents the latent variable, while the straight lines are factor loadings.

[4] The rectangles stand for manifest variables, the circles depict residuals, the curved arrows show covariances, and the straight arrows present regressions.

which non-significant paths were restricted after verification of the results. On the one hand, such restrictions result in the gain of some degrees of freedom and, on the other hand, a stricter model test about the established hypotheses. The final models are evaluated according to the same quality assessment criteria as the CFA (see the section 3.2.2.9. on Confirmatory Factor Analyses).

3.3. Results

3.3.1. Descriptive Statistics

The examination of the CRSi-7 index shows that both subsamples have a high proportion of highly religious persons: Pentecostal 96.0% and Orthodox 70.7%, with 2.9% and 26.4% for religious, and 1.1% and 2.9% non-religious, respectively. Therefore, the conclusions from these samples can be viewed as statements, especially for highly religious believers. These observations are supported by the figures in Table Ro-6. With a range of 1 to 5, all core dimensions indicate a tendency towards the maximum of the scale distribution, especially in the Pentecostal subsample (see the difference of the means). Standard deviations for short forms of the CRS are higher in the Orthodox subsample by all core dimensions and for total scores.

The Calling scale has a range of a minimum of 1 and a maximum of 6. With a mean and standard deviation of $M_o = 4.36, SD_o = 0.77$ for Orthodox and a mean and standard deviation of $M_p = 4.18, SD_p = 0.82$ for Pentecostals the scale shows a statistically significant difference between the two groups $t(545) = -2.58, p = 0.01$ two-tailed. The mean difference with the corresponding 95% confidence interval (CI) is $\Delta M = -0.18[-0.31; -0.04]$ and an effect size of Cohen's with a 95% CI $d = -0.22[-0.39; -0.05]$.

The last metric scale examined is the use of advice which ranges from a minimum of 1 to a maximum of 5. The mean and standard deviation of the Orthodox group is $M_o = 2.68, SD_o = 1.33$ and the mean and standard deviation of the Pentecostal group is $M_p = 2.77, SD_p = 1.19$. An independent *t*-test shows a statistically non-significant difference between the two groups: $t(538.80) = 0.79, p = 0.43$ two-tailed. The mean difference with the corresponding 95% confidence interval is $\Delta M = 0.09[-0.13; 0.30]$. Details of the examined scales and their subscales can be found in Table Ro-6.

Table Ro-6. Means and standard deviations with the difference of the core dimension of the CRS-5, CRSi-7, *calling* and frequency of advice for Orthodox and Pentecostal subsamples.

		Orthodox Christians		**Pentecostal Christians**		**Difference**	
Scale	Dimension	Mean	*SD*	Mean	*SD*	Mean	*SD*
CRS-5	Ideology	4.66	0.70	4.85	0.49	−0.19	0.21
	Intellect	3.60	1.12	4.28	0.87	−0.68	0.25
	Experience	3.99	1.03	4.48	0.70	−0.49	0.33
	Private practice	4.45	1.01	4.82	0.67	−0.37	0.34
	Public practice	3.99	1.12	4.84	0.68	−0.85	0.44
	Total score	4.14	0.79	4.65	0.50	−0.51	0.29
CRSi-7	Ideology	4.66	0.70	4.85	0.49	−0.19	0.21
	Intellect	3.60	1.12	4.28	0.87	−0.68	0.25
	Experience	4.02	1.00	4.50	0.66	−0.48	0.34
	Private practice	4.66	0.83	4.89	0.48	−0.23	0.35
	Public practice	3.99	1.12	4.84	0.68	−0.85	0.44
	Total score	4.19	0.73	4.67	0.45	−0.48	0.29
Calling		4.36	0.77	4.18	0.82	0.18	−0.05
Use of an Advise		2.68	1.33	2.77	1.19	−0.09	0.13

Note. $n_{pent} = 274$, $n_{orth} = 273$. CRS–Centrality of Religiosity Scale. CRSi–interreligious CRS. *SD*–standard deviation. The difference is calculated by subtracting the values of the Pentecostal subsample from the Orthodox one.

3.3.2. Psychometric Properties of CRS-5

The Cronbach's α of the CRS-5 for the Orthodox subsample is good with $\alpha_{orth} = 0.85$, the corresponding McDonald's ω_t is $\omega_{t-orth} = 0.85$. The α-coefficient for the Pentecostal group is slightly lower and acceptable with $\alpha_{pent} = 0.78$, while the corresponding McDonald's ω_t is $\omega_{t-pent} = 0.79$. The reason for the drop in the alpha coefficient within the Pentecostal group can be seen in the lower correlations of the core dimensions among each other.

Table Ro-7. The correlations of the core dimensions of the CRS-5 in the Christian Orthodox and Pentecostal subsamples.

	Designation	CRS-5	Ideology	Intellect	Experience	Prayer
Ideology	x_1	0.76/0.68				
Intellect	x_2	0.74/0.68	0.39/0.28			
Experience	x_3	0.82/0.77	0.60/0.50	0.55/0.44		
Prayer	x_4	0.79/0.73	0.63/0.39	0.39/0.27	0.53/0.40	
Public practice	x_5	0.82/0.78	0.54/0.49	0.48/0.26	0.56/0.49	0.60/0.65

Note. $n_{pent} = 274$, $n_{orth} = 273$. CRS-Centrality of Religiosity Scale. All listed correlations are significant at least on the $p \leq 0.01$ level. In each cell, the number to the left of the slash is the correlation for the Orthodox and to the right of the slash for the Pentecostals.

With regard to the correlations of the core dimensions, all except for the one between prayer and public practice are higher within the Orthodox subsample. Regarding the Orthodox respondents, the range of correlations goes from $r_{orth-x_1x_2} = r_{orth-x_2x_4} = 0.39$ (intellect with ideology and prayer) to $r_{orth-x_1x_4} = 0.63$ (ideology and prayer). In contrast, the Pentecostals range has wider boundaries with a minimum of $r_{pent-x_2x_5} = 0.26$ (intellect and public practice) and a maximum of $r_{pent-x_4x_5} = 0.65$ (prayer and public practice, see Table Ro-7 for more details).

3.3.3. Psychometric Properties of CRSi-7

Besides the calculation of the internal consistency of the CRS-5, the reliability estimation of the CRSi-7 for the Orthodox subsample is good ($\alpha_{orth} = 0.82$), with a corresponding McDonald's ω_t of $\omega_{t-orth} = 0.82$. The α-coefficient for the Pentecostal group is again, same as for the CRS-5, a little lower ($\alpha_{pent} = 0.74$), which is an acceptable value. The corresponding McDonald's ω_t has the same value as $\omega_{t-pent} = 0.74$. Table Ro-8 shows an overview of the correlations of the core dimensions of the CRSi-7. All correlations are higher for the Orthodox group with the highest of $r_{orth-x_1x_3} = 0.58$ (ideology and experience) and lowest $r_{orth-x_2x_4} = 0.33$ (intellect and private practice). In the Pentecostal group, the smallest correlation is of intellect and private practice $r_{orth-x_2x_4} = 0.18$ and the highest goes with $r_{orth-x_1x_5} = 0.49$ to ideology and public practice. The values range between medium and strong correlations suggesting that the core dimensions have at least weak but mostly strong communalities.

Table Ro-8. The correlations of the core dimensions of the CRSi-7 in the Christian Orthodox and Pentecostal subsamples.

	Designation	CRSi-7	Ideology	Intellect	Experience	Private practice
Ideology	x_1	0.76/0.68				
Intellect	x_2	0.75/0.70	0.39/0.28			
Experience	x_3	0.81/0.77	0.58/0.47	0.53/0.43		
Private practice	x_4	0.69/0.57	0.54/0.29	0.33/0.18	0.42/0.31	
Public practice	x_5	0.81/0.74	0.54/0.49	0.48/0.26	0.55/0.45	0.46/0.41

Note. $n_{pent} = 274$, $n_{orth} = 273$. CRSi-interreligious Centrality of Religiosity Scale. All listed correlations are significant on at least the $p \leq 0.01$ level. In each cell, the number to the left of the slash is the correlation for the Orthodox and to the right of the slash for the Pentecostals.

3.3.4. Correlational Analyses

In preparing the path analyses, the bivariate Pearson correlations between the two short CRSs, *calling* and the use of advice show that the CRS-5 and CRSi-7 are strongly correlated in both groups. Further, it demonstrates that *calling* is positively associated with the index of Centrality of Religiosity (CRS-5/i-7) in the Pentecostal group and has an opposite association in the Orthodox one. While *calling* has no association with the use of advice in the case of the Pentecostals, it is weakly associated with the Orthodox subsample. The use of advice has a strong association with the index of Centrality of Religiosity (CRS-5/i-7) of Orthodox people and a moderately strong correlation for the Pentecostals (see Table Ro-9 for more details).

Table Ro-9. The correlation analysis of the variables *calling* and religious adviser with the CRS-5 and the CRSi-7 split in the two subsamples of Orthodox and Pentecostal Christians.

	Orthodox			**Pentecostal**		
	CRS-5	CRSi-7	Calling	CRS-5	CRSi-7	Calling
CRSi-7	$0.99(p \leq 0.01)$			$0.98(p \leq 0.01)$		
Calling	$-0.15(p = 0.01)$	$-0.16(p = 0.01)$		$0.15(p = 0.01)$	$0.15(p = 0.01)$	
Advice	$0.61(p \leq 0.01)$	$0.60(p \leq 0.01)$	$-0.11(p = 0.07)$	$0.24(p \leq 0.01)$	$0.23(p \leq 0.01)$	$-0.03(p = 0.68)$

Note. $n_{pent} = 274$, $n_{orth} = 273$. CRS-Centrality of Religiosity Scale; CRSi-interreligious Centrality of Religiosity Scale. Each cell contains the correlation estimate with its corresponding *p*-value in parenthesis.

For the dichotomous variables of interest (i.e., gender and the presence of a religious adviser), the point-biserial correlation between them is significant for the Orthodox with $r = -0.17$ and non-significant for Pentecostals on a conventional 5% α-level. Gender (0–female, 1–male) is negatively correlated with the Centrality of Religiosity, as measured by the CRS in both groups. The correlation between gender and *calling* is non-significant for the Orthodox but statistically significant with an $r = -0.12$ for the Pentecostals. Regarding the association between Gender and the use of advice, the correlation is negative in the Orthodox group ($r = -0.17$), while non-significant in the Pentecostal one.

Considering the associations of the presence of a religious adviser in the life of the Orthodox believers, there is a moderate, negative association with *calling* and strong, positive correlations with the Centrality of Religiosity and the use of advice. The pattern is somewhat different for the Pentecostal subsample, in which the association of the presence of a religious adviser and *calling* is not significant. While the correlations between the presence of a religious adviser and the use of advice for daily problems are moderate, the associations with the index of Centrality of Religiosity are small and both are statistically significant (see Table Ro-10 for an overview of the correlations).

Table Ro-10. The point-biserial correlations of CRS-5, CRSi-7, *calling*, use of advice with the dichotomous variables gender and presence of a religious adviser, split in the two subsamples of Orthodox and Pentecostal Christians.

	Orthodox Christians		**Pentecostal Christians**	
	Gender	Religious adviser	Gender	Religious adviser
Gender		$-0.17(p = 0.01)$		$0.04(p = 0.55)$
CRS-5	$-0.31(p \leq 0.01)$	$0.54(p \leq 0.01)$	$-0.17(p \leq 0.01)$	$0.16(p \leq 0.01)$
CRSi-7	$-0.31(p \leq 0.01)$	$0.54(p \leq 0.01)$	$-0.17(p \leq 0.01)$	$0.15(p \leq 0.01)$
Calling	$-0.04(p = 0.51)$	$-0.15(p = 0.01)$	$-0.12(p = 0.04)$	$0.04(p = 0.56)$
Advice	$-0.17(p \leq 0.01)$	$0.54(p \leq 0.01)$	$0.08(p = 0.18)$	$0.31(p \leq 0.01)$

Note. $n_{pent} = 274$, $n_{orth} = 273$. CRS-Centrality of Religiosity Scale; CRSi-interreligious Centrality of Religiosity Scale. Coding of gender: 0–female, 1–male. Coding of religious adviser: 0–no, 1–yes. Each cell contains the correlation estimate with its corresponding *p*-value in parenthesis. The parametric correlations between CRS-5, CRSi-7, *calling*, and the use of an advice are reported in Table Ro-9.

3.3.5. Confirmatory Factor Analyses

In terms of global fit, the models were iteratively modified according to the proposed modification indices (MI) until the set-up goodness of fit criteria were met, resulting in models with correlated residuals. Although covariance of residuals is the only possible point of modification in the models, it took up to two residual correlations to get good-to-very good global model fits. The introduced residual correlations differ between the CRS-5 and the CRSi-7 models, as well as between Orthodox and Pentecostal samples, except for the correlated residuals of the indicators of intellect and religious experience–$\delta_{x_2x_3}$ which is common to all models. The generated correlations are reported together with the estimated model parameters in the subsequent sections and discussed in the general discussion section of this paper.

3.3.5.1. CFA of the CRS-5

Regarding the correlations of the CRS-5 indicators (see Table Ro-7), the associations are stronger – in other words, higher correlations – for Orthodox than for Pentecostals, except for the combination of private and public practice with an $\Delta r_{x_4x_5} = 0.05$ in favor of the Pentecostal subsample. The same can be said about the point estimate of the factor loadings of the Centrality of Religiosity–factor on the indicators of the five core dimensions in the CFAs. Considering the global fit, both models achieve excellent results, except for the RMSEA.

3.3.5.1.1. CFA of the CRS-5 in the Orthodox Subsample

Seen globally, the model that received correlated residuals of ideology and public practice $\delta_{x_1x_5} = -0.43[-1.00; -0.19, p \leq 0.01]$, as well as intellect and experience $\delta_{x_2x_3} = 0.29[0.19; 0.4, p \leq 0.01]$, performs well according to all established goodness of fit criteria i.e., $CFI = 1.00$, $TLI = 0.98$, $RMSEA = 0.06\ [0.00; 0.13], pclose = 0.33$, $SRMR = 0.02$, $\chi^2(3) = 5.83(p = 0.12)$. From all model fit indices, only the upper bound of the 90% confidence interval of the RMSEA violates the conventional goodness of fit, which is still acceptable seeing the non-significant closeness of fit probability test value of the RMSEA. Figure Ro-5 presents the graphical representation of the model and the results.

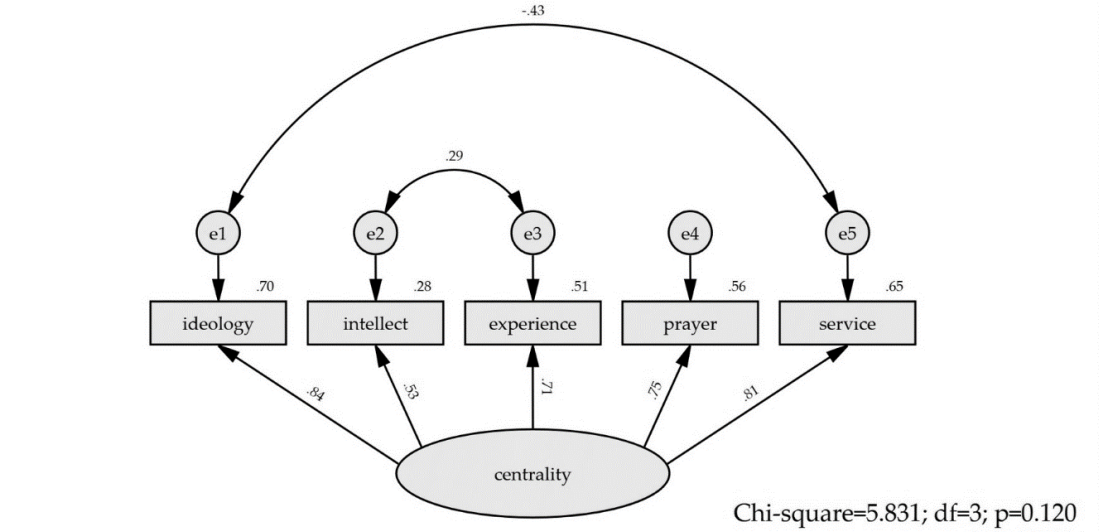


Figure Ro-5. CFA result of the CRS-5 with the Orthodox Christians subsample.

The local fit shows no local points of weaknesses. Each factor loading is statistically significantly different from zero on the $p < 0.001$ level. The factor weights mark at least a salient to a substantial presence of the Centrality of Religiosity factor in the variance of the corresponding indicator. Most unexplained variance is left in the indicator of intellect. With 71% of explained variance, the indicator ideology is best predicted by the latent variable of the Centrality of Religiosity.

According to modification indices, the CFA model received two covaried residuals, the first one from intellect and experience with 90% CI $\delta_{x_2x_3} = 0.29[0.19; 0.40, p \leq 0.01]$, the second one of the residuals is from ideology and public practice is $\delta_{x_1x_5} = -0.43[-1.00; -0.19, p \leq 0.01]$. See Table Ro-11 for a detailed overview of the factor loadings and explained variance of the indicators with the corresponding bootstrap CIs and Figure Ro-5 for the structural representation of the results.

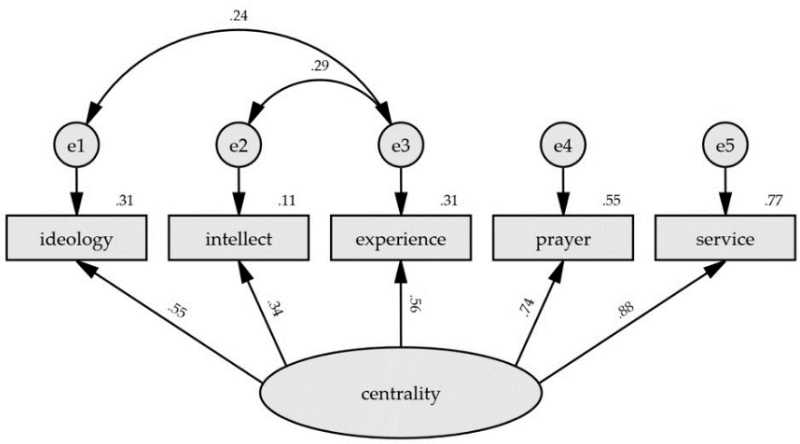
Table Ro-11. The overview of the parameter estimates in the confirmatory factor analysis of the CRS-5 in the Orthodox subsample.

	Designation	**Factor loading– $\boldsymbol{\lambda}[\mathbf{90\%}\ \boldsymbol{CI}, \boldsymbol{p}]$**	**Explained variance– $\boldsymbol{R^2}[\mathbf{90\%}\ \boldsymbol{CI}, \boldsymbol{p}]$**
Ideology	x_1	$0.84[0.76; 0.92, p \leq 0.01]$	$0.71[0.58; 0.85, p \leq 0.01]$
Intellect	x_2	$0.53[0.43; 0.61, p \leq 0.01]$	$0.28[0.18; 0.37, p \leq 0.01]$
Interactive experience	x_3	$0.71[0.64; 0.77, p \leq 0.01]$	$0.50[0.41; 0.59, p \leq 0.01]$
Prayer	x_4	$0.75[0.66; 0.81, p \leq 0.02]$	$0.56[0.44; 0.66, p \leq 0.02]$
Public practice	x_5	$0.81[0.74; 0.88, p \leq 0.01]$	$0.66[0.55; 0.77, p \leq 0.01]$

Note. $n_{orth} = 273$. CRS–Centrality of Religiosity Scale; CI–bootstrap bias-corrected confidence interval, p–probability level of the bootstrap bias-corrected CI. The covariance of the residuals of intellect and experience with 90% CI is $\delta_{x_2x_3} = 0.29[0.19; 0.40, p \leq 0.01]$, the covariance of the residuals of ideology and public practice is $\delta_{x_1x_5} = -0.43[-1.00; -0.19, p \leq 0.01]$.

3.3.5.1.2. CFA of the CRS-5 in the Pentecostal Subsample

The results of the global fit model test propose a very good model fit of the CFA of the CRS-5 in the Pentecostal group with a CFI of $CFI = 0.99$, a TLI of $TLI = 0.97$, a Root Mean Squared Error of Approximation with its 90% bootstrapped corrected confidence interval of $RMSEA = 0.07[0.00; 0.14], pclose = 0.26$, an SRMR of $SRMR = 0.03$, and a chi-square test of $\chi^2(3) = 6.78(p = 0.08)$. All but the upper boundary of the RMSEA confidence interval comply with the setup goodness of fit criteria. Still, the closeness of fit probability value is non-significant for the RMSEA which means that the RMSEA in the population is not statistically higher than 0.05. Figure Ro-6 shows the graphical representation of the model results.



Chi-square=6.784; df=3; p=0.079
CFI=0.990
TLI=0.968
RMSEA=0.068; pclose=0.260
RMSEA 90%-confidence interval=[0.000; 0.137]
RMR=0.013

format=Standardized estimates
number of parameters=12

Figure Ro-6. CFA result of the CRS-5 with the Pentecostal Christians subsample.

Local fit indices show no points of weakness. All factor loadings are statistically different from zero corroborating the indicators as a part of a whole. However, the factor loading of intellect is relatively weak with an explained variance portion of only 11%. The strongest factor loading among the five indicators is with public practice. The factor loadings of ideology and experience explain 31% each, while prayer explains 55% of the variance in their corresponding indicators, respectively. See Table Ro-12 for more details on the factor loadings and explained variance with their bootstrapped bias-corrected confidence intervals. Modification indices indicated two points of improvement in the model. These are the covariances of the residuals of intellect and experience with 90% CI $\delta_{x_2x_3} = 0.29[0.19; 0.39, p \leq 0.01]$ and the ones of ideology and experience with 90% CI $\delta_{x_1x_3} = 0.24[0.13; 0.36, p \leq 0.01]$.

Table Ro-12. The overview of the parameter estimates in the confirmatory factor analysis of the CRS-5 in the Pentecostal subsample.

	Designation	Factor loading– $\lambda[90\%\ CI, p]$	Explained variance– $R^2[90\%\ CI, p]$
Ideology	x_1	$0.55[0.28; 0.72, p \leq 0.01]$	$0.31[0.08; 0.52, p \leq 0.01]$
Intellect	x_2	$0.34[0.19; 0.48, p \leq 0.01]$	$0.11[0.04; 0.23, p \leq 0.01]$
Interactive experience	x_3	$0.56[0.37; 0.68, p \leq 0.01]$	$0.31[0.14; 0.46, p \leq 0.01]$
Prayer	x_4	$0.74[0.53; 0.85, p \leq 0.01]$	$0.55[0.28; 0.73, p \leq 0.01]$
Public practice	x_5	$0.88[0.69; 0.96, p \leq 0.03]$	$0.77[0.48; 0.92, p \leq 0.03]$

Note. $n_{pent} = 274$. CRS–Centrality of Religiosity Scale; CI–bootstrap bias-corrected confidence interval, p–probability level of the bootstrap bias-corrected CI. Covariance of the residuals of intellect and experience with 90% CI is $\delta_{x_2x_3} = 0.29[0.19; 0.39, p \leq 0.01]$, covariance of the residuals of ideology and experience with 90% CI is $\delta_{x_1x_3} = 0.24[0.13; 0.36, p \leq 0.01]$.

3.3.5.2. CFA of CRSi-7

For the CRSi-7, the correlations are higher in the Orthodox subsample for all combinations of core dimensions compared to Pentecostals (see Table Ro-8). If compared to the correlations of the CRS-5 core dimensions, differences can be expected for every bivariate combination with the

contribution of either experience or private practice, because these two receive different values in the CRSi-7 and the CRS-5 version. Indeed, the correlations drop remarkably in each of the combinations with the two mentioned indicators. Furthermore, the change in the correlation of private and public practice which decreases by an $\Delta r_{x_4x_5} = 0.24$ in the Pentecostal group and $\Delta r_{x_4x_5} = 0.14$ in the Orthodox one is noteworthy. Nonetheless, the CFA-models demonstrate decent results.

3.3.5.2.1. CFA of the CRSi-7 in the Orthodox Subsample

Regarding the absolute indices, the CFA of the CRSi-7 shows good parameter values, with an SRMR of $SRMR = 0.02$, and a chi-square of $\chi^2(3) = 6.19(p = 0.10)$. The relative fit indices of a CFI of $CFI = 0.99$ and a TLI of $TLI = 0.98$ also demonstrate that the model reproduces the data well. Only the upper boundary of the RMSEA crosses the set-up quality criteria $RMSEA = 0.06[0.00; 0.13], pclose = 0.30$. The non-significant closeness of fit probability value still shows a population RMSEA lower than 0.05. Figure Ro-7 demonstrates the results of the CFA in a graph.

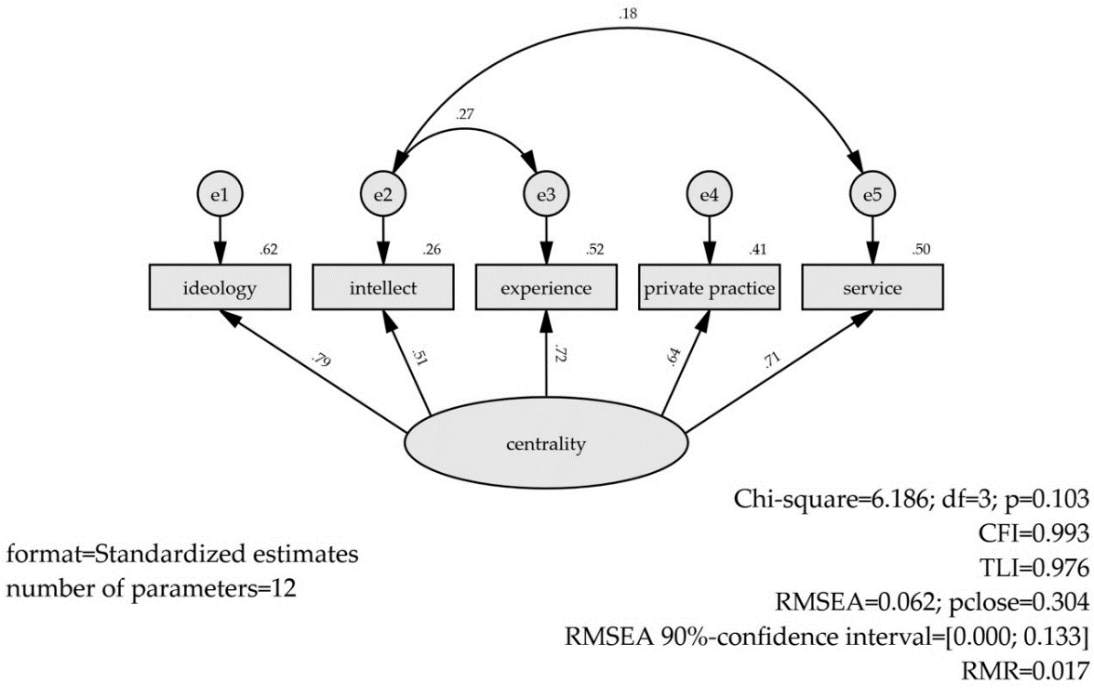


Figure Ro-7. CFA result of the CRSi-7 with the Orthodox Christians subsample.

Regarding the local fit, no points of model weakness can be identified. Factor loadings have at least a salient weight. The corresponding R^2 values have a range of a minimum of 26% for the core dimension of intellect to a maximum of 62% for the core dimension of ideology. The explained variances in the indicators of religious experience, private and public practice are 52%, 41%, and 50%, respectively. Table Ro-13 presents the results in a structured form and with details.

Modifications have been made concerning the covariances of the residuals of intellect and experience reported with 90% CI $\delta_{x_2x_3} = 0.27[0.15; 0.38, p \leq 0.01]$ and the covariance of the residuals of intellect and public practice $\delta_{x_2x_5} = 0.18[0.05; 0.29, p \leq 0.03]$.

Table Ro-13. An overview of the parameter estimates in the confirmatory factor analysis of the CRSi-7 in the Orthodox subsample.

	Designation	Factor loading– $\boldsymbol{\lambda[90\%\, CI, p]}$	Explained variance– $\boldsymbol{R^2[90\%\, CI, p]}$
Ideology	x_1	$0.79[0.69; 0.87, p \leq 0.01]$	$0.62[0.48; 0.76, p \leq 0.01]$
Intellect	x_2	$0.51[0.39; 0.60, p \leq 0.01]$	$0.26[0.15; 0.36, p \leq 0.01]$
Experience	x_3	$0.72[0.64; 0.79, p \leq 0.01]$	$0.52[0.41; 0.63, p \leq 0.01]$
Private practice	x_4	$0.64[0.51; 0.76, p \leq 0.01]$	$0.41[0.26; 0.58, p \leq 0.01]$
Public practice	x_5	$0.71[0.64; 0.79, p \leq 0.01]$	$0.50[0.41; 0.62, p \leq 0.01]$

Note. $n_{orth} = 273$. CRS–Centrality of Religiosity Scale; CI–bootstrap bias-corrected confidence interval, p–probability level of the bootstrap bias-corrected CI. The covariance of the residuals of intellect and experience with 90% CI is $\delta_{x_2x_3} = 0.27[0.15; 0.38, p \leq 0.01]$, the covariance of the residuals of intellect and public practice with 90% CI is $\delta_{x_2x_5} = 0.18[0.05; 0.29, p \leq 0.03]$.

3.3.5.2.2. CFA of the CRSi-7 in the Pentecostal Subsample

The last of the four CFA-models is the confirmatory factorial test of the CRSi-7 in the Pentecostal subsample. With a $CFI = 1.00$ and $TLI = 0.99$, it shows a very good model fit in terms of relative fit indices. In terms of absolute model indices, the same conclusion can be made with an $SRMR$ of 0.02 and a chi-square test value of $\chi^2(4) = 4.73(p = 0.32)$. Only the upper bound of the 90% confidence interval of the $RMSEA$ violates the set-up goodness of fit criteria $RMSEA = 0.03[0.00; 0.10], pclose = 0.62$. The non-significant closeness of fit test demonstrates that the RMSEA in the population is less than 0.05. A graphical demonstration of the CFA results is shown in Figure Ro-8.

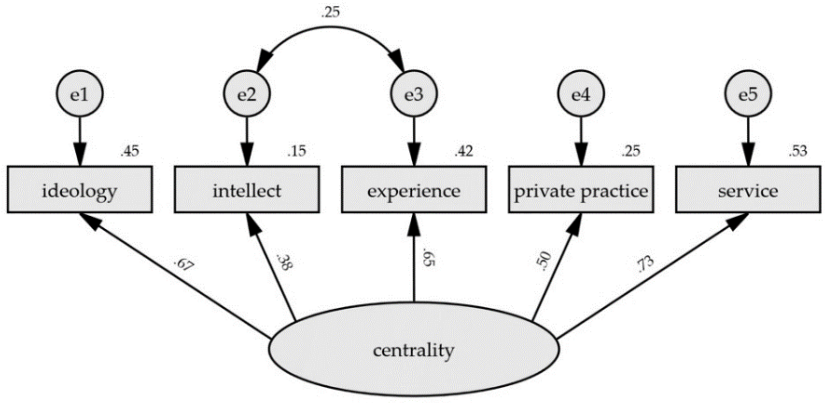


Figure Ro-8. CFA result of the CRSi-7 with the Pentecostal Christians subsample.

The smallest factor loading is shown for the indicator of intellect, while the biggest factor loading relates to public practice. Thus, the explained portions of variances in the indicators range between 15% of intellect and 53% of public practice. Values lying in between are the explained variances of the indicators of private practice, religious experience, and ideology with 25%, 42%, and 45%, respectively. Table Ro-14 shows more details on the factor loadings and the explained variance of the indicators.

One modification is proposed for the CFA by the modification indices with the covariance of the residuals of intellect and experience with its 90% CI $\delta_{x_2x_3} = 0.25[0.05; 0.34, p \leq 0.06]$.

Table Ro-14. The overview of the parameter estimates in the confirmatory factor analysis of the CRSi-7 in the Pentecostal subsample.

	Designation	Factor loading– $\boldsymbol{\lambda[90\%\, CI, p]}$	Explained variance– $\boldsymbol{R^2[90\%\, CI, p]}$
Ideology	x_1	$0.67[0.39; 0.81, p \leq 0.01]$	$0.45[0.15; 0.66, p \leq 0.01]$
Intellect	x_2	$0.38[0.21; 0.53, p \leq 0.02]$	$0.15[0.05; 0.28, p \leq 0.02]$
Experience	x_3	$0.65[0.50; 0.76, p \leq 0.01]$	$0.42[0.25; 0.58, p \leq 0.01]$
Private practice	x_4	$0.50[0.16; 0.69, p \leq 0.01]$	$0.25[0.03; 0.48, p \leq 0.01]$
Public practice	x_5	$0.73[0.51; 0.87, p \leq 0.02]$	$0.53[0.26; 0.75, p \leq 0.02]$

Note. $n_{pent} = 274$. CRS–Centrality of Religiosity Scale; CI–bootstrap bias-corrected confidence interval, *p*–probability level of the bootstrap bias-corrected CI. The covariance of the residuals of intellect and experience with 90% CI is $\delta_{x_2x_3} = 0.25[0.05; 0.34, p \leq 0.06]$.

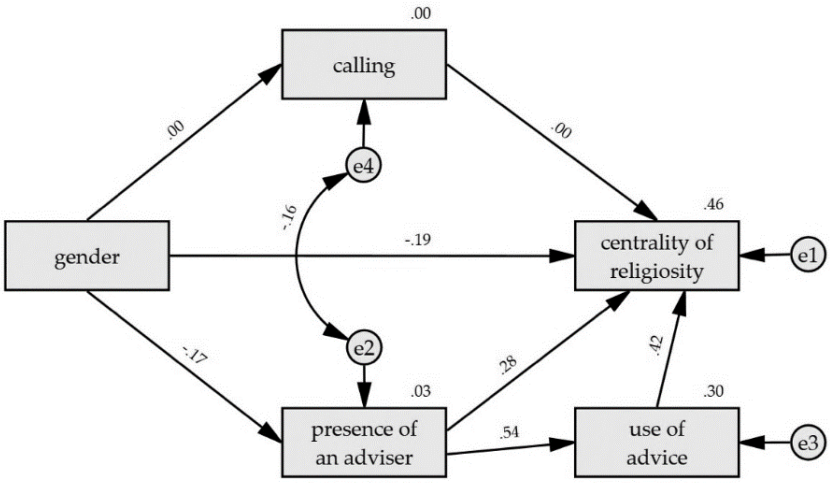
3.3.6. Path Analyses

Generally, models were first run without any restrictions on the parameters, in a second step non-significant paths (parameter estimates) were iteratively restricted to be zero, following the hypotheses of this study. Presented models are the results of that iterative process. Both path analytical models demonstrate a very good model fit in terms of the set-up quality criteria. The model for the Orthodox subsample received one less restriction—that of the covariance of the residuals of *calling* and the presence of a religious adviser—than the model for the Pentecostal group. Therefore, their fit indices are not directly comparable. Still, with satisfactory global fits, the paths in the models show some mechanisms which distinguish the religious cultures of these two presented Christian denominations. The gender variable, as a central exogenous demographic determinant of religiosity, serves as a starting point for the interpretation of the path analyses, which is done in the subsequent paragraphs.

3.3.6.1. Path Analysis in the Orthodox Subsample

With a CFI of $CFI = 0.99$, TLI of $TLI = 0.98$, RMSEA with its 90% CI of $RMSEA = 0.05[0.00; 0.11], pclose = 0.44$, SRMR of $SRMR = 0.03$, and chi-square test value of $\chi^2(4) = 6.50(p = 0.17)$, the path analysis of the Orthodox subsample shows a very good global model fit. Only the upper bound of the 90% CI of the RMSEA crosses the goodness of fit index of 0.08. With a non-significant closeness of fit *p*-value, it can be assumed that the RMSEA is not higher than 0.05 in the population. The review of the local parameter estimates shows no non-significant paths, except for those which were intentionally set to be zero according to the hypotheses.

As shown in Figure Ro-9, the whole path from gender to religiosity via *calling* is non-significant in the Orthodox subsample. Gender has a direct effect regarding both the presence of a religious adviser and the Centrality of Religiosity, while indicating that men are less connected with advisers $r_{dir} = -0.17, R^2 = 0.03$, and that they are less religious $r_{dir} = -0.19$. Furthermore, gender has an indirect effect on religiosity through the mediating variables of the presence of a religious adviser and the advice on everyday issues, the total effect of gender on religiosity is $r_{total} = -0.28$.



Chi-square=6.495; df=4; p=0.165
CFI=0.991; TLI=0.977
RMSEA=0.048; pclose=0.440
RMSEA 90%-confidence interval=[0.000; 0.112]
RMR=0.018

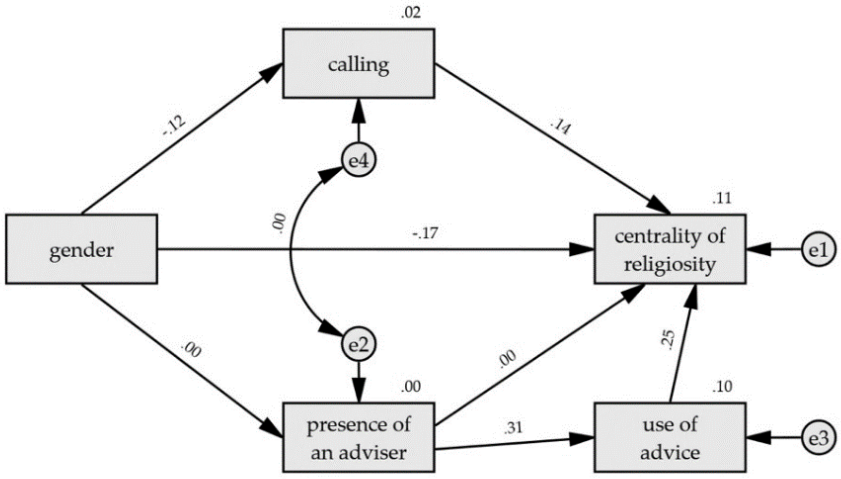
Figure Ro-9. Path analysis of the influence of religious culture on Centrality of Religiosity of Orthodox Christians.

The presence of a religious adviser has a direct effect on the use of advice with an $r_{dir} = 0.54, R^2 = 0.30$, while the use of advice has a direct effect on religiosity with $r_{dir} = 0.42$. Combined, the variable presence of a religious adviser has both direct and indirect effects on religiosity, the indirect path being a bit weaker than the direct one: $r_{indir} = 0.23$, while $r_{dir} = 0.28$, and a total effect of $r_{total} = 0.51$. The residuals of *calling* and the presence of a religious adviser correlate weakly $r = -0.16$.

The Centrality of Religiosity receives a total of four paths with the explained portion of the variance being $R^2 = 0.46$ or 46%.

3.3.6.2. Path Analysis in the Pentecostal Subsample

A path analytical model of the Pentecostal group shows a very good model fit with a CFI of $CFI = 1.00$, TLI of $TLI = 1.03$, RMSEA with its 90% CI of $RMSEA = 0.00[0.00; 0.08], pclose = 0.80$, SRMR of $SRMR = 0.03$, $\chi^2(5) = 4.30(p = 0.51)$. The global fit indices allow for a meaningful interpretation of the local paths in the model of which none have been identified non-significant except for those which were set to be equal zero, corresponding to the hypotheses of the present study.



Chi-square=4.297; df=5; p=0.507
CFI=1.000; TLI=1.025
RMSEA=0.000; pclose=0.796
RMSEA 90%-confidence interval=[0.000; 0.078]
RMR=0.015

Figure Ro-10. Path analysis of the influence of religious culture on Centrality of Religiosity of Pentecostal Christians.

In the case of the Pentecostal subsample, the variable gender has a direct effect on the Centrality of Religiosity $r_{dir} = -0.17$, but not on the presence of a religious adviser. Men are less religious, a result that is comparable to that of the Orthodox subsample. Furthermore, no indirect effect was found on religiosity through the mediating variable the presence of a religious adviser. Moreover, gender has a direct, but small, effect on *calling* $r_{dir} = -0.12, R^2 = 0.02$, and it exerts a low indirect effect on religiosity through *calling*. The direct effect of *calling* on the Centrality of Religiosity is small but present $r_{dir} = 0.14$. Added together the total effect of gender on religiosity is $r_{total} = -0.19$.

The presence of a religious adviser has a direct effect on the use of advice with $r_{dir} = 0.31, R^2 = 0.10$, while the latter has a direct effect on the Centrality of Religiosity with $r_{dir} = 0.25$. Taken together, the indirect effect of the presence of a religious adviser is $r_{indir} = 0.08$.

The Centrality of Religiosity receives a total of four paths with an overall proportion of the explained variance of $R^2 = 0.11$. A graphical overview of the model is presented in Figure Ro-10.

3.3.6.3. Summary of the Path Analyses

In conclusion, both subsamples show that gender is an important demographic determinant for religiosity in both direct and indirect ways. When taking into account the direct effect of gender, we found that men are less religious than women both in the case of the Orthodox and Pentecostal subsamples. Moreover, we found an indirect influence of gender through the mediation of either the variables *calling* or the presence of a religious adviser on the religiosity of Pentecostals and Orthodox believers, respectively. In both subsamples, the analyses show that both the presence of a religious adviser and the use of advice act as an indirect path for personal religiosity.

3.4. Discussion of the Results

Following the structure of the method section, the results of the confirmatory factor analyses are discussed before moving on to debate the results of the path analyses. In the last step, a general summary is made, and the strengths and limitations of the present study are noted. However, we would like to draw the reader's attention first to the fact that humility was not distinguishing between the two samples of Orthodox and Pentecostal Christians in Romania.

The hypothesis of difference in humility had to be rejected in the preliminary data check. A possible reason for the equality in humility in both groups is the high share of highly religious respondents. This might lead to a high expression of religious characteristics—here humility—and thus to no substantial difference between the groups. We could not check whether the groups would differ if we took only the non-religious and religious categories. For this, we did not have enough respondents. The religious and non-religious categories were too small in the subsamples of Orthodox and Pentecostal in the present investigation.

A further aspect of the non-significant results concerning humility is the fact that the Calling Humility Scale was developed in the context of market exchange to capture the different basic economical notions of Orthodox and Protestant denominations. The formulation of the items is indirect ("this person is…") and should facilitate the identification with the statement but it might have a differential effect with the Calling and the Humility scales when applied with highly religious respondents. We can only speculate that humility applies rather in a different context than market exchange or that because of the high proportion of highly religious respondents, humility is expressed in both denominations to an extent that the particularity which was expected to appear in the Orthodox sample is removed. Taking Zabaev's (2015) findings we cannot confirm that humility is a distinct Orthodox characteristic or even a virtue in Romania compared to the findings in Russia.

Calling and humility both do not rule out the subordination of a believer to a higher power or an "earthly" figure. While calling has only one reference point which can be, for example, an institutional authority or God, humility is a general interpersonal attitude that can refer to anyone. Therefore, it may explain why both Orthodox and Pentecostal Christians have high humility scores, but only the Pentecostals have a distinct calling aspect expressed because the path of authority in their faith life is not directly linked with their religiosity via an adviser. Speaking about religiosity and the effects on it leads to its assessment with the CRS. Before further discussing the results of the path-analyses, the role of calling, advice, and adviser, some words are said on the validity of the CRS-5 and CRSi-7 in the Romanian sample. Readers interested in the discussion of the results of the path-analyses may go over to the discussion of the results of path-analyses.

3.4.1. Discussion of the Results of Confirmatory Factor Analyses

The main result of the confirmatory factor analysis is that a one-factor model with five reflective indicators worked with, on the one hand, both the CRS-5 and CRSi-7 data and, on the other hand, with the Orthodox and Pentecostal subsamples. Further, in all models the indicator of the intellectual dimension received the weakest factor loading, leaving a great portion of the variance of the indicator to be explained by the residual. Moreover, in all models, the residual for the intellectual dimension correlated with the residuals of the indicator of the religious experience dimension. The algebraic sign and size of the correlations among these residuals are relatively stable considering the bootstrapped confidence intervals. In light of this stable correlation of the residuals of intellect and religious experience, other residuals' correlations (i.e., ideology with experience, ideology with public practice, intellect, and public practice) appear to be methodological artifacts. Indeed, checking, for example, the negative correlation of the residual of ideology and public practice in the CFA of the CRS-5 in the Orthodox group reveals the following: when controlling for the effect of centrality, some small numbers remain on the secondary diagonal, i.e., the higher the participation in Sunday Service, the lower the belief in God. Therefore, the authors argue that on a group level, there is some systematic association between the core dimensions of intellect and religious experience for highly religious people which takes place outside of the Centrality of Religiosity. With the two subsamples, where the proportion of highly religious believers of either Orthodox or Pentecostal Christians is over 80% (see Table Ro-5), this might be an observation that should be considered in future investigations with the Centrality of Religiosity Scale.

A methodological point of discussion is the correlation between the total score of the CRS-5 and CRSi-7 with their respective indicators. The numbers show that the total score's correlation with either of the indicators is always higher than the correlations among themselves. That means that each indicator adds a substantial value to the full scale. Thus, it seems logical that none of the

indicators' factor loadings are statistically non-significant or drop lower than $\lambda_x = 0.30$, which would be less than the salient presence of a factor in an indicator (Brown 2015). Another methodological issue with highly religious people is that the restriction of variance becomes a reason for reduced correlation sizes. The means of the core dimensions are higher, and the variance is more restricted for the Pentecostals. In such conditions, the correlations do not behave the same as in a sample with a majority of religious individuals. That might be one possible reason why the correlations are higher in the Orthodox subsample, where the proportion of the "religious" category is higher. Still, the scale shows no substantial points of CFA model weakness.

Additionally, in terms of sample size, the almost-balanced groups of Orthodox persons, a religious majority in Romania, and Pentecostals, a religious minority, allow for a comparison of highly religious believers within the country. This mainly plays its role within the discussion of path analyses in this study.

3.4.2. Discussion of the Results of the Path Analyses

Firstly, path analyses demonstrate that gender is an important demographic determinant of religiosity regardless of the denomination (Orthodox or Pentecostal). Secondly, the presence of a religious adviser is not an exclusively Orthodox phenomenon. However, while the presence of a religious adviser is common in both groups of believers, as expected, the Orthodox believers use advice more frequently than the Pentecostals. In the Orthodox sample, the presence of a religious adviser is directly linked with the Centrality of Religiosity, which means that such a person has a direct effect on religiosity, whereas for Pentecostals the effect is only mediated via the frequency of advice-taking. The presence of a religious adviser does not depend on gender in the Pentecostal subsample unlike in the Orthodox subsample. These findings are a strong indicator of the Pentecostals' preference for religious individualism. The last variable in the analyses is *calling*. Calling itself is a within-person variable that is not linked to an external factor, e.g., the religious advisor in our analyses. Therefore, the finding of a small but significant path in the Pentecostal group leading from gender to *calling* and religiosity demonstrates a further element related to religious individualism in the case of Pentecostal believers. In contrast, it is a path that is non-significant within the Orthodox group, meaning that despite being familiar with the concept of *calling*, the religiosity of Orthodox is not affected by it. Overall, we can partly confirm the theses of Weber, that there is a distinct *calling* aspect which differentiates the Protestant tradition from others, while it is not strong it is present and has an effect on the personal religiosity. While *calling* is supported by the results as a unique characteristic of Protestants of which Pentecostals are an example, humility cannot be said to be a unique characteristic of Orthodox Christianity. If there is an opportunity to test the hypothesis about the difference in humility between Protestant and Orthodox there should be a representative sample where the share of "religious" category forms the majority.

For the Orthodox subsample, the overall effect on religiosity is much more determined by the identified mechanisms in comparison with the Pentecostal one (46% of the explained variance in religiosity compared to 11% in the latter case), expressing more of a guided religiosity (religious collectivism) rather than an individualistic one (religious individualism). The results show that the role of a religious adviser—which we think of as a priest in our example—is more important for the personal religiosity of an Orthodox Christian in a direct and mediated way. In comparison to the Pentecostals, the results show that the presence of an adviser for the Orthodox Christian is less optional and that the frequency of advice-taking is higher. We are not eager to generalize these findings to everyday life, but if we imagine that this pattern would apply in economical behavior, the thesis of Weber would have corroboration in our data insofar that Protestants have more of "Berufung" and transfer it to the "Beruf". Thus, they take more action by themselves in solely reference to God, while for the Orthodox person it might be more of a guided path.

3.4.3. Summary

One problem of the empirical results concerning our hypotheses is that there was no significant mean difference between the Orthodox and Pentecostal groups concerning *calling* and humility.

Therefore, we need to control for the level of religiosity via the Centrality of Religiosity Scale (CRS). The higher the CRS, the more the specific religious content of a member belonging to a certain religious denomination becomes relevant. This allows for comparisons without the confounding factor of religiosity. After performing a correlation analysis, we found a negative correlation between the CRS and *calling* in the case of the Orthodox group and a positive one for the Pentecostal sample. This is presented in Table Ro-9. Moreover, the CRS is positively correlated with the CRS for both the Orthodox and Pentecostal groups. The score of humility still shows indifferent results even when controlling for the centrality of religiosity.

Returning to the antagonistic correlations between the CRS and *calling* for Orthodox and Pentecostal persons, we can support this argument by comparing these religious denominations, taking into account other dependent variables, namely:

- Having a confessor or personal priest or spiritual adviser (because the practice of confessing to a priest is fundamental for the forgiveness of sins and the attainment of salvation in Christian Orthodoxy, as estimated, we found a much higher correlation in the case of the Orthodox subsample compared to Protestant individualism); thus, guided faith life is more expressed in the Orthodox community.
- The practice of asking a priest or pastor for advice on everyday issues (the same as in the case of the previous idea, we expected and found a higher correlation in the Orthodox sample and a much lower one for the Protestant group); thus, while taking a piece of advice is not exclusive for Orthodox persons, it has a higher frequency for this group, which supports the idea of guided faith life.

Therefore, we consider that the item related to the practice of asking a priest or pastor for advice on everyday issues is a good predictor of religious individualism besides asking for calling and the presence of a religious adviser.

Overall, we found empirical support to argue that the CRS correlates with specific features that are typical of certain Christian denominations. Therefore, the *calling* framework is a rational deduction from this general thesis of Weber. In the Orthodox subsample, the results are in line with the previous idea that emphasized that its specific framework is based on an intimate and direct relationship with a priest (religious adviser) to search and fight for salvation rather than other traits related to *calling*, and therefore, confirming the findings of Zabaev (2015) related to the difference between Protestant and Orthodox Christians. Hence, in the case of the Pentecostal group, the vocational and personal effects are essential for these believers, being much more conducted by religious individualism than their Orthodox counterparts. These results are complementary to the findings of Weber (1963, 2005).

3.5. Strengths and Limitations

The presented study has some strong points and some potential points of critique. First of all, there is a unique almost-balanced sample of Orthodox and Pentecostal Christians in this study. Having in mind that in Romania, the Orthodox are the majority and Pentecostals are a minority, having these samples to compare introduces a rare study to the field of the comparative study of religiosity. A further aspect of the samples is the high proportion of highly religious participants. Such samples offer an exceptional opportunity to explore the psychosocial patterns of the highly religious believers of each of the denominations, which is done in the present investigation. The confirmatory analyses can be seen as the basis for the study of religiosity in Romania with the CRS and the multidimensional model of religiosity included. The path analyses deliver arguments for the distinguished sociological mechanism within parishes of Pentecostal and Orthodox believers.

While strong on the methodological side, there are some restrictions with the present samples. These samples are neither representative of the majority of the believers in the country nor are they representative of the composition of the religious denominations themselves. Looking at the determinants of religiosity it is clear that a lot of factors are not included in the analyses, e.g., age, level of education, occupational and marital status. Therefore, we encourage further investigations

to pay special attention to the small proportion of explained variance of religiosity for the Pentecostal group.

A further point, which is more of a theoretical decision, is the causal paths drawn in the path analyses. It might be equally true to draw the regression lines from the Centrality of Religiosity to the variables which represent the *calling*, presence of an adviser, and use of advice. Imaginable is a reciprocal loop where the aspects of calling and religious adviser/advice are positively associated with an increasing Centrality of Religiosity and vice versa. This question has not been examined, although it is desirable for further immersion into the matter related to religious individualism.

3.6. Conclusions

Regarding the performance of the short versions of the CRS, CRS-5, and CRSi-7, it can be said that the scales work well and can be used for studies related to religiosity with the adopted Romanian translation (see Table Ro-A4 for the wording of the items and Table Ro-A1 in Appendix Ro-1 for the answer options).

The path analyses of the religious culture of the Orthodox and Pentecostal Christians show that religiosity should be considered as a variable that not only captures the psychological dimension of faith but should also be included in social mechanisms. Distinctive differences between the two Christian denominations are *calling* for Pentecostals and the direct influence of a religious adviser on the religiosity of Orthodox believers.

Having done the study with samples of predominantly highly religious respondents leaves an ambiguous impression. On the one hand, asking highly religious believers about religious phenomena elicits the effects of faith on many aspects of their faith life. We assume that some of the phenomena would not be captured if the samples would be rather dominated by religious or non-religious respondents. Maybe this aspect can be balanced if the sample size gets bigger implying higher statistical power. On the other hand, having predominantly highly religious respondents restricts the variance in the variables of interest. For example, the authors wanted to report the reliability coefficients with their corresponding statistical confidence intervals. However, this was not possible because in the calculation with the Pentecostal subsample an error occurred reporting singularity of the data.

Two perspectives for the study of religiosity and religious individualism which arise from the current investigations are the integration of the individualization theses and the application of the intermediate or long form of the CRS. Generally speaking, the comparison of different religious traditions under the perspective of the individualization theses will put religious individualism in a theoretical frame where the question would be whether the ongoing individualization will have the same or different effects on distinct religious traditions or not. A methodological aspect of the study of religiosity is the degree of fineness which is achieved with different psychometrical instruments. The Centrality of Religiosity Scale has, besides its short versions—which were applied in these analyses—intermediate versions (CRS-10 and CRSi-14) and long versions (CRS-15 and CRSi-20). The intermediate and long versions have the same underlying multidimensional model of religiosity but capture additional aspects of each of the five dimensions. Therefore, if the interest is to go into the detail of the religiosity construct, these versions offer an instrument to do so.

3.7. *Appendix Ro-1. Scales and their Translations*

Table Ro-A1. Translation of the CRS-5 and CRSi-7 items and answer options.

Core Dimension	English Version	Romanian Version	English Answer Options	Romanian Answer Options
public practice (CRS-5 and i-7)	How often do you take part in religious services?	Cât de des participați la serviciile religioase?	More than once a week (5); Once a week (5); One or three times a month (4); A few times a year (3); Less often (2); Never (1)	Mai mult de o dată pe săptămână (5); O dată pe săptămână (5); O dată până la trei ori pe lună (4); De câteva ori pe an (3); Mai rar (2); Niciodată (1)
private practice (CRS-5 and i-7)	How often do you pray?	Cât de des vă rugați?	Several times a day (5); Once a day (5); More than once a week (4); Once a week (3); One or three times a month (3); A few times a year (2); Less often (2); Never (1)	De câteva ori pe zi (5); O dată pe zi (5); Mai mult de o dată pe săptămână (4); O dată pe săptămână (3); O dată până la trei ori pe lună (3); De câteva ori pe an (2); Mai rar (2); Niciodată (1).
private practice (CRSi-7)	How often do you meditate?	Cât de des meditați?		
ideology (CRS-5 and i-7)	To what extent do you believe that God or something divine exists?	În ce măsură credeți că există Dumnezeu sau ceva divin?	Very much so (5); Quite a bit (4); Moderately (3); Not very much (2); Not at all (1)	Foarte mult (5); Destul de mult (4); Așa și așa (3); Nu prea mult (2); Deloc (1)
intellect (CRS-5 and i-7)	How often do you think about religious issues?	Cât de des vă gândiți la aspecte religioase?	Very often (5); Often (4); Occasionally (3); Rarely (2); Never (1)	Foarte des (5); Des (4); Uneori (3); Rar (2); Niciodată (1)
experience (CRS-5 and i-7)	How often do you experience situations in which you have the feeling that God or something divine intervenes in your life?	Cât de des vă confruntați cu situații în care aveți senzația că Dumnezeu sau ceva divin intervine în viața dumneavoastră?		
experience (CRSi-7)	How often do you experience situations in which you have the feeling that you are in one with all?	Cât de des vă confruntați cu situații în care aveți senzația că sunteți în contact/una cu divinitatea?		

Note. CRS—Centrality of Religiosity Scale. CRSi—interreligious CRS. Numbers in parenthesis with the answer options show the re-coded value for the final calculation of the CRS indices.

Table Ro-A2. English and Romanian items and answer options of the Calling Scale.

Nr.	English version	Romanian version	English answer options	Romanian answer options
1	This person likes to overcome obstacles, to go against fate.	Acestei persoane îi place să depășească obstacolele, să se împotrivească soației.	very much like me (1); like me (2); moderately like me (3); a little like me (4); not like me (5); not at all like me (6); hard to answer (99)	e foarte asemănător cu mine (1); e asemănător cu mine (2); e destul de asemănător cu mine (3); e puțin asemănător cu mine (4); nu e ca mine (5); nu e deloc ca mine (6); greu de răspuns (99)
2	Work takes a lot of this person's time, leaving little time to relax.	Munca îi solicită mult timp acestei persoane, lăsându-i puțin timp pentru relaxare.		
3	This person tries to defend his/her interests under all circumstances.	Această persoană încearcă să-și apere interesele în toate circumstanțele.		
4	Even if this person was financially able, he/she would not stop working.	Chiar dacă această persoană ar fi independentă din punct de vedere financiar, ea nu ar înceta să muncească		
5	This person does not allow others to act unfairly upon him/her.	Această persoană nu le permite celorlalți să acționeze pe nedrept asupra sa.		
6	This person tries to do everything by himself/herself	Această persoană încearcă să facă totul de una singură.		
7	This person doesn't like having to depend on other people.	Acestei persoane nu îi place să depindă de alte persoane.		
8	This person is proud of his/her achievements	Această persoană este mândră de realizările sale.		
9	This person tries to defend his/her point of view to the end.	Această persoană încearcă să-și apere punctul de vedere până la capăt.		
10	This person schedules the day in advance to avoid wasting time.	Această persoană își programează ziua în avans pentru a evita pierderea timpului.		
11	This person tries to use his/her time productively.	Această persoană încearcă să își folosească timpul în mod productiv.		
12	Life without work would be very boring for this person.	Viața fără muncă ar fi foarte plictisitoare pentru această persoană.		
13	This person always wants to be a winner.	Această persoană vrea să fie întotdeauna o câștigătoare.		

Note. Numbers in parenthesis with the answer options show the re-coded value for the final calculation of the indices.

Table Ro-A3. English and Romanian items and answer options of the Humility Scale.

Nr.	English version	Romanian version	English answer options	Romanian answer options
1	This person is concerned, if other people are in trouble.	Această persoană este preocupată/îngrijorată, dacă alte persoane au probleme.	very much like me (1); like me (2); moderately like me (3); a little like me (4); not like me (5); not at all like me (6); hard to answer (99)	e foarte asemănător cu mine (1); e asemănător cu mine (2); e destul de asemănător cu mine (3); e puțin asemănător cu mine (4); nu e ca mine (5); nu e deloc ca mine (6); greu de răspuns (99)
2	If this person is treated unfairly, he/she tries to be patient and not to think about it.	Dacă această persoană este tratată pe nedrept, încearcă să aibă răbdare și să nu se gândească la asta.		
3	This person tries to be simple and modest.	Această persoană încearcă să fie simplă și modestă.		
4	Having done something good, this person would not want other people to know about it.	După ce a făcut ceva bun, această persoană nu și-ar dori ca alți oameni să știe despre asta.		
5	This person easily admits his/her mistakes.	Această persoană își recunoaște cu ușurință greșelile.		
6	This person tries to follow the natural course of events, not actively oppose it.	Această persoană încearcă să urmeze cursul natural al evenimentelor, neopunându-se în mod activ acestuia.		
7	This person usually asks other people for advice when making decisions.	Această persoană solicită de obicei sfaturi altor persoane atunci când ia decizii.		
8	This person considers advices from others carefully.	Această persoană ia în considerare cu precauție sfaturile primite de la alte persoane.		
9	This person feels the needs of other people.	Această persoană percepe nevoile altor oameni.		
10	If bad things happen to him/her, his person doesn't fight actively against it.	Dacă i se întâmplă lucruri rele, această persoană nu luptă activ împotriva lor.		
11	This person likes to help other people.	Acestei persoane îi place să ajute alți oameni.		
12	Good things, which the person hasn't deserved, often happened in their life.	Lucruri bune, pe care persoana nu le-a meritat, s-au întâmplat deseori în viața sa.		

Note. Numbers in parenthesis with the answer options show the re-coded value for the final calculation of the scale's score.

Table Ro-A4. Overview of the English and Romanian CRSi-20-items.

Nr.	English	Romanian
1	How often do you think about religious issues?	Cât de des vă gândiți la aspecte religioase?
2	To what extent do you believe that God or something divine exists?	În ce măsură credeți că Dumnezeu sau cineva divin există?
3	How often do you take part in religious services?	Cât de des participați la serviciile religioase?
4	How often do you pray?	Cât de des vă rugați?
5	How often do you meditate?	Cât de des meditați?
6	How often do you experience situations in which you have the feeling that God or something divine intervenes in your life?	Cât de des vă confruntați cu situații în care aveți senzația că Dumnezeu sau cineva divin intervine în viața dumneavoastră?
7	How often do you experience situations in which you have the feeling that you are in one with all?	Cât de des vă confruntați cu situații în care aveți senzația că sunteți în contact/una cu divinitatea?
8	How interested are you in learning more about religious topics?	Cât de interesat(ă) sunteți să învățați mai multe despre subiectele religioase?
9	To what extend do you believe in an afterlife—e.g., immortality of the soul, resurrection of the dead or reincarnation?	În ce măsură credeți în existența unei vieți de apoi, de exp. nemurirea sufletului, învierea morților sau reîncarnare?
10	How important is to take part in religious services?	Cât de important este să luați parte la serviciile religioase?
11	How important is personal prayer for you?	Cât de importantă este rugăciunea personală pentru dumneavoastră ?
12	How important is meditation for you?	Cât de importantă este meditația pentru dumneavoastră?
13	How often do you experience situations in which you have the feeling that God or something divine wants to communicate or to reveal something to you?	Cât de des trăiți situații în care aveți sentimentul că Dumnezeu sau cineva divin vrea să comunice cu dumneavoastră sau să vă dezvăluie ceva?
14	How often do you experience situations in which you have the feeling that you are touched by a divine power?	Cât de des trăiți situații în care aveți sentimentul că sunteți atins de o putere divină?
15	How often do you keep yourself informed about religious questions through radio, television, internet, newspapers, or books?	Cât de des vă informați despre chestiuni religioase prin intermediul radioului, televiziunii, internetului, ziarelor sau cărților?
16	In your opinion, how probable is it that a higher power really exists?	În opinia dumneavoastră, cât de probabil este ca o putere superioară să existe cu adevărat?
17	How important is it for you to be connected to a religious community?	Cât de important este pentru dumneavoastră să fiți conectat la o comunitate religioasă?
18	How often do you pray spontaneously when inspired by daily situations?	Cât de des vă rugați spontan, inspirat de situațiile zilnice?
19	How often do you try to connect to the divine spontaneously when inspired by daily situations?	Cât de des încercați să vă conectați spontan la divinitate, inspirat de situațiile zilnice?
20	How often do you experience situations in which you have the feeling that God or something divine is present?	Cât de des trăiți situații în care simțiți că Dumnezeu sau cineva divin este prezent?

Note. CRS–Centrality of Religiosity Scale. CRSi–interreligious CRS.

3.8. *Appendix Ro-2. Histograms of the CRS indicators*

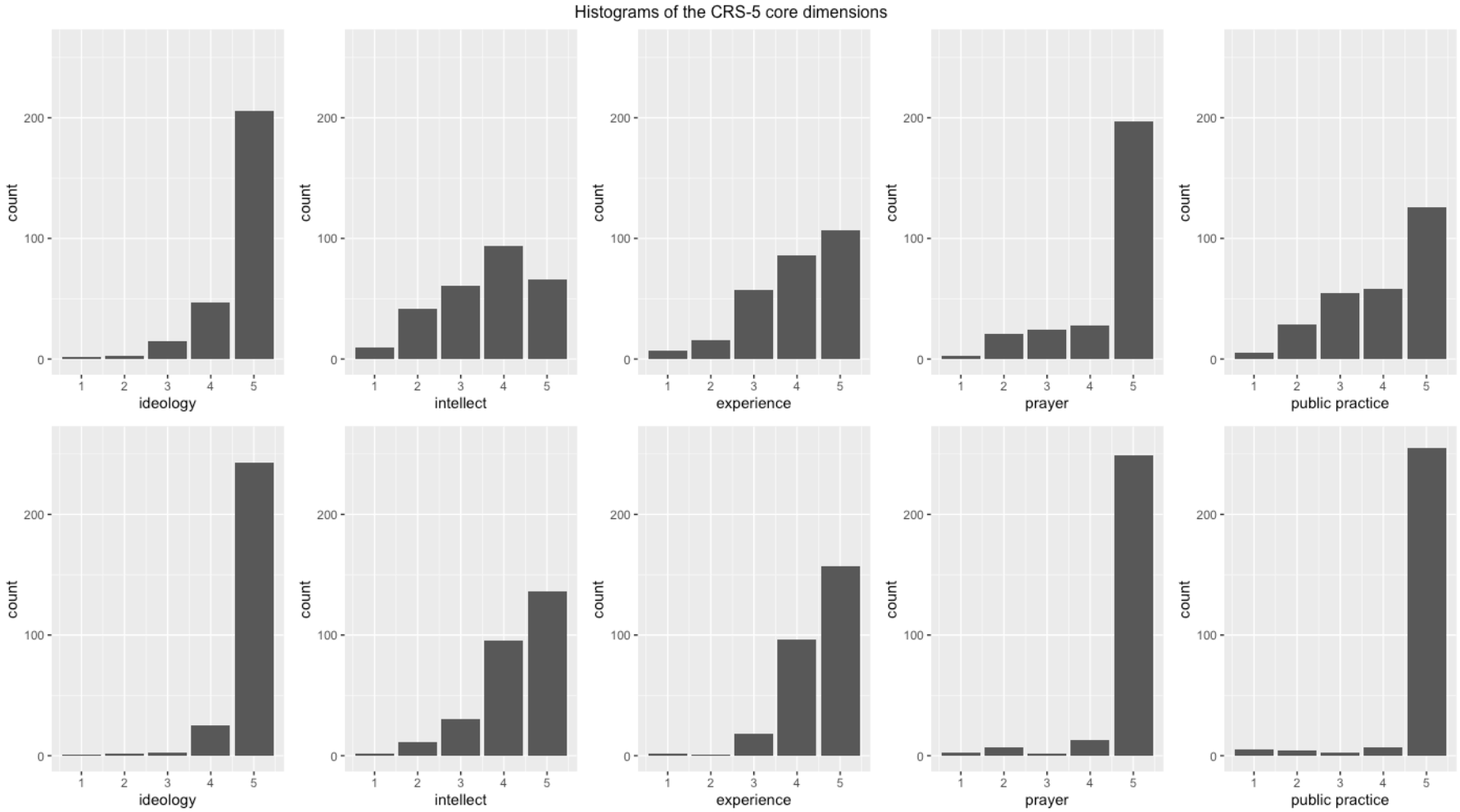


Figure Ro-A5. The histograms of the CRS-5 core dimensions; upper row data - Orthodox sample, lower row data - the Pentecostal sample.

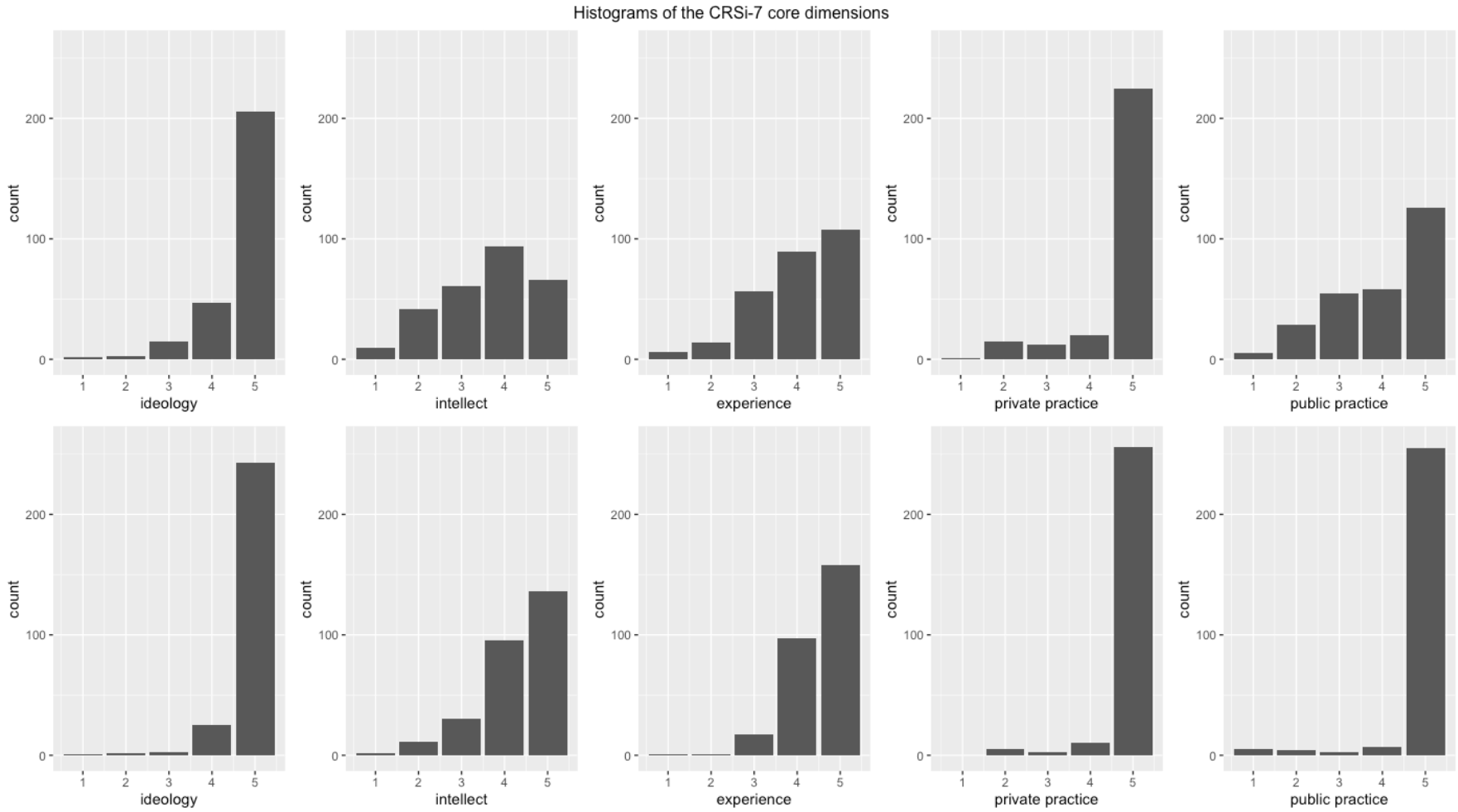


Figure Ro-A6. The histograms of the CRSi-7 core dimensions; upper row data - Orthodox sample, lower row data - the Pentecostal sample.

3.9. Results and Interim Conclusions From the Study in Romania

The Centrality of Religiosity Scale performed better in the Orthodox than in the Pentecostal group of the total sample. This becomes especially apparent, when regarding the higher Cronbach's α and McDonald's ω coefficients. The CRS-5 demonstrates better internal consistency than the CRSi-7.

According to the correlational analyses the CRS composite score shows higher correlations than any of the combinations of the core dimensions themselves. Each of the dimension scores contribute to a common construct. This is an argument in favor of a composite score and consequently, a unifying underlying factor, which is modeled in the CFAs.

To start, from the perspective of the model evaluation, the confirmatory analysis results show that all but the upper bound of the confidence interval of the RMSEA fit the set-up evaluation criteria well. In connection with a non-significant closeness of fit *p*-value the RMSEA can still be accepted by being less than 0.05 in the population. Overall, globally seen the CFA-models can be accepted, and the model parameters are meaningfully interpretable.

In the second place, it is notable that none of the CFA-models are free of correlated residuals. They were necessary to reproduce the patterns in the data. One constant correlation of the residuals is of the core dimensions of intellect and experience. Apart from that, no modifications are indicated for the original measurement model.

Third, the weight of the factor loadings shows that the indicators differ in their contribution to the centrality of religiosity-factor. However, regarding their overlapping confidence intervals, it cannot be said that they differ substantially in the given samples in Romania. All of them contribute with at least salient weight to the underlying factor, although their contribution is heterogeneous.

Finally, the centrality of religiosity-factor explains between 11% and 71% of the indicator variance, which is a remarkable range. Therefore, the centrality of religiosity is present but with variable strengths in the indicators of the core dimensions.

A less important finding concerning the goal of this thesis is the function which the CRSi-7 shows in the path-analyses. The measurement of centrality of religiosity can function as an outcome-variable which is linked with socio-demographic and socio-religious variables.

A point to consider after the inspection of the results is the composition of the sample which has a high share of highly religious respondents.

Table 15 demonstrate the results for invariance testing hypotheses. Configural invariance of the CRS is supported by the evidence from the study in Romania. In the next study, the multigroup-CFA is applied to model the time-invariance via metric invariance of the factor loadings of the CRS-5 for the first time. The CRSi-7 is only tested for model validity and configural invariance because only one data point is available for this short form in Georgia.

Table 15. Overview of the CRS invariance hypotheses' tests with the data in Romania.

	Configural invariance	**Metric invariance**	**Scalar invariance**
CRS-5	found	found, not reported*	not tested
CRSi-7	found	found, not reported*	not tested

Note. Configural invariance is found between the two subsamples of Orthodox and Pentecostal Christians. * models with metric invariance were tested in a preliminary analysis. The result showed that the factor loadings and the residual of both core dimensions of intellect and experience can be hold equal between both subsamples. Because of different variance of the centrality of religiosity factor and variances of the residuals due to restricted variance of the Pentecostal group, problem of standardization of parameter estimates could not be solved. Thus, the analyses were excluded from the article and therefore not reported. For the reason of lacking official report, the table includes the "found, not reported" token.

4. Examination in Georgia: "Validation of the Short Forms of the Centrality of Religiosity Scale in Georgia"

Abstract: This study presents the validation of the short forms of Centrality of Religiosity Scale (CRS) in Georgia. This country offers a unique Christian Orthodox context with a long-lasting religious tradition and strong affiliation to churches. Translated short forms were administered in the years 2012 (CRS-5) and 2018 (CRSi-7). Participants reported on ideological, intellectual, and experiential aspects of their faith and their private and public religious practice in face-to-face interviews. The collected data was subject to reliability analyses. Scale invariance over time was tested with the CRS-5, whereas the CRSi-7 was examined for model goodness, with one factor—Centrality of Religiosity—with a confirmatory factor analysis. Derived statistical coefficients from large stratified random populational samples (2012: $N = 2238$ and 2018: $N = 1906$) show good to acceptable Cronbach's α ($\alpha = 0.73$ and $\alpha = 0.67$ respectively). The composite scores' means and standard deviations contour norm values for further investigations in social sciences related to religiosity in Georgia. The results of the confirmatory factor analyses show that the Centrality of Religiosity manifests a stable factor, adequately explaining different dimensions of faith life. The high reliability of the CRS-5 over time leads to the conclusion of consistent measurement characteristics and thus, its suitability for longitudinal analysis. The CRSi-7 has a comparable model fit to the CRS-5 providing an alternative for interreligious contexts if needed. Aspects of assessment and analysis are discussed and reasons for the application of the longer version of the CRS are provided in the end.

4.1. Introduction

Throughout its entire existence, the study of religion and religiosity has been searching for a universal instrument to measure the psychological constructs behind the various religious ideologies, rituals, experiences and other expressions of faith life. However, over time, the broadness of the field led to a variety of results. Various research interests brought up a plethora of sociological and psychological assessment scales. For an overview and examples, see the book by Hill and Hood Jr. (1999). Nevertheless, the interest in a robust and versatile instrument remains unbroken, especially when looking at the changes in the religious landscape worldwide (Hackett & Stonawski, 2017) as well as the wish to have a comparable scale for the different dimensions of human religiosity in distinctive religious contexts. Endorsing the idea of multifaceted religious expression, Murken and Namini (2006) summarize, in their chapter on the Psychology of Religion, that one subject is undiscussable. In order to be universal, a psychometrical scale has to be multidimensional because assessing, for example, only the frequency of church attendance or prayer, the importance of commandments or rules or the time spent in religious communities is not appropriate to capture the importance of religion in a human's life. The problem of an assessment with single items is long-known and understood in the research community. Since the 1960s, attempts have been made to construct a scale which includes all possible expressions of human religiosity.

In 2003, Stefan Huber proposed a new—albeit not the first—multidimensional method of measuring religiosity combining two of the most popular measurement models of religiosity of the 20th century: the I/E-concept by Allport and Ross (1967) and the Dimensions of Religious Commitment by Glock and Stark (1966). His conceptualization takes the multifaceted phenomenological model by Glock and places it on an aggregated score of the religious dedication as proposed by Allport. This conceptualization allows for an assessment of the strength of religious commitment—so-called centrality. At the same time, this assessment encompasses a content analysis of the fanned-out core dimensions of religiosity: ideology, intellect, religious experience, private and public religious practices, which were redefined from the original proposition by Glock. Together, the five dimensions form what is called religiosity—a personal psychological trait in demarcation to religion as an organized, tradition-oriented social phenomenon and spirituality as a privatized, experience-oriented, individual phenomenon (Streib & Hood Jr, 2016, p. 9). The scale is thus called the Centrality of Religiosity Scale, short CRS, and is placed on the intersection of theology,

psychology, and sociology of religion as a psychometric questionnaire. A distinctive feature of the scale is that it is conceptualized to capture the expression of personal traits in the measurement of dimensions of frequency, importance and salience providing platform for objective and subjective expression of one's religiosity. Respondents are not provoked to auto-reference to or compare themselves with a particular social group, therefore, comparability (e.g., between religious communities, across time points, between countries, etc.) is preserved for the analysis of the totality of the collected responses.

In 2012 Huber and Huber proposed various forms of the CRS to the community to satisfy different research needs. There is a major split is between Abrahamitic and non-Abrahamitic contexts: the CRS-5, the CRS-10, and the CRS-15 serve the first and the CRSi-7, the CRSi-14, and the CRSi-20 serve the second ones respectively (see Tables Ge-A1 to Ge-A3 in Appendix Ge-1). The number after the abbreviation indicates the number of items in the scale. In the shortest version – the CRS-5, each core dimension has only one indicator, multiplied by two in the CRS-10 and multiplied by three in the CRS-15 version. The "i"- versions are an expansion, in which additional items were added. One on meditation and one on experience of connectedness in the short version. With these items, the CRS-5 resulted in the CRSi-7 (5 + 2); the CRS-10 with two additional items in the CRSi-14 (10 + 2 + 2), with one additional item leading from the CRS-15 to the longest version, the CRSi-20 (15 + 2 + 2 + 1). The answer options can be summed up into the three categories of frequency, importance and salience of the construct of interest.

The scale was developed and validated in Europe (Switzerland and Germany; Huber, 2003), its universality, practicality and utility, as well as psychometric characteristics had to be tested by putting it into practice in different contexts.

Since the first publication in the year 2003 all six forms of the Centrality of Religiosity Scale have been used in a wide scope of applications in different religious contexts and numerous countries[5]. The application in the international Religion Monitor run by the German Bertelsmann Foundation in 21 countries in the years 2007/2008 (CRS-5, CRSi-7, and CRS-10), in 13 countries in the years 2012/2013 (CRS-5 and CRSi-7), and 6 countries in the year 2017 (CRS-5 and CRSi-7) showcases the viability of the scale. The Religion Monitor is a good example of the adaptiveness of the CRS to different religious, cultural and linguistic environments. The scale assists the field by aggregating divergence of religious expression to a comparable quantity while keeping the possibility of accentuation of the core dimension in the final interpretation. Thus, religiosity becomes an attainable and extensive construct, which is easy to integrate into any kind of research on health-related, economic, political, educational and social topics to name a few examples. That is the reason why interest in application, translations and cultural adaptations of the CRS has remained unbroken in the last decade (e.g., Esperandio, August, Viacava, Huber, & Fernandes, 2019; Fradelos et al., 2018; Huza, 2018; Zarzycka, 2007). The showcase of the Religion Monitor demonstrates, on the one hand, the functionality of the CRS, and on the other hand it reveals its limitations. For some non-western contexts (e.g., Turkey, Morocco, Nigeria, Guatemala, Indonesia) the scale had a very skewed distribution, resulting in collapsing coefficients of internal consistency (Huber & Huber, 2012). Georgia offers in this regard a unique example of a non-western, predominantly Christian Orthodox country to test the CRS further and to explore the capability of its reliability.

4.1.1. Setting in Georgia

For the investigation of the CRS in the Orthodox context, Georgia stands out as a remarkable example because of its long-lasting roots of Christianization. Even though the Christianization of Georgia has not been the only religious transformation of the country—as seen for example in the region Adjara in South-West Georgia with a concentration of Muslims because of former Ottoman influences—its dominance is seen in the numbers of the current demographical statistics. In the 2014 census, the number of Orthodox Christians was 83.4%, Muslims—10.7%, Armenian Apostolic—2.9%, and others including non-religious—3.0% (Shavishvili, 2016). To embed the current situation of the religious landscape in the course of time we

[5] For an overview about the worldwide applications of the CRS see:
https://www.ier.unibe.ch/forschung/centrality_of_religiosity_scale_crs/index_ger.html

are briefly summarizing the development of the Orthodox church in Georgia in recent decades in the following paragraph. The Muslim minority as well as other religious groups in Georgia are not a subject of this study.

After the collapse of the Soviet Union and disappearance of the restrictive political regime in 1991, the Georgian Orthodox church started gaining huge social power, church attendance rose dramatically and religious discourses appeared in the political realm (Sumbadze, Maglakelidze, Menagarishwili, & Abzianidze, 2016). The Georgian Orthodox church is still the most trusted institution in the country and Orthodoxy is one of the most important ingredients of Georgian national identity. Hence, religion plays a major role in the daily life of Georgian people but was not examined extensively and in-depth considering all the dimensions of religious life.

4.1.2. Dimensions of the Centrality of Religiosity Scale

The two versions of the CRS we refer to in this article are the CRS-5 and the CRSi-7. The dimensions of the CRS are ideology, intellect, experience, private practice and public practice. In the CRS-5, each core dimension is represented by only one item, in the CRSi-7 additional items are added on private practice and religious experience. The CRS-5 is intended to be applied in Abrahamitic contexts, i.e., Jewish, Christian and Muslim. The extension, by two items, to the CRSi-7 includes other religious backgrounds, e.g., Hinduism and Buddhism. The five dimensions of CRS-5 are thus included in the CRSi-7. The translated items of both scales can be found in Appendix Ge-1, Table Ge-A1—the answer categories and their interpretation are presented in Table Ge-16. Hereafter, original items are presented alongside the description of the dimension in the text.

Table Ge-16. Answer categories of the Centrality of Religiosity Scale and their interpretation.

	Score	**Wording**		**Hermeneutics**
		Frequency	**Importance**	**Presence of Personal Constructs in Personality**
Categories of a five-level Likert-answer scale	5	Very often	Very much so	Clear Presence
	4	Often	Quite a bit	
	3	Occasionally	Moderately	Transition area: background presence
	2	Rarely	Not very much	No or only marginal presence
	1	Never	Not at all	

4.1.2.1. Ideology

The ideological dimension deals with beliefs and patterns of plausibility. A core indicator for this dimension is the plausibility of the existence of a transcendent sphere of reality. The more plausible this sphere appears; the more relevant and concrete religious' beliefs can become for somebody. The corresponding question is: "To what extent do you believe that God or something divine exists?" (CRS-5 and CRSi-7).

4.1.2.2. Intellect

The intellectual dimension consists of religious knowledge, themes of interest, and hermeneutical skills. An indicator of the general strength of this dimension is the frequency of thinking about religious issues. The more somebody thinks about religious questions, the more religious knowledge is deepened and enhanced, and the more hermeneutical skills are trained. The corresponding question is: "How often do you think about religious issues?" (CRS-5 and CRSi-7).

4.1.2.3. Religious Experience

The experiential dimension consists of patterns of religious perceptions and religious feelings. General indicators of this dimension are the frequency of experiences of divine interventions or of being one with

everything. The more these general types of experiences take place, the more somebody is open to concrete experiences of the divine. The corresponding questions are: "How often do you experience situations in which you have the feeling that God or something divine intervenes in your life?" (CRS-5) and additionally "How often do you experience situations in which you have the feeling that you are one with everything?" (CRSi-7).

4.1.2.4. Private Practice

The dimension of private practice relates to actions in which somebody tries to connect him- or herself with a transcendent sphere of reality. The most common forms are prayer and meditation. The more somebody practices at least one of these forms, the more he or she is in the mode of connecting him- or herself with the divine. The corresponding questions are: "How often do you pray?" (CRS-5) and additionally "How often do you meditate?" (CRSi-7).

4.1.2.5. Public Practice

The dimension of public practice refers to the integration of somebody's religious life in a social body. The most general indicator is the frequency of participation in religious services. The more somebody attends religious services the higher is the probability that somebody is integrated in a social religious body. The corresponding question is: "How often do you take part in religious services?" (CRS-5 and CRSi-7).

The frugal short forms have been proven to have good psychometrical characteristics by demonstrating moderate positive correlations between the core dimensions $r = 0.35$ to $r = 0.73$ (CRS-5 and CRSi-7 in the International Religion Monitor of the years 2007, 2012, 2017)—proving them to be relatively autonomous among each other. The composite score of the scale has a good to excellent internal consistency with a Cronbach's α between $\alpha = 0.84$ for the CRSi-7 and $\alpha = 0.85$ for the CRS-5 in the norm sample (Huber & Huber, 2012). The overall good internal consistency suggests a one-factor latent structure. Nonetheless, the uniform construct of Centrality of Religiosity was subject to discussion from the beginning.

4.1.3. Interrelationship of the Dimensions of Religiosity

The latent structure of the CRS was examined for the first time in the book "Centrality and Content" (Huber, 2003, pp. 270-293) concurrent with the publication of the scale itself. Different models starting with one latent factor and going up to five latent factors are presented and compared with each other. In this manner, different possible combinations of the core dimensions of religiosity are accounted for. This approach opens the field to a theoretical discussion of homogeneity of religiosity as a personal trait. Since the publication of the scale data was analyzed but not discussed systematically regarding neither the latent structure nor its stability in different religious contexts. Nevertheless, it is worth looking at the construct behind the core dimensions of religiosity.

The most obvious and simplest even though not the most parsimonious latent structure of the CRS is given by a five-factor solution, where all the items of one dimension are explained by one latent variable and are correlated with each other (see Figure Ge-11 for the most advanced version, CRS-15). The most parsimonious version would be represented by five intercorrelated items with the CRS-5. This structure of correlated factors replicates the idea of relatively autonomous core dimensions of religiosity. It was introduced in 2003 and has been constantly and straightforwardly reproduced since then. Recently, two studies using translated versions of CRS-5 and CRS-10 in Brazil by Esperandio and colleagues (2019) and in Romania with CRS-15 by Huza (2018) confirmed this simple pattern yet again.

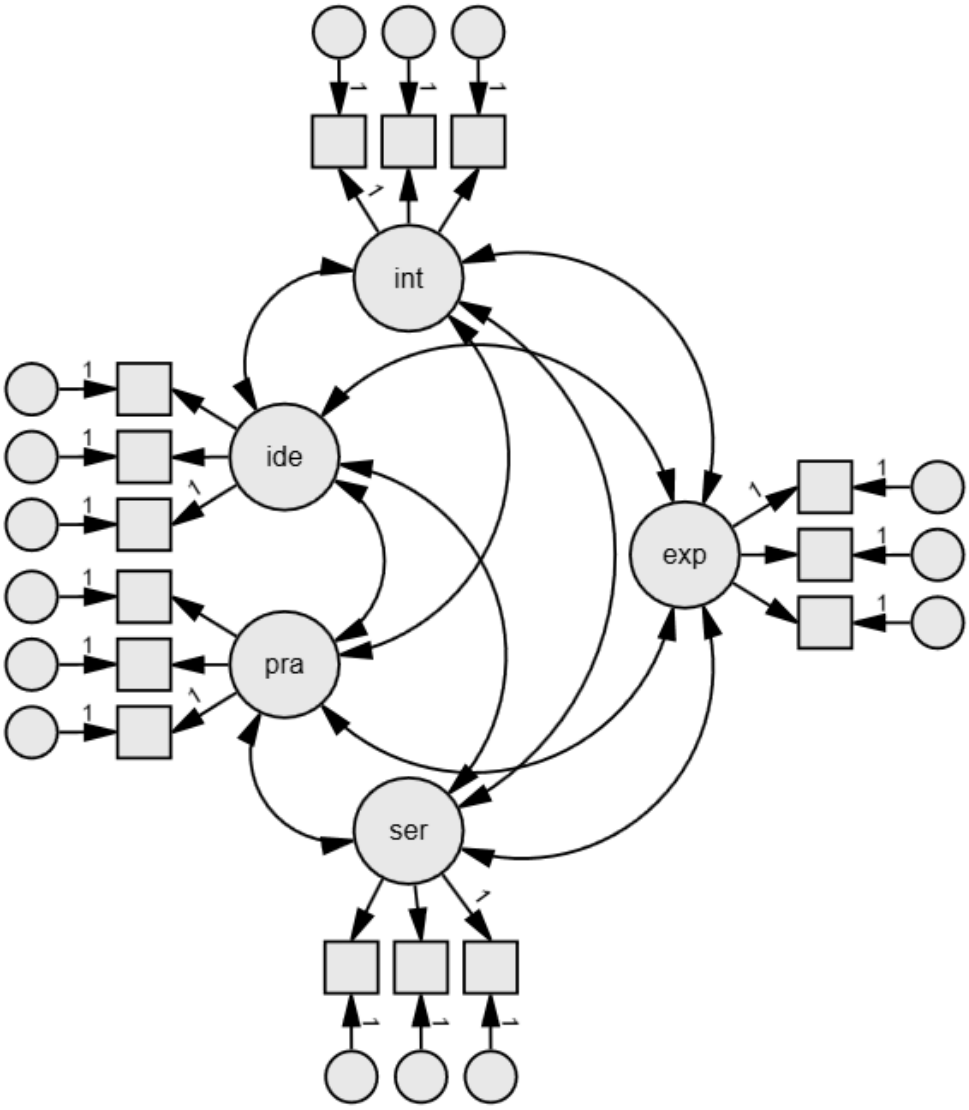


Figure Ge-11. Symbolic picture of the basic model for the CRS with 15 indicators[6].

As elaborated by the author of the scale, the core dimensions contribute to a personal trait called Centrality of Religiosity. In other words, the five core dimensions form a common factor, which affects the behavior and experience of a human being in the realm of religion. In the statistical conceptualization, this means there is a second-order factor as depicted in Figure Ge-12. If the shortest version of the CRS is applied, the centrality is reflected through five items, one per core dimension. Thus, the second-order factor becomes a first-order factor. Between the two configurations from scattered stand-alone factors to the most centralized model with one second-level factor, different kinds of latent structures are imaginable. With this in mind, researchers looked at the latent structures alongside validations of the CRS in different languages and countries.

Even though in the mentioned study by Huza (2018), the researcher didn't test for anything but the five-factor solution, in Greece Fradelos et al. (2018) conducted an exploratory factor analysis of the CRS-15 attempting a reduction of the dimensions and found two factors, which they called "religious practices"

[6] "int"–intelligence, "ide"–ideology, "exp"–experience, "pra"–private, and "ser"–public practice. Small circles depict residual variances, squares depict indicators, curved lines show covariances, straight lines show regressions.

and "religious beliefs and experiences". Religious practices as a factor is hereby formed by items from the private and public practice core dimensions. Religious beliefs and experience as a factor is formed by the remaining items from the core dimensions of ideology, intellect, and experience. Looking at the results of the most recent studies in Romania and Greece, which are largely Orthodox countries like Georgia, one could question the solidity of the theoretical construct of centrality. The similarity in religious traditions leads to the research idea of testing for the factor structure of the CRS in the Georgian sample as a part of the linguistic validation. Even though the application of the shortest version of the CRS-5 and the CRSi-7 do not allow for a detailed examination of more than a one-factor solution, the temporal stability of such a model can be studied.

In this article, we omit the discussion of the theoretical plausibility of a "more-than-one-factor"-latent structure but rather inspect whether a one-factor solution can be reproduced in Georgian populational samples from the years 2012 and 2018. After establishing a measurement model, we further test for the scalar invariance of the model to examine the change in religiosity in the Christian Orthodox population in Georgia from the years 2012 and 2018. If established, scalar invariance allows for a comparison of the factor loadings over time between showing their temporal change and reliability.

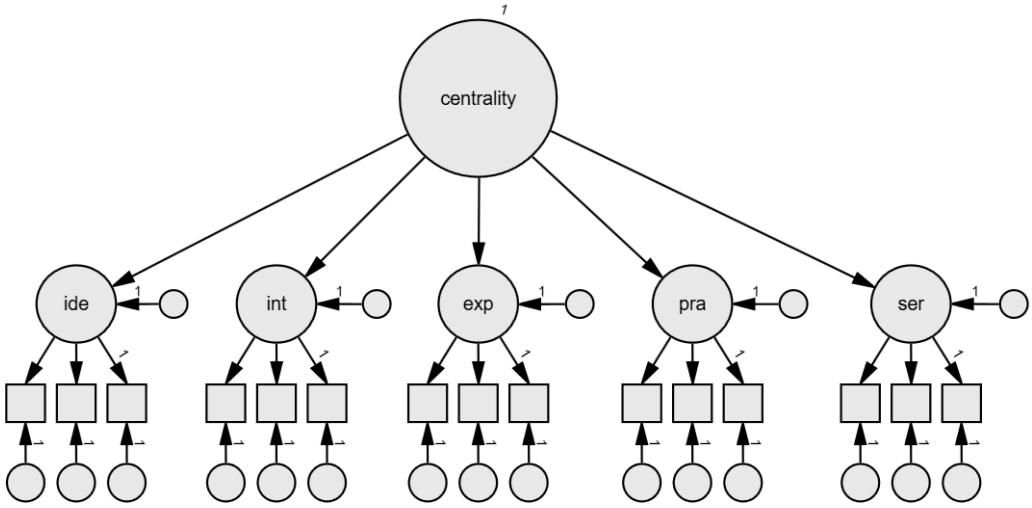


Figure Ge-12. Symbolic picture of centrality or religiosity as a second-level factor with the 5 dimensions of the CRS[7].

4.1.4. Goals and Hypotheses

Up till now the CRS has been well received by the research community, but there is some inconclusive finding regarding its construct validity and reliability in so-called non-western countries (cf. Table 5 in Huber & Huber, 2012, p. 722). The Christian Orthodox context of Georgia challenges the concept of Centrality of Religiosity that is why this article examines the question of construct validity and reliability of Centrality of Religiosity in this country among Orthodox Christians. To be precise, a one-factor solution is expected to work with CRS-5 and CRSi-7.

The study is built around a twofold analytical objective of firstly testing construct validity and reliability of the CRS-5 over time in two representative population samples from the years 2012 and 2018 by confirmatory factor analysis. Both samples are hypothesized not to differ over time.

Secondly, CRSi-7 is expected to show a good global model fit with one factor and factor loadings different from zero, but to not differ substantially from the results of the CRS-5 model testing.

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[7] Small circles depict residual variances, squares depict indicators "int"–intelligence, "ide"–ideology, "exp"–experience, "pra"–private, and "ser"–public practice. Small circles depict residual variances, squares depict indicators, curved lines show covariances, straight lines show regressions.

4.2. Method

4.2.1. Overview

Descriptive statistics are calculated for the distinct indicators and composite scores of the CRS-5 and the CRSi-7. For common reliability analyses of both short forms of the CRS, Cronbach's α are calculated separately for each sample. McDonald's ωs are presented as an alternative coefficient of assessing internal consistency of a scale. The viability of the CRS-5 is confirmed in the general population by comparing the two populational samples from 2012 and 2018 in a one-factor structure invariant model for CRS-5. This model is consequently tested for measurement invariance over time on the level of factor loadings, indicator intercepts, and residual variances. Data only exist from one time point for the CRSi-7. Thus, no invariance testing is performed for this short version of the CRS. The CRSi-7 is tested for global model fit and local strains.

4.2.2. Translation

The CRS underwent the translation procedures twice. The CRS was developed in German (Huber, 2003), and the first officially validated and published version in English appeared in 2012 (Huber & Huber, 2012).

In 2012, a Georgian research team developed the Georgian short versions (CRS-5 and CRSi-7) of the CRS in collaboration with the original author, thus the order of translation was English–Georgian and then the back-translation of Georgian–German. The translation was assessed and accepted by the author of the scale.

In 2018, as the possibility of the translation of all versions of the CRS (CRS-5, CRSi-7, CRS-10, CRSi-14, CRS-15, CRSi-20) was given, the Georgian team hired two professionals, the first for the English–Georgian, and the second for the Georgian–English back-translation. In 2018, the aim was to consult non-German-speaking experts in the field. The back-translations of all versions were accepted by experts in the field and by the author himself.

The translated Georgian items are presented side to side with the English originals in Appendix Ge-1. Only the translations of the seven items of the CRSi-7, which includes the CRS-5 version, were empirically tested in the current study.

4.2.3. Samples

The CRS was applied in two samples in Georgia in the years 2012 and 2018. Both samples were collected in different projects but under the supervision of same principal investigators. Originally, both samples included respondents other than Orthodox Christians. In 2012, any kind of religious affiliation was targeted. In 2018, because of language and organizational reasons, only Christian respondents were targeted in Georgian-speaking households during the sampling procedure. For unification reasons, respondents other than Orthodox Christians were dropped from the analyses, as Christian Orthodox formed the biggest overlapping respondent group. The sampling procedure is described in detail for each sample in the following paragraph. Characteristics of final samples are presented in Table Ge-17.

For the 2012 sample, we used data from a database of the GGS (Generations and Gender Survey, part of the international Generations and Gender Program, coordinated by United Nations Economic Commission for Europe), from a representative longitudinal study in Georgia. Participants already took part in two waves in 2006 and 2009 but the CRS-5 was first administered in 2012. The GGS, as well as the present study, were conducted by the NGO Georgian Centre of Population Research (GCPR), directed by Ph.D. Irina Badurashvili. We randomly selected participants from three Georgian areas, Tbilisi ($N = 1163$), Imereti ($N = 1116$), and Mtskheta-Mtianeti ($N = 74$), in total $N = 2353$. Most of the respondents examined in the study belonged to the Georgian Orthodox Church (95.1%, $N = 2238$). The remaining 4.9% were broke down as follows: Armenian Gregorian 2.6%, other Christians 0.5%, Jewish 0.2%, Muslim 0.2%, Roman Catholic 0.1%, other religion 0.8%, non-religious 0.6%. Participants lived in urban (74.6% of the sample) as

well as rural areas (25.4%). Women constituted 58.9% of the sample. The mean age was 46.38 years ($SD = 18.63;\ range = 15 - 88$).

In the 2018 sampling procedure, about 2000 households from 11 regions of Georgia were randomly chosen, applying a multistage stratified random sampling procedure based on a Georgian population census from 2014 (Shavishvili, 2016). For further statistical analyses the focus only lay on the population that was affiliated with the Orthodox church (87.8%)—in total $N = 1906$ of the 2018 sample (rural area 38%; urban area 62%). The remaining 12.2% of the respondents were distributed as follows: Pentecostalism 5.4%, Protestantism 5.1%, no denomination 0.8%, Roman Catholic 0.7%, another denomination 0.2%. Among the 1906 participants, 55.5% were women and the mean age of the respondents was 48.5 years ($SD = 16.35;\ range = 18 - 89$).

In both waves, all participants were informed about the goal and purpose of the study by an informed consent form, which they signed before entering the study. Participants who did not sign the informed consent form were excluded from the study. There were no specific inclusion criteria apart from being over 15 years old.

Table Ge-17. Descriptive statistic on number of participants, gender, age, and education in samples of the Georgian Christian Orthodox population in 2012 and 2018.

		2012	**2018**
Sample Size		2238	1906
Gender (Women in %)		58.3%	55.5%
Age (Mean; *SD*)		46.1; 18.6	48.5; 16.4
Education	Secondary	34%	39%
	Professional	27%	23%
	Tertiary	37%	38%

Note. *SD*–standard deviation.

4.2.4. Procedure and Measures

Both translated short versions of the CRS were tested in a pilot study within a selection of 50 people to determine the clarity of the items. Respondents recommended changing the wording of the additional experience item in the CRSi-7. Adaptations were done according to the comments. The questions in both English and Georgian can be found in Tables Ge-A1 to Ge-A3 in Appendix Ge-1. Interviews were conducted with the CRS-5 in 2012 and with the CRSi-7 in 2018, therefore, the CRS-5 can also be derived from the data in 2018.

Interviewers visited the participants at their homes. Participants were interviewed face to face, answers were recorded on paper, only one respondent was taken per household according to the most recent birthday in the annual circulation.

The collected data was managed and analyzed with IBM SPSS and AMOS both version 26. Confirmatory Factor Analysis with the multigroup method was used to check for the reliability over time from 2012 to 2018 with the CRS-5. A CFA with one factor of Centrality of Religiosity was applied to the CRSi-7.

4.2.5. Analytic Plan

4.2.5.1. Exploratory Factor Analysis

An Exploratory Factor Analysis (EFA) was performed with both samples to check for the resemblance with the original model by Huber (2003). For factor extraction, a maximum likelihood extraction with varimax rotation method was applied to look for common variance. The decision on the number of factors was done according to the eigenvalue criteria >1. If only one factor would be extracted, rotation would not be applied.

4.2.5.2. Confirmatory Factor Analysis

The confirmatory factor analysis (CFA), in contrast to EFA, was applied in this study to test a specific hypothesis about statistical invariance and compare the one-factor latent structure over time.

The starting point of the confirmatory analysis are the EFAs. The EFAs indicate a one-factor solution (see Table Ge-21) but with the results of studies by Fradelos et al. (2018) and Huza (2018) in mind, we further checked the associations of the core dimensions. The correlation matrix shows the proximity of the three core dimensions—intellect, experience, and ideology—as well as the two core dimensions of private and public practice (see Tables Ge-19 and Ge-20). Thus, the pattern of private and public practice suggests being condensed into "religious practice" (RP) and the grouping of intellect, experience, and ideology can be named "religious beliefs and experience" (RBE) borrowing the designations from Fradelos et al. (2018). To model this specific pattern with five indicators and one factor we allow the private practice and public practice core dimensions to covariate freely in the structure. Consequently, the hypothesized structure is a one-factor solution with centrality as a unifying construct and five indicators of intellect, ideology, experience, private practice, and public practice, with linked residuals between the two indicators of private practice and public practice. The maximum likelihood (ML) method is used in the estimation with variance–covariance matrices as data input throughout the analysis. Taking the suggestions of Hu and Bentler (1999) acceptable fit of the models is stated by following criteria: $RMSEA(\leq 0.06, 90\%CI \leq 0.06, pclose > 0.05)$, $SRMR(\leq 0.08)$, $CFI(\geq 0.95)$, and $TLI(\geq 0.95)$. The named indices provide information on different aspects of the model (i.e., absolute fit, fit adjusted for model parsimony, fit relative to a null model). Altogether, these indices offer a more conservative and reliable evaluation of the solution. For the distinct parameter estimates, modification indices bigger than 4.00 (i.e., expected parameter change $\chi^2 > 4.00$) are considered as a point of model discussion. The modification indices are considered as a model comparison with 1 degree of freedom and a critical $p < 0.05$ where $\Delta\chi^2 > 3.84$ suggest that the overall model fit can be significantly improved, if the fixed or constrained parameter is freely estimated. We round up to $\Delta\chi^2 > 4.00$ for practical reasons.

Throughout the text, parameter estimates are designated in Greek letters: λ—factor loading, τ—intercept of the indicator, κ—factor mean, ϕ—factor variance, δ—with one-digit subscript designates variance of residual, δ—with two digits subscript designates covariance of residuals. Parameter estimates for intellect receive the subscript *x1*, for ideology *x2*, for experience *x3*, for private practice *x4*, and for public practice *x5*.

4.2.5.3. Multigroup Confirmatory Factor Analysis

The populational samples do not constitute a test-retest sample. Therefore, we conduct a test of the invariance using a multigroup analysis. The one-factor model of centrality was tested for structural (equal form), scalar (equal factor loadings) and metric (equal indicator intercepts and equal residual variance) invariance as nested models. Parameters of metric invariance are hereby nested within the scalar parameters and the parameters of scalar invariance are nested within the structural invariance respectively. For the model identification in the invariance testing condition, the variances of the latent variable of centrality are fixed to $\varphi_{2012} = \varphi_{2018} = 1.00$ and the means are set to $\kappa_{2012} = \kappa_{2018} = 0.00$. For the estimation of the mean difference in a second step, the mean for the 2012 group is set to be the reference with $\kappa_{2012} = 0.00$ and the mean of 2018's group is unconstrained.

Multivariate normal distribution of the indicators is a critical condition to get non-biased parameter estimates in SEM. Visual inspection suggests close to normal distributions of the indicators. We still decided to apply a bootstrapping procedure with $B = 200$ drawings to get bias-corrected 95% confidence intervals for the parameter estimates. We think of the bootstrapping as reasonable with given data to correct for the standard error bias within the Maximum Likelihood estimation with close-to-normal distributed data.

As the CRSi-7 was not applied in 2012, no multigroup analysis is run for this short version. Instead, we test a one-factor model with two changes in the indicators of experience and private practice. In both, the maximum answer value of the main and the additional questions are conveyed into the analysis. Two

possible points of difference, i.e., religious experience and private practice between CRS-5 and CRSi-7 are compared.

4.3. Results

4.3.1. Descriptive Results

The answers to the two items, private and public practice, were recoded from a 7-step into a 5-step scale according to recommendations of the authors (Huber & Huber, 2012, p. 720), as this results in an equal 5-step-metric for all the indicators in the model. The mean score of CRS-5 in the representative survey in 2012 is $M = 3.46, SD = 0.83$, same parameters in 2018 $M = 3.59, SD = 0.71$. For more details see Table Ge-18.

Table Ge-18. Means and standard deviations and mean difference between 2018 and 2012 of core dimensions of the CRS-5 and the CRSi-7 and the composite scores of the Christian Orthodox samples in Georgia.

	2012		**2018**		**Difference**	
	Mean	SD	Mean	SD	Mean	SD
Ideology	3.96	0.77	4.09	0.77	0.13	0.00
Intellect	3.37	1.03	3.39	1.03	0.02	0.00
Experience	3.39	1.05	3.48	1.02	0.09	−0.03
Private practice	3.71	1.46	3.84	1.36	0.13	−0.10
Public practice	2.88	1.51	3.07	1.19	0.19	−0.32
CRS-5	3.46	0.83	3.59	0.71	0.13	−0.12
CRSi-7[8]	-	-	3.60	0.71	-	-

Note. CRS—Centrality of Religiosity Scale, CRSi—interreligious CRS, *SD*—standard deviation. Range for each dimension and composite scores goes from 1 to 5. The difference is calculated by subtracting the value of 2012 from the value of 2018.

4.3.1.1. Psychometric Properties of the CRS-5

In the general population, the internal consistency of the surveys with the five items scale was $\alpha = 0.73$[9] in 2012, and $\alpha = 0.67$[10] in 2018, according to Cronbach's α. As displayed in Table Ge-19, the correlations between the five dimensions range between $r = 0.26$ and $r = 0.58$ in 2012 and between $r = 0.21$ and $r = 0.47$ in 2018.

Table Ge-19. Correlations of the core dimensions of the CRS-5 in the Christian Orthodox samples in the years 2012 and 2018.

	CRS-5	**Ideology**	**Intellect**	**Experience**	**Private practice**
Ideology	0.67/0.62				
Intellect	0.71/0.66	0.49/0.36			
Experience	0.71/0.70	0.54/0.45	0.58/0.47		
Private practice	0.76/0.69	0.39/0.28	0.35/0.21	0.36/0.26	
Public practice	0.70/0.66	0.27/0.23	0.29/0.25	0.26/0.25	0.43/0.38

Note. CRS—Centrality of Religiosity Scale. All listed correlations are significant on the $p < 0.001$ level. In each cell, the first correlation coefficient refers to the data from the year 2012, the second to 2018.

[8] CRSi-7 was not applied in the year 2012

[9] Corresponding McDonald's $\omega = 0.72$, calculated by a method suggested by Zhang and Yuan (2016)

[10] Corresponding McDonald's $\omega = 0.65$, calculated by a method suggested by Zhang and Yuan (2016)

4.3.1.2. Psychometric Properties of the CRSi-7

The same statistical calculations as for the CRS-5 were applied to the CRSi-7 reliability testing, but only for the data in 2018. Before calculating the composite total maximum score between existing items and additional items for private practice and experience, dimensions for an interreligious version were calculated see procedure by Huber and Huber (2012). For the resulting five items, the internal consistency of the representative sample was Cronbach's $\alpha = 0.67$[11]. The correlations of the five dimensions range between $r = 0.20$ and $r = 0.48$, see Table Ge-20 for more details.

Table Ge-20. Correlations of the core dimensions of the CRSi-7 in the Christian Orthodox sample in the year 2018.

	CRSi-7	**Ideology**	**Intellect**	**Experience**	**Private Practice**
Ideology	0.62				
Intellect	0.65	0.36			
Experience	0.69	0.45	0.48		
Private practice	0.70	0.28	0.20	0.25	
Public practice	0.67	0.23	0.24	0.24	0.39

Note. CRSi—interreligious Centrality of Religiosity Scale. All listed correlations are significant on the $p < 0.001$ level.

4.3.2. Results of the Exploratory Factor Analyses

Before running the confirmatory (CFA), the samples were checked with exploratory factor analyses (EFA). The EFAs were conducted in all samples separately, to test the general religiosity factor of the CRS-5 and the CRSi-7. The exploratory factor analyses resulted in a one-factor solution in every sample; thus, factor rotation did not play a role. In the general population sample for the year 2012, the EFA demonstrates one factor with an $eigenvalue = 2.60$ and explained variance of 40.81% ($KMO = 0.77$; Bartlett's sphericity $\chi^2 = 2847.77, p < 0.001, df = 10$). In 2018, EFA indicates one factor with an $eigenvalue = 2.24$ and explained variance of 31.87% ($KMO = 0.73$; Bartlett's sphericity $\chi^2 = 1439.89, p < 0.001, df = 10$). The EFA of the CRSi-7 in 2018 yield comparable results with the CRS-5 hence, one factor with an $eigenvalue = 2.26$ and explained variance of 32.10% ($KMO = 0.72$; Bartlett's sphericity $\chi^2 = 1520.01, p < 0.001, df = 10$). See Table Ge-21 for an overview.

Table Ge-21. Results of the exploratory factor analyses with the CRS-5 and the CRSi-7 in 2012 and 2018.

Year (Version)	***N***	***KMO***	**Bartlett's Sphericity χ^2**	***p***	***df***	**Factors with Eigenvalue >1**	**Explained Variance**
2012 (CRS-5)	2238	0.77	2847.77	<0.001	10	1	40.81%
2018 (CRS-5)	1906	0.73	1439.89	<0.001	10	1	31.87%
2018 (CRSi-7)	1835	0.72	1520.01	<0.001	10	1	32.10%

Note. CRS—Centrality of Religiosity Scale, CRSi—interreligious CRS, *N*—sample size, *KMO*—Kaiser–Meyer–Olkin criterion, *p*—probability level, *df*—degrees of freedom.

4.3.3. Results of the Confirmatory Factor Analysis

The CFA is done for the CRS-5 and the CRSi-7. In Georgia, a country with a religion with Abrahamitic roots, the CRS-5 is the instrument of choice, thus, the results of its analysis come first. In the text, we report findings related to scale invariance testing of the CRS-5 between 2012 and 2018, and the results of model testing of the CRSi-7. The interreligious short version does not add any new religious dimensions but extends the measurement of private practice and experience by two additional items, retaining the latent

[11] Corresponding McDonald's $\omega = 0.66$, calculated by a method suggested by Zhang and Yuan (2016)

structure. Thus, a latent structure with one factor of centrality is indicated by five observed variables of the five core dimensions. For the CRSi-7 the results are summarized following the CRS-5 results.

4.3.3.1. CRS-5

4.3.3.1.1. Global Fit

Model tests show a measurement invariance up to the level of indicator residual variances. The model with equal indicator residual variances has a fit of $\chi^2 = 259.09$ with 24 degrees of freedom and 16 estimated parameters. The model's overall goodness-of-fit is characterized by the Comparative Fit Index (*CFI*), Tucker–Lewis index (*TLI*), Standardized Root Mean Square Residual (*SRMR*) and the Root Mean Squared Error of Approximation (*RMSEA*). With a $CFI = 0.95$, a $TLI = 0.96$, a $SRMR = 0.04$ and a $RMSEA[90\%CI] = 0.05[0.04; 0.05]$, $pclose = 0.63$ the model globally fits the data well according to the recommendation by Hu and Bentler (1999). From here on we discuss the model of the highest invariance, hence the model with equal form, equal factor loadings, equal indicator intercepts and equal residuum variances. Details on stepwise model invariance comparison are described in Appendix Ge-2, Table Ge-A4.

4.3.3.1.2. Local Fit

The completely standardized factor loadings of the model vary between $\lambda_{x5} = 0.37$ to $\lambda_{x3} = 0.76$ with the highest value for the core dimension of experience and lowest for public practice. Each of the parameter estimates is reported in the text with a 95% bootstrap-CI in brackets: intellect $\lambda_{x1} = 0.68[0.66; 0.71]$, ideology $\lambda_{x2} = 0.66[0.64; 0.69]$, experience $\lambda_{x3} = 0.76[0.74; 0.78]$, private practice $\lambda_{x4} = 0.44[0.42; 0.47]$, and public practice $\lambda_{x5} = 0.37[0.33; 0.40]$. Each of the bootstrap-CI is associated with a probability of $p = 0.01$.

Intercepts of the indicators can vary between $\tau_{min} = 1.00$ and $\tau_{max} = 5.00$. In the model estimation, they show a range between $\tau_{x5} = 2.97$ and $\tau_{x2} = 4.03$. The indicator of ideology has the highest value and the indicator of public practice the lowest. The intercept's estimations are: intellect $\tau_{x1} = 3.39[3.36; 3.42]$, ideology $\tau_{x2} = 4.03[4.00; 4.05]$, experience $\tau_{x3} = 3.43[3.40; 3.46]$, private practice $\tau_{x4} = 3.77[3.73; 3.82]$, and public practice $\tau_{x5} = 2.97[2.94; 3.01]$. For the intercepts, each of the bootstrap-CI is associated with a probability of $p = 0.01$.

The only allowed correlation of the residuals in the model is the one of private practice and public practice $\delta_{45} = 0.31[0.27; 0.33]$, $p = 0.01$.

The estimated variances of the residuals range between $\delta_2 = 0.33$ and $\delta_5 = 1.64$ with the lowest value for the residual of ideology and the highest for public practice. The variances are as follow: intellect $\delta_1 = 0.55[0.52; 0.58]$, ideology $\delta_2 = 0.33[0.31; 0.35]$, experience $\delta_3 = 0.45[0.42; 0.48]$, private practice $\delta_4 = 1.61[1.54; 1.69]$, and public practice $\delta_5 = 1.64[1.56; 1.72]$, each with a probability level of $p = 0.01$. All reported parameter estimates (i.e., λ, τ, δ) are significant on the $p < 0.001$ conventional level ($\alpha = 0.05$).

The indicator's R^2 range between $R^2_{x3} = 0.58$ and $R^2_{x5} = 0.13$. The indicator of experience has the highest explained variance and the lowest goes to the indicator of public practice, each reported with a 95% bootstrap-CI: intellect $R^2_{x1} = 0.47[0.44; 0.50]$, ideology $R^2_{x2} = 0.44[0.41; 0.47]$, experience $R^2_{x3} = 0.58[0.55; 0.61]$, private practice $R^2_{x4} = 0.20[0.17; 0.22]$, and public practice $R^2_{x5} = 0.13[0.11; 0.16]$, probability for each bootstrap-CI is $p = 0.01$. See Table Ge-A5 in Appendix Ge-2 for an overview of the results.

The local strain modifications of $\chi^2 > 4.00$ were only suggested for the covariances of the residuals, which we decided not to let correlate except for the covariance of the behavior-related indicators—private practice and public practice. Both of them constitute the less predictive part of the solution, but still have salient factor loadings and a substantial covariance between the residuals. The interpretability of the solution is only limited in the behavioral part of the model, i.e., private practice and public practice indicator, we review this point in the discussion.

4.3.3.1.3. Mean Difference between 2012 and 2018

For examining the latent mean difference between 2012 and 2018 we released the constraint of equal means, which was necessary for model identification in the first two steps (equal form and equal factor loadings); thus, only two models can be consulted for the latent mean difference as identified (equal indicator intercepts and equal error variances). Considering the estimation of the model with equal error variances as fitting well with a $CFI = 0.95$, a $TLI = 0.96$, $SRMR$ =not available[12] and a $RMSEA[90\%CI] = 0.05[0.04; 0.06]$, $pclose = 0.60$, globally seen, the model fits the data well as proposed by recommendations by Hu and Bentler (1999). The later fit is close to the model with both latent means constrained to zero. The latent mean difference shows an increase from 2012 to 2018 with $\kappa_{2018} - \kappa_{2012} = 0.11$ ($\varphi_{2012} = \varphi_{2012} = 1.00$).

4.3.3.2. CRSi-7

4.3.3.2.1. Global Fit

For the CRSi-7, a model with one factor and five indicators was calculated. The model's overall fit is $\chi^2 = 26.71$ with 4 degrees of freedom and 11 estimated parameters. The model's overall goodness-of-fit is defined by the Comparative Fit Index (CFI), Tucker–Lewis index (TLI), Standardized Root Mean Square Residual ($SRMR$) and the Root Mean Squared Error of Approximation ($RMSEA$). A $CFI = 0.99$, a $TLI = 0.97$, a $SRMR = 0.02$ and a $RMSEA[90\%CI] = 0.06[0.04; 0.08]$, $pclose = 0.31$ show that the model has a good fit according the recommendation by Hu and Bentler (1999). Only the CI of *RMSEA* crosses the defined upper limit of ≤ 0.06.

4.3.3.2.2. Local Fit

The model's completely standardized factor loadings range from $\lambda_{x5} = 0.43$ to $\lambda_{x3} = 0.74$ with the highest value for the core dimension of experience and lowest for public practice. Each of the estimated parameters is reported here with a 95% bootstrap-CI in brackets and the associated probability: intellect $\lambda_{x1} = 0.63[0.58; 0.67], p = 0.02$, ideology $\lambda_{x2} = 0.62[0.58; 0.66], p = 0.01$, experience $\lambda_{x3} = 0.74[0.70; 0.78], p = 0.01$, private practice $\lambda_{x4} = 0.38[0.32; 0.42], p = 0.02$, and public practice $\lambda_{x5} = 0.35[0.31; 0.41], p = 0.01$.

One covariance of the residuals in the model was not restricted. It is the covariance of the residuals of private and public practice $\delta_{45} = 0.31[0.25; 0.34], p = 0.01$. All reported parameter estimates (i.e., λ, δ) are significant on the $p < 0.001$ conventional level ($\alpha = 0.05$).

The indicator's explained variances range between $R^2_{x3} = 0.54$ and $R^2_{x5} = 0.13$. The indicator of experience has the highest explained variance and the lowest goes to the indicator of public practice, each reported with a 95% bootstrap-CI and the accompanying probability: intellect $R^2_{x1} = 0.39[0.34; 0.45], p = 0.01$, ideology $R^2_{x2} = 0.38[0.34; 0.44], p = 0.02$, experience $R^2_{x3} = 0.54[0.49; 0.61], p = 0.01$, private practice $R^2_{x4} = 0.14[0.10; 0.17], p = 0.01$, and public practice $R^2_{x5} = 0.13[0.09; 0.16], p = 0.02$. See Table Ge-A6 in Appendix Ge-2 for an overview of the results.

Modification indices with $\chi^2 > 4.00$ were recommended by the analytical software for the covariances of the residuals, which we decided to not let correlate, with the exception of the covariance of private and public practice indicators. Another recommendation was given for a factor loading between the indicators of private practice and ideology in both directions separately, with both modification indices $\chi^2 > 4.00$. We review this point in the discussion.

[12] SRMR is not available in AMOS as soon as means and intercepts have to be estimated by the software, which happens here with the release of one of the mean constraints

4.4. Discussion

This paper presents three main results: firstly, two statistically validated, short versions of the scale (CRS-5 and CRSi-7) in the religious and cultural context of Georgia; secondly, an investigation of the latent structure of the five dimensions of the CRS by Confirmatory Factor Analysis based on samples from 2012 and 2018 that are representative for the Christian Orthodox population of Georgia; thirdly, the norm values of both scales for future research.

4.4.1. Validation in the Context of Georgia

As mentioned in the introduction, Georgia, with its long-lasting Christian roots, has some particularities to be considered, e.g., the interwovenness of religion and national identity, high trust in religious institutions and their role in the everyday life of people and, therefore, their extension from macro to micro levels of society. Even if not discussed in detail, in this study these facts solidify the assessment of religiosity as a key construct in social scientific research in Georgia.

Generally, the Centrality of Religiosity can be straightforwardly assessed in Georgia with both the CRS-5 and the CRSi-7. The scales' internal consistencies, according to Cronbach's α, show acceptable to good values, with the lowest value $\alpha = 0.67$ and the highest $\alpha = 0.73$. Only in the sample from 2018, Cronbach's α drops lower than $\alpha = 0.70$—i.e., $\alpha = 0.67$—in both short versions of the CRS. Therefore, we advocate for using longer versions of the CRS, or considering training for interviewers if applicable. Both steps heighten the probability of better data quality. Additionally, as no data were collected with the CRS-10, the CRS-15, the CRSi-14 or the CRSi-20, it would be a desirable next step to statistically validate their translation into Georgian.

If considered in detail, in the samples, the correlations of the indicators of the CRS range between $r = 0.20$ and $r = 0.58$ (cf. Table Ge-19 and Table Ge-20). These values evidence the operational expectancy that the core dimensions are moderately linked and have enough common variance. At the same time, correlations show that they are not too close to each other to consider one or more core dimensions to be redundant. This finding was mirrored in the CFA. Each of the five dimensions substantially contributes to the latent variable of centrality in both samples (2012 and 2018). In this regard Georgia has a comparable outcome to many of the countries of the Religion Monitor organized by the German Bertelsmann Foundation. Therefore, the researchers can run studies in Georgia with the CRS and draw conclusions on international analyses.

Through an inspection of correlations, two sub-clusters of religiosity can be recognized but not reconstructed via statistical methods in this study. One of them is religious beliefs and experience (intellect, ideology, and experience) and the other is religious behavior (private practice and public practice). Both assumed factors collapse into the factor of Centrality of Religiosity, as is shown by the EFAs. Further exploration of this issue can be undertaken by using a longer version of the CRS in research if desired. More on this topic will follow in the discussion of confirmatory factor analysis.

Even though no distinct behavioral factor shows up in the analysis, one particularity of Georgian believers has to be seriously considered. Especially in Georgia, people use churches and chapels in their everyday faith life as a place to stay shortly, pray and continue their daily businesses. This custom leads to proximity of the church environment and private religious practice. Thus, personal religious activity becomes mixed with the communal religious sphere. Believers may report their private religious habits in public places according to social desirability. A possible explanation is that—being activated in the semantical net—both private and public practice may be subject to conformity under the overarching idea of national identity. Such an influence gives rise to biased survey data. Interviewer effects can amplify the bias. Considering possible sources of data distortion and incompleteness, the differentiated measurement of religiosity should be multidimensional as claimed for more than half a century by the proposition of Glock and Stark (1966) and re-established by Huber (2003). Hence, we argue in favor of an extensive measurement. Saving time should not be a reason for incompletely constructed assessments. The short forms of the CRS were validated to save time in the first place. One major point stands out. If researches rely for example on the frequency of church attendance and private practice in Georgia, they make use of

the weakest predictors according to the results in this study. To sum up briefly, an underestimation of Centrality of Religiosity—e.g., looking at the frequency of church attendance or prayer—would lead to inaccurate results in any domain of scientific investigation related to religion in Georgia.

Another major advantage of samples, like in this study, is their coverage of the majority of the population. The results of this study can be used as rough populational norms in Georgia. In combination with the reliability analyses and the result of longitudinal stability of the scale's statistical coefficients (cf. Tables Ge-18–Ge-20) provide a basis for further investigations in Georgia and for international comparisons. A minor concern is that the data in this study consists solely of the Orthodox majority of Georgia despite its religious plurality.

4.4.2. CRS Reliability

Analysis of the longitudinal stability of the measurement of centrality by CRS-5 shows that over a period of 6 years between 2012 and 2018, the scale is a consistent instrument. CRSi-7 has comparable model fit indices and parameter estimates. In general, both short versions provide evidence for the construct of Centrality of Religiosity with some minor cutbacks on behavioral indicators. We review the results in detail for each scale.

4.4.2.1. CRS-5

The widely known Cronbach's α shows the viability of the CRS in an unpretentious way; however, it has widely known limitations. Reflecting on the model implications of Cronbach's α—especially its τ—equivalence and requirement of uncorrelated error variances models in this study have to be evaluated in a different way. Samples from 2012 and 2018 do not contain the same participants. Thus, models with invariance constraints on different levels are calculated for reliability tests. Corrected for the measurement error in the CFA, the CRS-5 demonstrates high credibility by longitudinal invariance over 6 years. This means that the concept of Centrality of Religiosity is a reliable psychological construct.

Considered more closely, the final model with equality on factor loadings, indicator intercepts, indicator variances, and residual variances in 2012 and 2018, has its strengths and weaknesses. Based on EFAs that yield, in both samples, an overall satisfactory solution with only one factor with an eigenvalue higher than 1. The CFA verifies this factor as the assumed Centrality of Religiosity. The global fit indices for the estimation are acceptable at a conventional level allowing the interpretation of the individual parameters.

First, an argument for the residual covariation of the indicators of prayer and church attendance is presented. Ideally, there would be no need to let the residuals covariate, but we see this as well-founded in a one-factor model, where residual variances do not only consist of measurement error. The relatively high variances of the residuals of prayer and church attendance demonstrate that. Thus, we preserve the model with constrained residual variances that corroborates the covariance of residuals being stable at a $\delta_{45} = 0.31$ over time. The second argument is on the factor loadings. Any of the factor loadings have at least a salient presence in the manifest variables. For intellect, ideology, and experience the factor loadings can be interpreted as simple regression coefficients with medium to strong effect sizes (*r*s ranging from $r_{x2} = 0.66$ to $r_{x3} = 0.76$), explaining a substantial part of religious beliefs and experience systematically (R^2s ranging from 0.47 to 0.58). Particularly, experience shows its driving force for the Centrality of Religiosity in the Georgian context. No less than experience, cognitive occupation and relation with transcendence also contribute to the Centrality of Religiosity.

For the frequency of private and public practice, the factor loadings show relatively low values $r_{x4} = 0.44$ and $r_{x5} = 0.37$, respectively (their R^2s range from $R^2_{x4} = 0.20$ to $R^2_{x4} = 0.13$). Their validity still stays unquestioned but is belittled in the light of the other three indicators. Further investigations may use the longer CRS versions to establish a measurement model which has more indicators per core dimension. For thorough and detailed investigations, the CRS-15 and CRSi-20 are recommended. Then, the clusters of religious belief and experience and religious behavior will be reproduced by covariations between the latent variables of each core dimension. The same recommendations can be derived for the predictive power of

the CRS. Longer versions consider more aspects of behavior than just frequency, i.e., importance and connectedness.

The reported indicator intercepts are conservative—in other words, more precise—mean estimations of each of the items of the core dimensions as they are corrected for the measurement error. Combined with the found latent mean difference of $\Delta\kappa = 0.11$ we can conclude a small increase in the mean of Centrality of Religiosity in Georgia from 2012 to 2018. If needed, increases in each core dimension can be calculated separately by multiplying the factor loadings with the latent mean change and adding the product on the values of the 2012 indicator intercepts. With the established model, we can see that changes in intellect, ideology and experience are slightly underestimated, whereas changes in private and public practice are slightly overestimated by the composite scores: intellect $\Delta\tau_{x1} = -0.07$, ideology $\Delta\tau_{x2} = -0.01$, experience $\Delta\tau_{x3} = -0.03$, private practice $\Delta\tau_{x4} = 0.02$, public practice $\Delta\tau_{x5} = 0.06$. We do not consider these changes as substantial enough to discuss, but the amplitude of differences can quickly change according to the groups being analyzed; thus, practical implications of a substantial change are a desirable next step in further investigations. A third representative sample with a comparable sample size—around 2000 participants—in Georgia with an adequate time gap (e.g., starting from 2024) would allow for further investigations of scale reliability of the CRS-5 and the first invariance testing of the CRSi-7.

4.4.2.2. CRSi-7

The CRSi-7 was examined differently than the CRS-5. Because of a lacking second time point of assessment, no invariance test could be run. Despite this fact, the interreligious short version demonstrates comparable results as its shorter Abrahamitic equivalent. The two potential points of difference between the two scales are the core dimensions of experience and private practice. CRSi-7 offers the participants two additional questions. Before the analysis, both core dimensions receive the maximum value. The maximum is calculated from the items asking about the frequency of prayer or meditation. The same pattern applies for the item of religious experience asking about dialogic (God's intervention in one's life) or participative (connectedness with everything) familiarity. Following this logic, both dimensions should have higher factor loadings. A comparison of the parameter estimates shows that the estimation for the core dimension of experience in the CRS-5 fall within the 95% CI of the estimator in CRSi-7 and vice versa. While the core dimension of private practice is at the upper bound (superscript *ub*) of the confidence interval in the CRSi-7, it touches the lower bound (superscript *lb*) of the CI in CRS-5 ($\lambda^{lb}_{x4-crs5} = \lambda^{ub}_{x4-crsi7} = 0.42$). The CIs of the covariance between the residuum of private and public practice overlap as well. The same can be said about the remaining factor loadings in the models. Thus, we can conclude that the CRSi-7 yields comparable results to the CRS-5 in the sample from 2018. One should not lose sight of one thing; the sample solely consists of Orthodox Christians and practices such as meditation or an experience of being one with everything are not typical for this religious tradition. Our hypothesis on the equality of the result of both CRS version in this sample is confirmed.

4.4.3. Relation of the CRS-5 and the CRSi-7

Even though not mentioned explicitly as a study goal, the comparison of both scales is of interest. Considering the uniform Christian Orthodox sample, it is not surprising to find both scales perform similarly in the statistical analyses. Means of the composite scores in 2018 almost do not differ—with CRS-5 with $M = 3.59$, and CRSi-7 with $M = 3.60$. Cronbach's αs are identical $\alpha_{CRS-5} = \alpha_{CRSi-7} = 0.67$. The correlations between the core dimensions for the CRS-5 and CRSi-7 do not differ by greater than 0.01; no favorable direction can be identified thus it seems to have a random character. In the EFA, CRSi-7 captures a little, but not substantial, more variance—$R^2 = 32.10\%$—in the data than CRS-5, at $R^2 = 31.87\%$. In the end, CFA showed that both scales are comparable in the Christian Orthodox context of Georgia—see the discussion of CRSi-7 in the preceding paragraph. There seems to be no advantage of an interreligious version; therefore, for study economy, CRS-5 should be applied in dominantly Abrahamitic contexts.

4.5. Conclusions

In this study we show that (1) the CRS-5 has a valuable credibility for the assessment of the personal trait of religiosity; (2) the CRSi-7 delivers comparable results in Christian Orthodox samples like the one in Georgia; (3) researchers can use the results as norms for further investigations in Georgia and likewise for international comparison; (4) the results of the CFA of the CRS-5 indicate a minor increase in the religiosity level in the country. Some critique is justified and is considered in the following paragraph.

4.5.1. Limitations and Strengths

For broad investigations of religiosity in Georgia, the short versions are limited. Therefore, longer versions should be evaluated statistically. Using the CRS-15 or the CRSi-20 would provide at least three indicators per core dimension, allowing a deeper investigation of the latent structure within the framework of a CFA. With a look at the relatively large variances of the residuals of private and public practice, which point towards higher heterogeneity in the population, longer versions offer an advantage to disentangle this block of variance. In our study, we allow the residuals of private and public practice to covariate here, by building a so-called minor factor. In our opinion, this covariation accounts adequately for the unexplained variance in the residuals of both factors. The random nature of these residual co-/variances is refuted in the invariance testing by showing a stable parameter estimate of $\delta_{45} = 0.31$. Nonetheless, it is an essential indication of model fit and could lead to a rejection of the model if no residual covariances would be allowed in the model. Besides the discussion of statistical models, it is a limitation of the current study that the concept of CRS is not cross validated with other ways of measuring religiosity. Thus, external validity is not examined, and no statements could be made upon this topic. Notwithstanding mentioned limitations, some major advantages of this empirical study stand out.

In this study, we collected data on Christian Orthodox samples of the Georgian population, with sample sizes delivering sufficient statistical power. With this data, the concept of Centrality of Religiosity forms a stable factor that adequately explains the core dimensions of religiosity as postulated by Huber (2003). If the research focuses mainly on Christians, there is no additional benefit in using the CRSi-7 over the CRS-5. As longer versions are available, we recommend validating and using them wherever possible in the research related to religion in Georgia.

4.6. *Appendix Ge-1. Items of English and Georgian Versions of the CRS*

Table Ge-A1. Items of the CRS shared by the short, intermediate and long versions.

Dimension	Items for Both the Basic and Interreligious Versions	Basic Versions			Additional Items for the Interreligious Versions	Interreligious Versions		
		CRC-5	CRS-10	CRS-15		CRSi-7	CRSi-14	CRSi-20
Intellect	01: How often do you think about religious issues? 01: რამდენად ხშირად ჩაფიქრებულხართ რელიგიასა და მასთან დაკავშირებულ საკითხებზე?							
Ideology	02: To what extent do you believe that God or something divine exists? 02: რამდენად ძლიერად გწამთ ღმერთის ან რაღაც ღვთიურის?							
Public practice	03: How often do you take part in religious services? 03: რა სიხშირით იღებთ მონაწილეობას რელიგიურ მსახურებებში?							
Private practice	04: How often do you pray? 04: რა სიხშირით ლოცულობთ?				04b: How often do you meditate? 04b: რა სიხშირით მედიტირებთ?			
Experience	05: How often do you experience situations in which you have the feeling that God or something divine intervenes in your life? 05: რამდენად ხშირად ყოფილხართ ისეთ სიტუაციაში, როდესაც იგრძენით, რომ თქვენს ცხოვრებაზე ღმერთი ან რაღაც ღვთიური ახდენდა გავლენას?				05b: How often do you experience situations in which you have the feeling that you are in one with all? 05b: რამდენად ხშირად ყოფილხართ ისეთ სიტუაციაში, როდესაც იგრძენით, რომ თქვენ და სამყარო ხართ ერთი მთლიანი?			

Note. CRS–Centrality of Religiosity Scale, CRSi—interreligious CRS, light grey marks the items of the short versions, semi-dark grey marks the items of the intermediate versions, dark grey marks the items of the long versions. See Tables Ge-A2 and Ge-A3 for the listing of the items of the intermediate and long versions.

Table Ge-A2. Items of the CRS shared by the intermediate and long versions.

Dimension	Items for Both the Basic and Interreligious Versions	Basic Versions		Additional Items for the Interreligious Versions	Interreligious Versions	
		CRS-10	CRS-15		CRSi-14	CRSi-20
Intellect	06: How interested are you in learning more about religious topics? 06: რამდენად გაინტერესებთ რომ უფრო მეტი შეიტყოთ რელიგიურ საკითხებზე?					
Ideology	07: To what extend do you believe in an afterlife—e.g., immortality of the soul, resurrection of the dead or reincarnation? 07: რამდენად ძლერად გწამთ სიკვდილის შემდგომ სიცოცხლის - მაგ.: სულის უკვდავების, მკვდრეთით აღდგომის ან რეინკარნაციის?					
Public practice	08: How important is to take part in religious services? 08: რამდენად მნიშვნელოვანია რელიგიურ მსახურებებში მონაწილეობის მიღება?					
Private practice	09: How important is personal prayer for you? 09: რამდენად მნიშვნელოვანია თქვენთვის პირადი ლოცვები?			09b: How important is meditation for you? 09b: რამდენად მნიშვნელოვანია თქვენთვის მედიტაცია?		
Experience	10: How often do you experience situations in which you have the feeling that God or something divine wants to communicate or to reveal something to you? 10: რამდენად ხშირად ყოფილხართ სიტუაციაში, როდესაც იგრძენით რომ ღმერთს ან რაღაც ღვთიურს სურს თქვენთან კომუნიკაცია, რაღაცის გაცხადება?			10b: How often do you experience situations in which you have the feeling that you are touched by a divine power? 10b: რამდენად ხშირად ყოფილხართ სიტუაციაში, როდესაც იდგრძენით რაღაც ღვთიური ძალის შეხება?		

Note. CRS–Centrality of Religiosity Scale, CRSi—interreligious CRS, semi-dark grey marks the items of the intermediate versions, dark grey marks the items of the long versions. See Table Ge-A1 for items shared by all versions of the CRS. See Table Ge-A3 for the listing of the items of the long versions.

Table Ge-A3. Items of the CRS shared by the long versions.

Dimension	Items for Both the Basic and Interreligious Versions	Basic Versions	Additional Items for the Interreligious Versions	Interreligious Versions
Intellect	11: How often do you keep yourself informed about religious questions through radio, television, internet, newspapers, or books? 11: რამდენად ხშირად იღებთ რელიგიურ საკითხებზე ინფორმაციას ისეთი წყაროებიდან როგორიცაა: რადიო, ტელევიზია, ინტერნეტი, გაზეთები ან წიგნები?	CRS-15	14b: How often do you try to connect to the divine spontaneously when inspired by daily situations? 14 b: რამდენად ხშირად ცდილობთ დაუკავშირდეთ რაღაც ღვთიურს, სპონტანურად, ყოველდღიური სიტუაციიდან გამომდინარე?	CRSi-20
Ideology	12: In your opinion, how probable is it that a higher power really exists? 12: თქვენი აზრით, რამდენად შესაძლებელია, რომ მართლაც არსებობს უმაღლესი ძალა?			
Public practice	13: How important is it for you to be connected to a religious community? 13: რამდენად მნიშვნელოვანია თქვენთვის გქონდეთ კავშირი მრევლთან?			
Private practice	14: How often do you pray spontaneously when inspired by daily situations? 14: რამდენად ხშირად ლოცულობთ სპონტანურად, ყოველდღიური სიტუაციიდან გამომდინარე?			
Experience	15: How often do you experience situations in which you have the feeling that God or something divine is present? 15: რამდენად ხშირად ყოფილხართ სიტუაციაში, როდესაც იგრძენით რომ ღმერთი ან რაღაც ღვთიური თქვენთან იმყოფება?			

Note. CRS–Centrality of Religiosity Scale, CRSi—interreligious CRS, dark grey marks the items of the long versions. See Tables Ge-A1 and Ge-A2 for the items shared by short and intermediate versions of the CRS.

4.7. *Appendix Ge-2. Results of the Confirmatory Factor Analyses and Histograms of the CRS items*

Table Ge-A4. Comparison of nested models for the CRS-5 between 2012 and 2018.

Invariance Level	*Npar*	χ^2	*df*	$\Delta\chi^2$	Δ *df*	RMSEA [90% CI]	*pclose*	SRMR	CFI	TLI
Equal form	32	50.22	8			0.04 [0.03; 0.05]	0.99	0.02	0.99	0.98
Equal factor loadings	27	73.59	13	23.38	5	0.03 [0.03; 0.04]	1.00	0.03	0.99	0.98
Equal intercepts	21	113.13	19	39.54	6	0.04 [0.03; 0.04]	1.00	NA	0.98	0.98
Equal residual variances	16	259.09	24	145.95	5	0.05 [0.04; 0.05]	0.63	NA	0.95	0.96

Note. Models are nested in descending order. N—sample size; *Npar*—number of estimated parameters; *df*—degrees of freedom; χ^2—chi-square; SRMR—standardized root mean square residual; CFI—comparative fit index; TLI—Tucker–Lewis index; RMSEA—root mean square error of approximation; CI—confidence interval; *pclose*—probability value of the Close Fit-function proposed by (Browne & Cudeck, 1993), NA—not applicable, the SRMR is not available as soon as means and intercepts are estimated by the AMOS software.

Table Ge-A5. Results of the Confirmatory Factor Analysis of the CRS-5 invariance examination.

	Designation	**Factor Loading— λ[95% CI]**	**Indicator Intercept— τ[95% CI]**	**Squared Correlation— R^2[95% CI]**	**Residual Variance— δ[95% CI]**
Intellect	x_1	0.68 [0.66; 0.71]	3.39 [3.36; 3.42]	0.47 [0.44; 0.50]	0.55 [0.52; 0.58]
Ideology	x_2	0.66 [0.64; 0.69]	4.03 [4.00; 4.05]	0.44 [0.41; 0.47]	0.33 [0.31; 0.35]
Experience	x_3	0.76 [0.74; 0.78]	3.43 [3.40; 3.46]	0.58 [0.55; 0.61]	0.45 [0.42; 0.48]
Private Practice	x_4	0.44 [0.42; 0.47]	3.77 [3.73; 3.82]	0.20 [0.17; 0.22]	1.61 [1.54; 1.69]
Public Practice	x_5	0.37 [0.33; 0.40]	2.97 [2.94; 3.01]	0.13 [0.11; 0.16]	1.64 [1.56; 1.72]

Note. Results from the model with equal residual variances are presented. CI—confidence interval. Covariance of the residuals of private and public practice is $\delta_{45} = 0.31[0.27; 0.33]$. All other covariances of residuals are fixed to zero. All estimates are significant at $p < 0.001$ level. Confidence intervals are calculated via bootstrapping with 200 drawings. All presented bootstrap-CIs are associated with a significance level of $p = 0.01$.

Table Ge-A6. Results of the Confirmatory Factor Analysis of the CRSi-7.

	Designation	**Factor Loading— λ**		**Squared Correlation— R^2**	
		estimate [95% CI]	p of CI	estimate [95% CI]	p of CI
Intellect	x_1	0.63 [0.58; 0.02]	0.02	0.39 [0.02; 0.45]	0.01
Ideology	x_2	0.62 [0.58; 0.01]	0.01	0.38 [0.01; 0.44]	0.02
Experience	x_3	0.74 [0.70; 0.01]	0.01	0.54 [0.01; 0.61]	0.01
Private Practice	x_4	0.38 [0.32; 0.02]	0.02	0.14 [0.02; 0.17]	0.01
Public Practice	x_5	0.35 [0.31; 0.01]	0.01	0.13 [0.01; 0.16]	0.02

Note. CI—confidence interval. Covariance of the residuals of private and public practice is $\delta_{45} = 0.30$ [0.25; 0.34]. All other covariances of residuals are fixed to zero. All estimates are significant at $p < 0.001$ level. Confidence intervals are calculated via bootstrapping with 200 drawings.

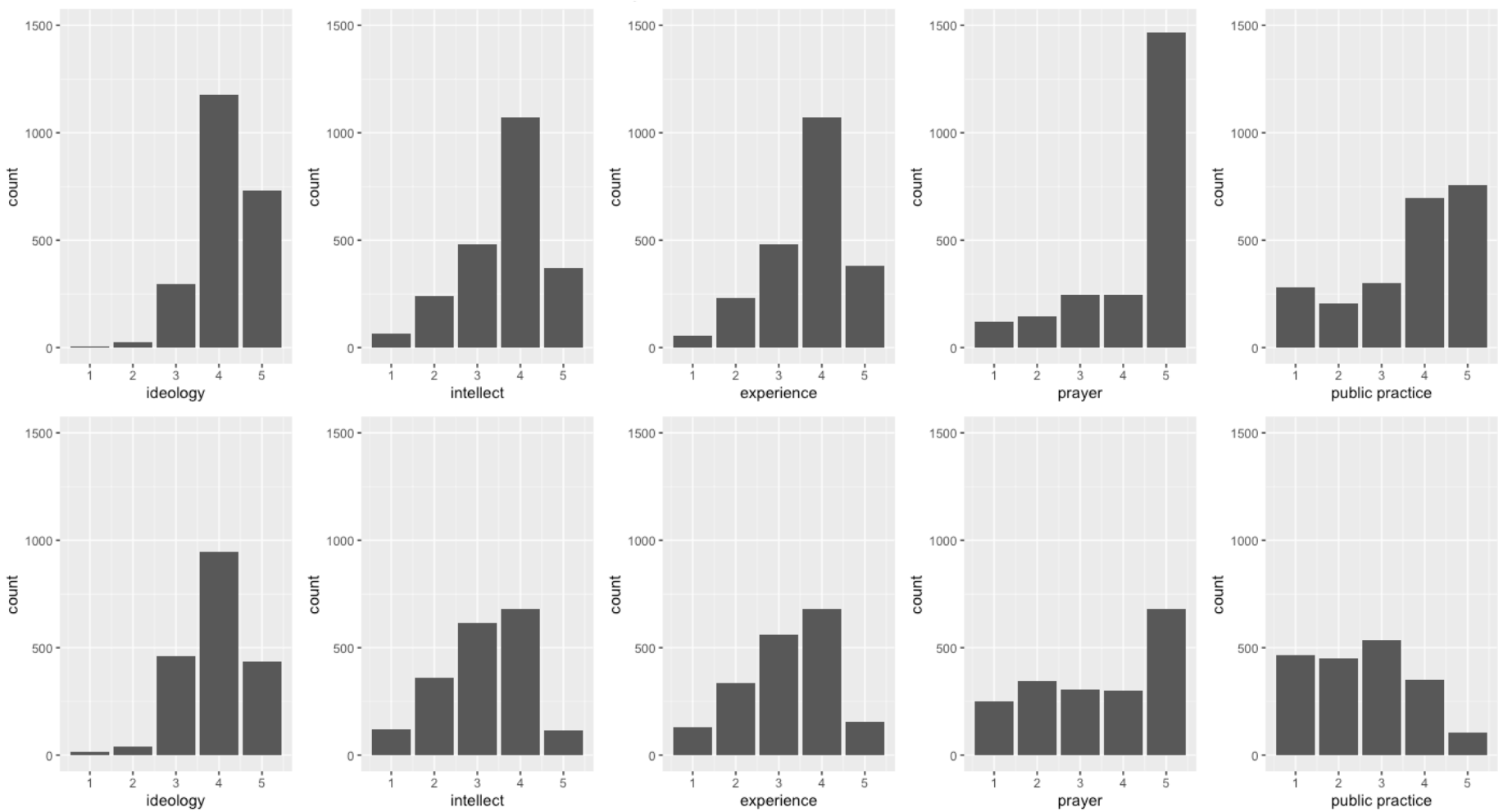

Figure Ge-A7. Histograms of the CRS-5 items. Upper row data from the year 2012, lower row data from the year 2018.

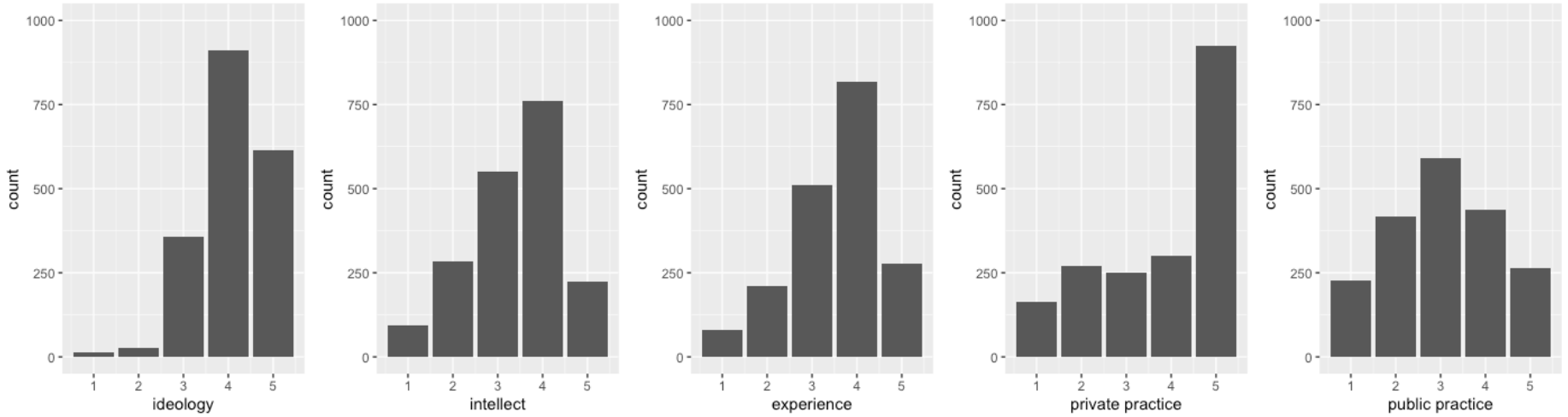

Figure Ge-A8. Histograms of the CRSi-7 items. Data from the year 2018.

4.8. Results and Interim Conclusions From the Study in Georgia

The investigation of the short forms of the CRS in Georgia was the first to examine the time-invariance of the scale with the CRS-5. It was done via stepwise restriction of the parameter in the measurement models of the CRS. Before discussion of the CFA results some words on the psychometrical qualities of the scale.

From the internal consistency coefficients, one can see that the values are acceptable. Nonetheless, there is room for improvement especially with regard to the data collection which was done via home visits and reliability differed between the interviewers in a post-hoc analysis remarkably.

Low internal consistency coefficients are reflected in the low mean factor loadings for the CRS-5 and CRSi-7 models (mean λ, see Tables 34 and 35). Both models have the same correlated indicator residuals of private and public practice. This modification was necessary to model the covariance pattern in the data. Nevertheless, the correlation of the residuals is constant over time. With these correlated residuals, the model of the CRS-5 is suitable to reproduce the configuration in both samples. The weakest factor loadings in both the CRS-5 and CRSi-7 CFAs are associated with the indicators private and public practice, exactly those with the correlated residuals. The range of factorially explained variance in the five indicators ranges between 12% and 58% leaving room for extra-factorial determinants.

Regarding the global model fit measures, the CRS-5 and CRSi-7 models perform well according to the established goodness of fit criteria. The restrictions on the latent mean on the CRS-5 time-invariance model allow for an estimation of the change in centrality of religiosity from the year 2012 to 2019 which is $\Delta\kappa = 0.11$ in a possible range of 1.00 to 5.00. This is possible because the model of the CRS-5 shows scalar invariance.

In general, the results show that the centrality-component is reproducible with both short versions of the CRS. Additionally, a time-invariance is observable with the CRS-5. The general hypotheses testing results can be seen in Table 22.

The next study with the data from Russia was intended to replicate the results of time-invariance from Georgian data with the CRS-5 and the CRSi-7.

Table 22. Overview of the CRS invariance hypotheses' tests with the data in Georgia.

	Configural invariance	**Metric invariance**	**Scalar invariance**
CRS-5	found	found	found
CRSi-7	found	not tested*	not tested*

Note. Configural invariance is found between the years 2008 and 2012 with the CRS-5. Results of the CRSi-7 testing can be interpreted as configural invariance compared to other studies with the CRSi-7 e.g., Romania and Russia included in this thesis. Metric and scalar invariance was supported with the data for the CRS-5. *There was no data available for the CRSi-7 to test metric and scalar invariance, thus, the table includes the "not tested" token.

5. Examination in Russia: "Validation of the Short Forms of Centrality of Religiosity Scale in Russia"

Abstract: Since the end of the Soviet Union, Christian Orthodoxy has regained importance in Russian society. Considering the religious dynamics in the decades after 1990, scholars working in the field have been debating about a reliable measuring tool for religiosity. The present study provides a validation of two short forms of the Centrality of Religiosity Scale (CRS), the CRS-5, and CRSi-7 in Russia, as well as its corresponding translated items. Therefore, data from two large-scale sociological surveys from 2008 ($N = 984$) and 2019 ($N = 1768$) were used. A multigroup confirmatory factor analysis with restrictions on the variance and covariance structure of the model shows good results in terms of absolute, parsimony, and relative model fit for the CRS-5 and CRSi-7. Moreover, the models indicate time-invariance, which is a consistent psychometric characteristic of both short forms. The time-invariance is accompanied by the good internal consistency of the scales: The CRS-5 with $\alpha = 0.85$ and the CRSi-7 with $\alpha = 0.84$. The results of the analysis encourage the use of the CRS-5 and the CRSi-7 for research on religiosity in Russia. While the CRS-5 is especially suitable for the Orthodox-dominated religious landscape, the CRSi-7 should be used if non-monotheistic private religious practice and religious experience are the focus of the scientific investigation.

5.1. Introduction

5.1.1. Status Quo of the Empirical Research on Religiosity in Russia

A substantial gap concerning church affiliation and religious practice can be identified in sociological research on religiosity in Russia. While a large share of the population belongs to the Russian Orthodox Church (according to various surveys, between 60% to 80%), low levels of religious practices like regular attendance of religious services, confession, and receiving communion, have been observed (according to various sources, between 3% to 15% of the population). See, for example, Sahgal and Cooperman (2017), Emelyanov (2016), and Sinelina (Синелина 2013) for in-depth statistical analyses on this discrepancy.

The low religiosity level is usually explained by the strong link between Russian Orthodox religious affiliation and ethnicity, national identity, or loyalty to the state, which substitutes "true" religious commitment. For example, Zorkaya (Зоркая 2009) argues that the mass conversion to Orthodoxy since the 1990s is not a manifestation of religious revival, since Orthodoxy is only a component of the post-Soviet identity. On the same topic, Kääriäinen and Furman (Каариайнен and Фурман 2007a, 2007b) conclude that the "pro-Orthodox consensus"—a positive attitude towards religion and the Russian Orthodox Church in the mass consciousness, accompanied by the conviction that there is no "Russianness" without Orthodoxy—cause the growth of religious affiliation not confirmed by either practice or belief in God. Filatov and Lunkin (Филатов and Лункин 2005) complete these thoughts by adding that the religious factor only has a minor effect on public life in Russia, as for the majority of Orthodox Christians faith has become just a cultural symbol. In her article, Mchedlova (Мчедлова 2009) discusses the ambiguity of religiosity in Russian society and distinguishes between two contradictory aspects in the perception of religion: As a cultural identification characteristic, and as a way of life with faith as a primary principle. Lastly, Karpov and colleagues (Карпов, Лисовская, and Barry 2012) sum up the discussion by stating that religiosity in Russia is characterized by "ethnodoxy"—"a belief system that rigidly links a group's ethnic identity to its dominant religion". This lively discussion among scholars in Russia and outside its borders is accompanied by the question of the assessment of religiosity to establish a measurement that allows for the evaluation of the "gap" between the associated members of a religious community and the practitioners. While the interest can lie in a distinction between "true believers" and associated members of a religious community, the greater question behind this discussion is the general comprehensive assessment of someone's religiosity.

The most systematic among the currently existing and applied approaches in measuring Orthodox religiosity in Russia is the method developed by Chesnokova (Чеснокова 2009). It is based on the construction of the "Index of churching" (short "V-index", Russian: "в-индекс", "в" transcribes as the Latin letter "v" which stands for "воцерковлённость" translated as "churching").

Churching is characterized as a change in one's way of life, behavior, and practices caused by conversion to Orthodoxy, and, accordingly, the adoption of a certain belief system. Churching is measured using the V-index, which includes five main indicators: Frequency of attending church services, frequency of confession and communion, observation of fasting, frequency, and type of prayer (church prayers or prayers in one's own words) and reading of sacred texts. These practices are the key to contemporary Orthodox church life. Each indicator is measured on a five-point scale. The respondents are subsequently classified according to their maximum response level on any of the five scales. In total, there are five groups: (1) "zero group"—the weakest in terms of the level of churching (i.e., "do not attend services", "did not receive communion", "do not read holy scripture", "do not pray", "do not fast"); (2) "weak churching"—those who selected the second position on any of the five scales at least once, without rising higher; (3) "beginners"—everyone who reached at least the third position at least once; (4) "semi-churching"—those who reached the fourth position on at least one variable; (5) "full churching"—everyone who attained the fifth and highest position at least once on any of the subscales. The main indicators can be supplemented by several additional questions (knowledge of the Church Slavonic language, presence of liturgical literature in the home library, knowledge of the Christian creeds, and participation in the restoration of churches, icons, religious literature). These supplementary indicators allow for an increase in the respondent's position on the "Index of Churching". Thus, this scale neither uses a summary or an average score to assess nor does it take into account the unbalanced scores of different participants for the categorization of one's religiosity.

The Churching Scale is a relatively recent development but has already been adopted for others than the Christian Orthodox religious communities in Russia. Sinelina further developed this approach and applied it in several studies. She constructed a similar measure to study the religiosity of Muslims, which allowed for the examination of the Orthodox and Muslims based on comparable scales. For example, Sinelina discussed the relationship between churching and superstitious behavior (Синелина 2006, 2013).

The V-scale remains one of the most elaborate and well-thought-out approaches to measure Russian Orthodox religiosity. Its main advantage is the possibility to take different religious practices into account simultaneously. The inquired practices constitute the core of people's faith life. However, Chesnokova's approach assumes a certain dynamic—from the lowest to the highest degree of churching. The operationalization is of that kind that the respondents "accumulate" points in different domains of faith life and by that summary score are categorized on different levels of churching. In the early 1990s, when Chesnokova developed this method, such an approach was relevant. Many people had joined the Church recently. There was a great lack of church infrastructure and priests. Most of the newly converted Orthodox did not have any experience in a church way of life nor were they socialized religiously. In this case, each little step on the way of churching was significant. This is directly reflected in the logic of the V-index construction which is based on the respondent's strongest answer.

Nevertheless, in the current situation, the second decade of the 2000s, the approach of the V-scale is much less relevant as churches have been rebuilt and information about, as well as the access to the religious communities, is greatly available. Hence, the low level of the core religious practices in Russia can no longer be explained so easily. Therefore, the rationale of the V-scale has been criticized. Criticism came, for example, from Lebedev and Sukhorukov (Лебедев and Сухоруков 2013), who claim that the V-scale overestimates the number of churched Orthodox Russians. They also scrutinized the question wording and pointed out the flaws in some of them (for example, combining several issues in one question, like type and frequency of personal prayer). Hence, there is room for improvement or alternatives, especially in the domain of multidimensional scales assessing religiosity, as Prutskova and Markin conclude (Пруцкова and Маркин 2017).

In comparison to the Index of Churching, the Centrality of Religiosity Scale (CRS) approach discussed in the current paper, allows for a detailed study of several dimensions of Orthodox religiosity—not only private and public practice, but also intellect, ideology, and religious experience. The questions are worded much more elaborately and a more appropriate logic consisting of a total centrality score computation is used. It allows for the comparison of different religious traditions based on the same indicators and takes both the interactive (a human being with a personalized entity) and participative (human being with a universal principle or the like) patterns of spirituality into account.

The CRS already proved its suitability for large-scale comparison in and among different countries and religious traditions (Huber and Huber 2012), but this is not enough. In this paper, we argue that for the empirical examination of the changes of religiosity in a country or a religious tradition or among them a scale should not only be multidimensional and show good internal reliability, but also have consistent psychometrical characteristics over time, in other words, to be time-invariant. Regarding the time-invariance examination of the CRS, it has been studied in the Christian Orthodox tradition of Georgia. In that study by Ackert et al. (2020a), the scale demonstrated good statistical fit with one particularity of an extra-factorial association between the private and public practice core dimensions. We, therefore, pick this observation and integrate it into the present analyses as a test of the particularity of the Christian Orthodox Churches.

5.1.2. Centrality of Religiosity Scale

Speaking about religiosity in Russia, the term is defined as a personal psychological trait in demarcation to religion as an organized, tradition-oriented social phenomenon and to spirituality as a privatized, experience-oriented, individual phenomenon (Streib and Hood 2016, p. 9). In the present study, religiosity is operationalized by the Centrality of Religiosity Scale. The Centrality of Religiosity Scale (CRS) was developed by Huber (2003) as a synthesis of the sociological religiosity model by Charles Y. Glock (Glock 1962; Stark and Glock 1968) and the psychological religiosity model by Allport (1950), Allport and Ross (1967). The CRS found wide application as the five- and seven-items-versions of the scale (CRS-5, CRSi-7) were integrated into the international Religion Monitor of the German foundation "Bertelsmann Stiftung" (Huber 2009). In the 17 years since the first publication of the CRS (Huber 2003), 610[13] applications of this scale have been documented so far (see Figure Ru-13 for a global overview of the applications).

An introduction to the construction principles of the CRS, the core dimensions of religiosity, the coding of the indicators, the application in different religious cultures as well as the different versions of the CRS is provided by Huber and Huber (2012). In this article, we will therefore only briefly describe the basic ideas, the five core dimensions, and the composite score, or in other words the CRS-index.

[13] For continuous updates of the map please navigate to this web-address: www.ier.unibe.ch → Forschung → Centrality of Religiosity Scale (CRS).

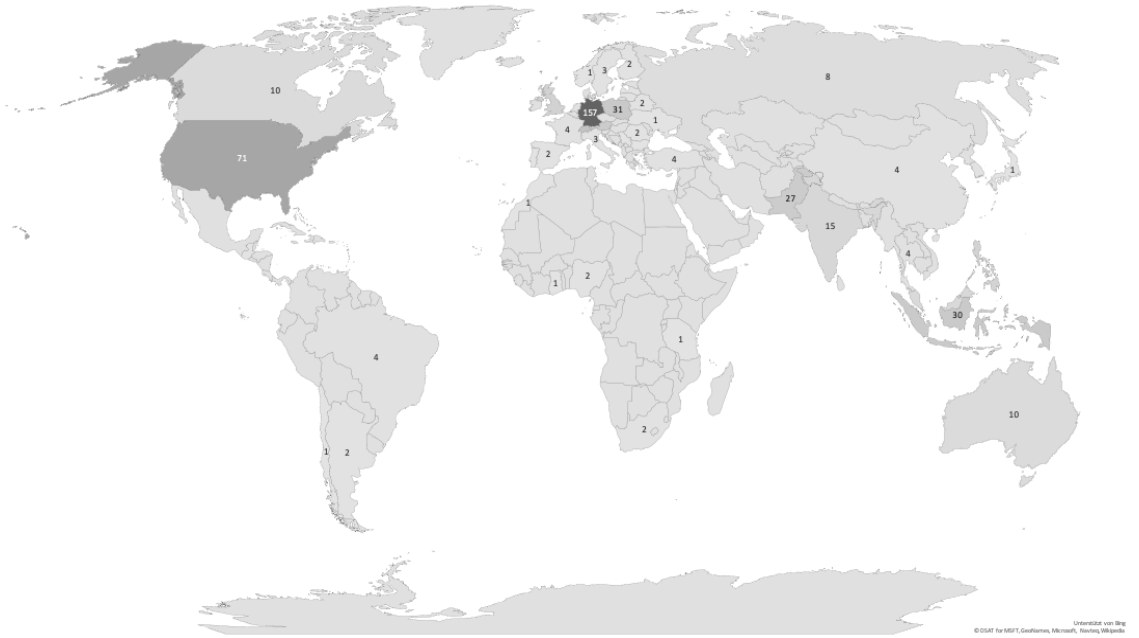

Figure Ru-13. Applications of the Centrality of Religiosity Scale by country until May 2020[14].

5.1.2.1. Basic Concepts

The measurement strategy of the CRS is based on the following assumptions. First: Individuals mainly articulate their religious attitudes, experiences, and behavior in five core dimensions i.e., ideology, intellect, experience, private practice, and public practice. Second: The more central religiousness becomes for a person, the more frequently and intensively she or he expresses her or his religiousness in form of the five core dimensions. Third: The measurement of the general intensity of the five core dimensions allows for an estimation of the centrality of religiosity, which is a personal construct (Kelly 1991).

5.1.2.2. Core-Dimensions of Religiosity

According to Huber (2003), there are five so-called core dimensions in which the religious life of a human being is given expression to:

- The ideological dimension refers to the social expectation that religious individuals have beliefs regarding the existence and the nature of a spiritual reality. A general indicator of this dimension should exclusively focus on the aspect of the plausibility of the existence of spiritual experience without determining certain concepts of the nature of this reality. This can be achieved by concurrently referring to a theistic and pantheistic concept of the spiritual world—the existence of God or something divine.
- The intellectual dimension refers to the social expectation that religious people have some knowledge of religion and that they can explain their views on transcendence, religion, and religiosity. A general indicator is the frequency of thinking about religious issues. It indicates how often religious contents are activated in personal reflections.
- The experiential dimension refers to the social expectation that religious individuals have "some kind of direct contact to an ultimate reality" (Glock 1973). In line with theistic and pantheistic concepts of the spiritual reality two basic patterns of religious experiences can be postulated. In correspondence with theistic concepts, the interactive experiences of God, e.g., the experience of a situation in which God or something divine intervenes in somebody's/a person's life. In

[14] The number on the territory of each country indicates the number of applications within empirical studies. Darker shades of grey mean a higher number of applications in one country.

correspondence with pantheistic concepts the participative experiences of the spiritual reality, e.g., the experience of a situation in which somebody feels they are one with everything.

- The dimension of private practice refers to the social expectation that religious individuals devote themselves to the spiritual reality in individualized activities and rituals in private space. There are two basic and irreducible forms of addressing oneself to a spiritual reality—prayer and meditation. In prayer, a transcendent counterpart is addressed. This implies an interactive pattern of spirituality and corresponds with theistic concepts of spiritual reality. In contrast, meditation is structured regarding either one or both of the following: The self or an all-pervasive principle. Therefore, it is more in line with a participative pattern of spirituality and corresponds with pantheistic concepts of the spiritual reality and respective types of religious experiences.
- The dimension of public practice refers to the social expectation that religious individuals belong to religious communities, which are manifested in the public participation in religious rituals and communal activities. The general intensity of this dimension can be measured easily by inquiring about the frequency with which somebody takes part in religious services or similar activities.

5.1.2.3. Centrality of Religiosity Index

Each core dimension is represented in the various forms of the CRS by an equal number of indicators—either one, two, or three indicators, which results in the CRS-5, CRS-10, and CRS-15, respectively. This means that the five core dimensions are equally weighted in the CRS-index, which is calculated as the average score over all core dimensions. The same principle applies to the interreligious versions of the CRS—the CRSi-7, CRSi-14, and CRSi-20 in which only the higher of two alternative indicators for one dimension is counted. The only two core dimensions that have alternative indicators are experience, i.e., the interactive and participative pattern of experience, and private practice i.e., prayer and meditation. If, for example, both the frequency of prayer and the frequency of meditation are asked, only the higher value of both indicators is included in the calculation of the CRS-index. Therefore, the two alternative indicators in the CRS only have the weight of one indicator. In this article, we only focus on the short forms: The CRS-5 and the CRSi-7. The seven items are (see also Table Ru-A1 in Appendix Ru-1 for the translation of the CRS):

- How often do you think about religious issues? (in CRS-5 and CRSi-7, core dimension: Intellect).
- To what extent do you believe that God or something divine exists? (in CRS-5 and CRSi-7, core dimension: Ideology).
- How often do you take part in religious services? (in CRS-5 and CRSi-7, core dimension: Public practice).
- How often do you pray? (in CRS-5 and CRSi-7, core dimension: Private practice).
- How often do you meditate? (only in CRSi-7, core dimension: Private practice).
- How often do you experience situations in which you have the feeling that God or something divine intervenes in your life? (in CRS-5 and CRSi-7, core dimension: Experience).
- How often do you experience situations in which you have the feeling that you are in one with all? (only in CRSi-7, core dimension: Experience).

The measurement is based on a rating of Likert-scales. Two types of ratings are provided: Importance and frequency. Participants are asked to rate ideology in a range of "very much so (5)—quite a bit (4)—moderately (3)—not very much (2)—not at all (1)", which is the only importance rating in the CRS-5 and CRSi-7 versions. The plainest subjective type of frequency rating is applied to the intellect and experience core dimensions: "very often (5)—often (4)—occasionally (3)—rarely (2)—never (1)". Public practice is assessed by an objective seven-point frequency scale: "several times a day—once a day (7)—more than once a week (6)—once a week (5)—one to three times a month (4)—a few times a year (3)—less often (2)—never (1)". Finally, public practice is assessed by objective frequency in six answer options "more than once a week (6)—once a week (5)—one to three times a month (4)—a few times a year (3)—less often (2)—never (1)" (see Appendix Ru-1, Table Ru-A3 for

details). After the assessment, the answers are recoded according to a calculation proposed by the author of the scale (Huber and Huber 2012). Finally, all indicators of the CRS range between 1 and 5 with 1 being the minimum and 5 the maximum values.

The CRS-index is a composite score based on the average of all items and ranges from 1 to 5. According to Huber and Huber (2012) three groups can be distinguished based on the CRS-index—the "highly religious", the "religious", and the "non-religious". If the CRS-index is higher than 4.0, the respondent is categorized as "highly religious". This means that she or he has a profound religious life. In this case, faith likely plays a central role in her or his life. If the CRS-index is lower than 2.0, the respondent is categorized as "non-religious". This means that she or he has almost no faith life. In such a case, it is very likely that religion does not matter to her or him at all or only has little influence. If the CRS-index is between 2.00 and 4.00, the respondent is categorized as "religious", which means that faith is lived sporadically. Religion is present and a part of that individual's life but does not play a central role in life decisions.

5.1.3. Study Goals and Hypotheses

Before coming to the main goal, there are some notable byproducts to mention. The study should deliver norm values of every core dimension in Russia and can be used as a reference for future investigations with the CRS in Russia. Besides the norm values, which are of statistical nature, the translated CRS items are provided in Table Ru-A1 of Appendix Ru-1 to facilitate a unified use of the CRS in Russian.

The main goal of this study is to test the statistical validity, consistency, and performance of the short forms of the CRS in Russia. The CRS is in itself a psychometrical measurement instrument that is based on the concept of the centrality of religiosity—a personality construct. Such constructs are said to be relatively stable over time in an individual. Technically spoken, we therefore expect that both short forms, the CRS-5 and the CRSi-7, have a time-invariance in measurement corroborated by confirmatory factor analysis (CFA) with one latent variable and five reflective indicators. The latent variable in the CFA statistically represents the concept of "centrality of religiosity" and is said to be relatively stable. Hence, stability is operationalized as configural invariance over time. Reliability analysis, on the other hand, refers to the consistency of the structural equation model. Moreover, starting with configural invariance we restrict the models and establish metric invariance. Regarding the mean structure in the CFA, no hypotheses are posed on its invariance between the two time points of assessment. This is done because the main interest lies in the consistency of the measurement and less in the changes in the centrality of religiosity in the population, which we describe but do not test statistically.

We expect the CRS-5 to perform better, in terms of having a better model fit than the CRSi-7 due to the mainly Orthodox samples, which are largely Christian and therefore Abrahamitic, making them more suitable for the interactive formulation of the items incorporated by the CRS-5.

Considering the association of private and public practice in Orthodox church traditions we postulate a stable association between these two dimensions. This association is extra-factorial and therefore is captured by the residuals of the indicators of both practical dimensions. Such an association was already found in the mainly Orthodox samples from Georgia (Ackert et al. 2020a) and is to be corroborated in this investigation. This means, in addition to the main goal of the validation of the scale, that this study explores the potential of the CRS to capture the particularities of religious traditions with the example of Christian Orthodoxy in this article.

5.2. Method

5.2.1. Translation

The CRS was originally published in German and English (Huber 2003; Huber and Huber 2012), therefore, its application in Russia is preceded by its translation. The translation procedure took place in two parts. In the first round, the short forms CRS-5 and CRSi-7 were translated into Russian by the Bertelsmann foundation project team in 2007. The second round was done by the Religion &

Economics project team in 2016 while the intermediate CRS-10, CRSi-14, and long forms CRS-15, CRSi-20 were added to the translation of the short forms. The article "The Centrality of Religiosity Scale (CRS)" by the author of the scale (Huber and Huber 2012) was entirely translated into Russian (Хубер and Хубер 2019) as a byproduct, rendering all items for the use in this language. See Appendix Ru-1, Table Ru-A1 for an overview of the items after translation and Table Ru-A2 for the item composition of the short, intermediate, and long form of the CRS. Appendix Ru-1 provides items of all forms of the scales. However, only the short forms of the CRS-5 and CRSi-7 are tested and validated statistically in the presented article.

5.2.2. Procedure

On a larger scale, the CRS was applied in Russia three times since its publication. The first application took place within the international project Religion Monitor in 2008 (Rieger and Stiftung 2009). The second time the CRS was applied within the international project on Religion and Economics between Russia and Switzerland in 2019. The same year another project at the same lab "The Paradox of Interrelation between Religion and Family in Modern Russia" made use of the CRS. Data from both 2019 projects in Russia were combined into one sample. From all the named surveys only data from Russia are analyzed in the current paper. Data collection was done in 2007 and 2019 by specialized polling institutes via computer-assisted telephone interviews and online surveys supervised by the leading researchers in the teams.

5.2.3. Samples

Stemming from three projects with different goals and with different data management concepts, the data had to be harmonized for the analyses. The first dataset comes from the Religion Monitor's 1st wave (most recent dataset, Huber and Bertelsmann Stiftung 2010) from 2007. However, the data were first available in 2008, therefore, hereafter it is abbreviated as RM08, with a total amount of $N = 1002$ respondents. Data were collected according to a five-stage sampling plan, where administrative districts or agglomerations are the first stage, towns and rural soviets are the second stage, voting districts are the third stage, households at the fourth stage, and randomly selected respondents at the final fifth stage. Sampling units in the first three stages are drawn with a probability-proportional-to-the-unit-size method. Households are drawn systematically from the list of addresses and the "last birthday"-procedure is used for random selection of a respondent in the household. All respondents are aged 18 years or older.

Table Ru-23. Sample characteristics of the demographical variables in the datasets from 2008 and 2019 of the CRS in Russia.

		RM08	**RE19**
N		984	1768
Sex, female in %		33.5	52.7
Age, *M*(*SD*)		46.5 (18.8)	39.8 (13.1)
Religious affiliation in %	Christian*	80.0	67.4
	Other	5.5	5.1
	None	14.5	27.5

Note. *Christian–the majority of the Christian group is constituted of Orthodox Christians: In the RM08-dataset, no further breakdown of the Christian denomination can be made, in RE19 $N = 1147$ are Orthodox, $N = 7$ are Catholic, $N = 6$ are Protestant, $N = 4$ are Pentecostals, $N = 20$ another Christian denomination. CRS—Centrality of Religiosity Scale. RM08—data from the first wave of Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019. *N*—number of cases; *M*—mean; *SD*—standard deviation.

The second dataset is derived from two projects, which took place at the same lab in 2019. The first portion of the second sample comes from the "Project on Religiosity and Economics" and the second portion was collected within the project "The Paradox of Interrelation between Religion and

Family in Modern Russia". Hereafter, this dataset is abbreviated as RE19, with a total sample size of $N = 1768$ respondents. Details on the demographical characteristics of the samples before data preprocessing are listed in Table Ru-23. The data selection and preparation are described in the following paragraphs.

5.2.4. Data Preparation

The samples were preprocessed before the main analyses resulting in an equal sample size of $N = 984$. The RM08 dataset is a population-representative dataset and therefore served as a template for the matching procedure. The two datasets RM08 and RE19 were matched via a statistical procedure according to recommendations by Ho et al. (2007). The matching of two datasets reduces the model dependency on unequal distributed covariates. The data were taken from two different projects, therefore not many variables overlapped. In addition to the items of the CRS, three demographical variables were chosen as covariates for the matching process i.e., "sex", "age" and "religious affiliation". One major reason for this decision is that the homogenization of the categories could not be applied to any other variable in the datasets. Nevertheless, sex and age are important sociodemographic determinants whereas religious affiliation is related to the patterns of religious behaviors and attitudes. Controlling for them means reducing the bias of these sociodemographic and religious covariates. Even though harmonization was not possible for education, the distribution of the educational level in RM08 24.7% indicated to have between 10 to 17 years of education, 34.5% indicated 11 to 21 years, and 27.9% indicated more than 21 years of education including kindergarten. Of the respondents, 12.9% provided no sufficient data to indicate their educational level. In RE19, the categories were somewhat different: 3.8% had basic secondary education or lower, 43.9% had upper secondary or professional education, 51.1% had tertiary education, and 1.1% had a doctoral degree, 0.1% gave no answer.

All cases in the two datasets are compared and paired according to covariates and not according to the items of the CRS. The variables "age" and "sex" did not need any transformation. "Age" was an integer scale from 18 to 93. "Sex" was a dichotomous variable with two instances "female" and "male". The variable "religious affiliation" was aggregated into three categories "Christian", "other", and "none". Respondents who had a missing value on religious affiliation were excluded from further analysis (18 respondents in 2008th and 39 respondents in 2019th dataset) resulting in no missing values on covariates. CRS variables had some missing values that were imputed in the next step right before the matching.

Table Ru-24. Sample characteristics of the demographical variables in the datasets from 2008 and 2019 of the CRS in Russia after matching preprocessing.

		RM08	**RE19**
N		984	984
Sex, female in %		33.5	38.2
Age, *M*(*SD*)		46.5 (18.7)	42.2 (13.3)
Religious affiliation in %	Christian*	80.0	77.3
	Other	5.5	5.3
	None	14.5	17.4

Note. *Christian–the majority of the Christian group are Orthodox Christians, after the data preprocessing no detailed information can be given on the distribution of the Christian denominations within the group. CRS—Centrality of Religiosity Scale. RM08—data from the first wave of the Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019. *N*—number of cases; *M*—mean; *SD*—standard deviation.

The matching procedure requires data with no missing values on the target variables as well as the covariates, therefore multiple imputations (Schafer 1997) were done in IBM AMOS® Version 26 (IBM, Armonk, NY, USA) using the stochastic regression imputation according to Little and Rubin

(2002). We do not apply listwise deletion as this method would lead to a loss of power in the successive analyses. In the RM08-dataset 4.8% and in the RE19-dataset 3.2% of the data had missing values. Table Ru-A4 in Appendix Ru-2 summarizes the missingness in the data before imputation. Each dataset received 10 copies with imputed values. The sets of 10 datasets each were aggregated using the mean function and rounded to integers. As a result, the datasets RM08 and RE19 had no missing values on the CRS items and were ready to be matched.

For the matching procedure in *R* (R Development Core Team 2020) the package "MatchIt" was used (Ho et al. 2007, 2011). The fact that the RE19 dataset has 1.76 times more cases allows the application of the so-called optimal matching algorithm that "finds the matched samples with the smallest average absolute distance across all the matched pairs" (Ho et al. 2011). That means that every case in RM08 receives the optimal match on its covariates in RE19. The results of the matching procedure can be found in Appendix Ru-2. A summary of the sample characteristics after matching and before data analysis is listed in Table Ru-24.

5.2.5. Analytic Plan

For the analysis, the authors of the original scale recommend recoding the answers of the private and public practice from a 7-point to 5-point scale (Huber and Huber 2012). We followed these recommendations, which led to an all-equal 5-step scale for all core dimensions. Such an equal metric on all CRS items facilitates the interpretation of the statistical models and comparison of its parameters in further steps.

Firstly, descriptive statistics and reliability calculations with τ-equivalent—better known as Cronbach's α—and congeneric reliability—we make use of McDonald's ω—were done. Differences between the mean CRS-scores in the two samples are reported along with their statistical significance. The calculation of the effect sizes Cohen's *d* is done using a formula provided by Borenstein (2009).

In a second step, we run an exploratory factor analysis (EFA) for both short forms of the CRS (CRS-5 and CRSi-7) in both datasets (RM08 and RE19) to test the plausibility of the one-factor solution in the following CFA.

After the EFA a multigroup confirmatory factor analysis (multigroup-CFA) was modeled for the examination of time-invariance of both scales. In the following subsections, we report on the procedures and parameters of the EFA and CFA.

5.2.5.1. Notation

Throughout the result and discussion sections, we use common naming rules. We refer to a so-called "latent X"-notation e.g., found in Timothy A. Brown's book on CFA (Brown 2015, 48). Thus, parameter estimates in factor analyses are labeled with Greek letters: λ—factor loading, τ—intercept of the indicator, κ—factor mean, φ—factor variance, δ—with one-digit subscript designates variance of residual, δ—with two digits subscript designates covariance of residuals, ξ represents the factor. Parameter estimates for the core dimensions receive subscripts with a numbered x: x_1 for ideology, x_2 for intellect, x_3 for experience (interactive and participative), x_4 for private practice (prayer and meditation), and x_5 for public practice. For example, according to this scheme λ_{x_3} stands for the factor loading of the experience core dimension, $\delta_{x_{45}}$ is the covariance between the two residuals of private and public practice, and $r_{x_1x_2}$ labels the correlation between the ideology and intellect dimensions and so on.

5.2.5.2. Exploratory Factor Analysis

Exploratory factor analysis lets us examine whether the expected one factorial structure of the scales is truly suitable for the subsequent CFA. Therefore, EFA is calculated with the following model parameters: Maximum likelihood estimator (ML), varimax rotation (applies only if the number of factors is greater than 1). Factors are considered as such by having an *eigenvalue*> 1. After having considered the results of the EFA, we formulated the proper models for the multigroup-CFA.

5.2.5.3. Confirmatory Factor Analysis

After the EFA we move on to the CFA, first verifying whether the distributions of the indicators are suitable for the CFA. Checks on the distributions of the CRS-items reveal that the variables in the datasets are not multivariate normally distributed, which is a prerequisite of structural equation modeling (SEM). Modern statistical software packages provide estimators that are robust to deviations from the mean and variance of normally distributed data but are less suitable for deviations in skewness and kurtosis. Therefore, we use a method for examining the multivariate skewness and kurtosis proposed by Mardia (1970). See Table Ru-25 for more details on multivariate skewness and kurtosis examination conducted according to recommendations of Cain et al. (2017). Violations of multivariate normality have minimal effects on type I errors (i.e., rejecting the null hypothesis when it is true). Still, as a correction to the distribution distortion models, the model estimates were calculated with 90% bootstrap confidence intervals.

Table Ru-25. Assessment of non-normality via multivariate skewness and kurtosis of the data from RM08 and RE19.

Scale	Project	Skewness			Kurtosis	
		$b_{1,p}$	$\chi^2(p)$	adj-χ^2 (p)	$b_{2,p}$	$N(b_{2,p}), (p)$
CRS-5	RM08	1.69	277.21 (<0.001)	278.33 (<0.001)	38.57	6.69, (<0.001)
	RE19	2.36	387.60 (<0.001)	389.17 (<0.001)	38.60	6.75, (<0.001)
CRSi-7	RM08	1.54	252.98 (<0.001)	254.01 (<0.001)	37.71	5.08, (<0.001)
	RE19	1.85	303.65 (<0.001)	304.89 (<0.001)	38.07	5.75, (<0.001)

Note. CRS—Centrality of Religiosity Scale. RM08—data from the first wave of the Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019. Sample size $N = 984$ for each sample. $b_{1,p}$—Mardia's multivariate skewness, $b_{2,p}$—Mardia's multivariate kurtosis. $N(b_{2,p})$–Mardia's test value of multivariate kurtosis. Values of $b_{1,p} > 0$ and $b_{2,p} > 35$ (which is the result of the term $p(p+2)$, where p is the number of items, here $p = 5$) show deviations from multivariate normality in skewness and kurtosis respectively.

The CFA was done to test a hypothesis of metric invariance of the CRS-5 and CRSi-7 over time, which is between the two sampling time points in 2007 and 2019. The EFA revealed a one-factor structure in all 4 analyses, therefore a time-invariance of a "centrality of religiosity"-factor by 5 indicators (here: the core dimensions of the CRS) seemed plausible to model. Furthermore, the correlations matrix reveals that the core dimensions are associated in a range of $r = 0.38–0.64$ for the CRS-5 and in a range of $r = 0.33–0.59$ for the CRSi-7. Therefore, each core dimension contributed, especially to the latent variable.

To test the ability of the CRS to statistically point out particularities of certain religious traditions an additional parameter was placed into the CFA. From a study on the time-invariance of the short forms of the CRS in Georgia (Ackert et al. 2020a), there is evidence that the practice-related core dimensions (private and public practice) are closely and stably related to each other in Orthodox dominated culture, which Russia represents. Therefore, we let the residuals of private and public practice covariate and constrain this correlation to be time-invariant. The final structure is presented in Figure Ru-14.

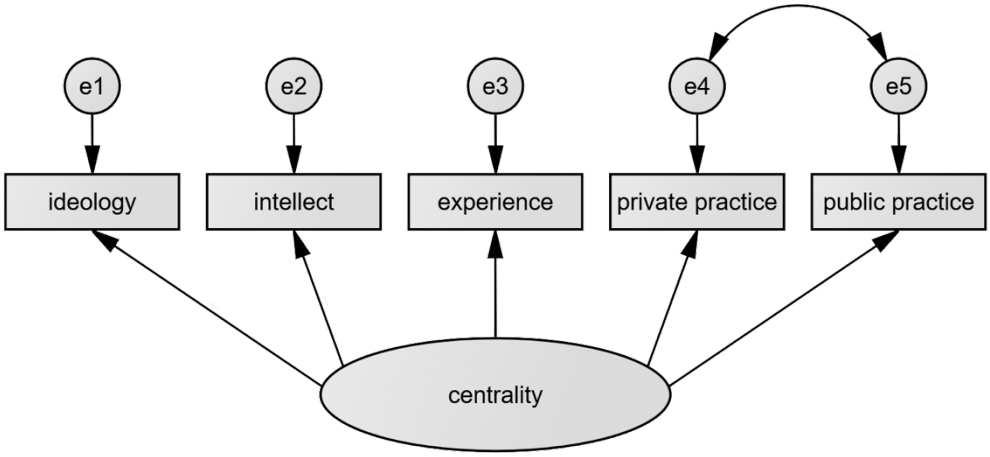

Figure Ru-14. Graphical representation of the tested models for the CRS-5 and the CRSi-7[15].

For the estimation of the variance-covariance matrices, we use the maximum likelihood estimator (ML) within the IBM AMOS software version 26. Bootstrapped 90% confidence intervals with $B = 200$ drawings were calculated for all parameter estimates and are reported along with the point estimates. Global fit measures are adopted from the recommendations of Hu and Bentler (1999) with an acceptable fit of the models established by the following criteria: $RMSEA \leq 0.06, 90\%\ CI \leq 0.06, pclose > 0.05$, $SRMR \leq 0.08$, $CFI \geq 0.95$, and $TLI \geq 0.95$. These indices inspect different aspects of the model (i.e., absolute fit, fit adjusted for model parsimony, fit relative to a null model). In sum, these indices allow a more conservative and reliable evaluation of the global fit of the model. For the distinct parameter estimates, modification indices bigger than 4.00 (i.e., expected parameter change $\chi^2 > 4.00$) are considered as a point of model discussion. The modification indices are considered as a model comparison with 1 degree of freedom and a critical $p < 0.05$ where $\Delta\chi^2 > 3.84$ suggests that the overall model fit can be significantly improved if the fixed or constrained parameter is freely estimated. We round up to $\chi^2 > 4.00$ for practical reasons as it is done by many statistical software packages.

5.2.5.4. Multigroup Confirmatory Factor Analysis

Multigroup CFA has been applied in the analysis with the aim of the examination of the time-invariance of the scales i.e., its consistency of measurement quality over time. In the analyses, groups are defined by both datasets, RM08 and RE19. Consequently, the differences or similarities in the data can be interpreted as time effects between the years 2008 and 2019. We do not assume that the intercepts of the indicators do not vary over time. In fact, there are hints that they change substantially e.g., if looking at the mean differences in Table Ru-26. Therefore, we do not put any restrictions on the mean vector of indicator intercepts ($\tau_{x_1} \ldots \tau_{x_5}$) or the mean vector of the latent means ($\kappa_{RM08}; \kappa_{RE19}$) in the models. Thus, unlinking the intercept and mean pattern from the co-/variance pattern in the data. The vector of thetas ($\tau_{x_1} \ldots \tau_{x_5}$) is allowed to vary freely and the mean of the latent variables of the centrality of religiosity is set to be $\kappa_{RM08} = \kappa_{RE19} = 0.00$. The factor variance of the factors is fixed to $\varphi_{RM08} = \varphi_{RE19} = 1.00$ for model identification. In contrast to the freely estimated indicator intercepts, we put restrictions on the factor loadings ($\lambda_{x_1} \ldots \lambda_{x_5}$) first, secondly on the variances of the residuals ($\delta_{x_1} \ldots \delta_{x_5}$), and third on the covariance of the residuals of private and public practice ($\delta_{x_4 x_5}$). This approach results in four models i.e., equal form, equal factor loadings, equal residual variances, and equal residual co-/variances. The restrictions hold each parameter to be equal across groups.

[15] Residuals e1 to e5 are depicted as small circles. Rectangles represent (from left to right) the items of the scale i.e., the core dimensions of religious ideology, intellectual reflections on religious topics, religious experience, private and public religious practice. The oval represents the latent variable of "centrality of religiosity". Straight arrows show factor loadings, curved arrow represents the covariance of two residuals e4 and e5.

Following this rationale, we restrict the co-/variances in the models step by step, working through nesting models to compare them with the conventional goodness-of-fit criteria.

Table Ru-26. Means, standard deviations, and differences of the datasets from the RM08 and the RE19 data in Russia.

	RM08		RE19		Difference	
	Mean	***SD***	**Mean**	***SD***	**Mean**	***SD***
Ideology	2.92	1.24	3.21	1.12	0.29	−0.12
Intellect	2.41	1.10	2.87	1.02	0.46	−0.08
Interactive Experience	2.35	1.14	2.77	1.00	0.42	−0.14
Participative Experience	2.24	1.18	2.45	1.08	0.21	−0.10
Prayer	2.53	1.55	2.75	1.51	0.22	−0.04
Meditation	1.22	0.74	1.57	1.05	0.35	0.31
Public practice	2.15	1.19	2.10	1.03	−0.05	−0.16
CRS-5	2.47	0.97	2.74	0.90	0.27	−0.07
CRSi-7	2.55	0.96	2.82	0.87	0.27	−0.09

Note. The difference is calculated by subtracting the RM08 from RE19 values. *SD*—standard deviation. The range of the values for each category on the left is from 1 to 5. The RM08-data are from the first wave of the Religion Monitor from Russia in 2008. The RE19-combined data are from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019.

5.3. Results

5.3.1. Descriptive Statistic

All means and standard deviations followed by correlations of the core dimensions as well as of the composite score of the CRS-5 and CRSi-7 are reported in the subsequent paragraphs and tables.

After the recommended transformation of all Likert-answer scales to the same metric ranging from 1 to 5 with 1 being the minimum and 5 being the maximum value, the mean value of $M = 3$ represents the expected mean of the scale. In the RM08, all dimensions remain below the $M = 3$ mark ranging from the highest $M_{x_1} = 2.92$ (ideology) and the lowest $M_{x_4} = 1.22$ (meditation). The composite scores of the CRS-5 and CRSi-7 in RE08 are $M_{CRS-5} = 2.47$ and $M_{CRSi-7} = 2.55$, respectively. Thus, the CRSi-7 index shows a higher value in the descriptive statistic coefficient. Considering the standard deviations among all core values ranging from $SD_{x_1} = 1.24$ for ideology and $SD_{x_4} = 0.74$ for meditation with $SD_{CRS-5} = 0.97$ and $SD_{CRSi-7} = 0.96$ the difference between the composite scores of CRS-5 and CRSi-7 constitutes 8% of the pooled SD in the RM08-data. A dependent *t*-test proves a significant but small difference between the composite score values of the two short CRS versions $t(983) = -15.29, p < 0.001, Cohen's\ d = -0.08$.

A similar picture manifests itself in the RE19-data. The ideology core dimension has the highest mean among all core dimensions with $M_{x_1} = 3.21$, while meditation has the lowest mean with $M_{x_4} = 1.57$. The composite scores of the CRS-5 and the CRSi-7 differ from each other with $M_{CRS-5} = 2.74$ and $M_{CRSi-7} = 2.82$ by 0.08, which represents 9% of pooled SD. This difference is significant but small according to a dependent t-test $t(983) = -14.33, p < 0.001, Cohen's\ d = -0.09$.

If we compare the two datasets from the RM08 and RE19 (two most right columns in Table Ru-26) we can see that except for the mean of the core dimension of public practice which went down by $\Delta M_{x_5} = -0.05$ all the others went up in a range from $\Delta M_{x_3} = 0.21$ to $\Delta M_{x_2} = 0.46$. The same increase can be seen for both composite scores, which went up by $\Delta M_{CRS-5} = \Delta M_{CRSi-7} = 0.27$. At the same time, the standard deviations slightly decreased by a range between $\Delta SD_{x_4} = -0.04$ to $\Delta SD_{x_3} = -0.14$, except for meditation where it is increased by $\Delta SD_{x_4} = 0.31$. We do not compare the distinct values through statistical tests as we planned to do a CFA, which allows modeling the differences from RM08 to RE19 on a global level. Before looking at the factor analysis results, we report on the psychometric properties of the CRS-5 and CRSi-7.

5.3.1.1. Psychometric Properties of the CRS-5

Psychometric characteristics of the CRS-5 are described by some common statistical parameters and show good values for the scale in the given samples. The following coefficients of internal consistency are given with a 95% confidence interval in square brackets. The Cronbach's α for the RM08-data is $\alpha = 0.85[0.83; 0.86]$; subsequently, McDonald's ω is $\omega = 0.85[0.83; 0.87]$. Coefficients for the RP19-data are very similar considering the confidence interval $\alpha = 0.85[0.83; 0.86]$ and $\omega = 0.86[0.84; 0.87]$.

Table Ru-27 presents the correlations among the core dimensions and the total score of the CRS-5. In the RM08-data (left from the slash in each cell), the correlations among the core dimensions fluctuate between $r_{x_1x_5} = 0.41$ and $r_{x_1x_3} = 0.59$. The correlations between the total score and the distinct dimensions range between $r_{CRS-5_{total}x_5} = 0.70$ to $r_{CRS-5_{total}x_1} = r_{CRS-5_{total}x_4} = 0.81$. Taking a look at the RE19-data (number to the right of the slash in each cell) the correlations among the core dimensions go from $r_{x_4x_5} = 0.38$ to $r_{x_1x_3} = 0.64$. The total CRS-5 score correlates with the distinct subscales in a range from $r_{CRS-5_{total}x_5} = 0.72$ to $r_{CRS-5_{total}x_4} = 0.85$. None of the specific values exceed the correlations with the total score. Taking a glance at the coefficient pairs i.e., numbers in the same cell, one can see that they do not differ by more than $\Delta r_{x_4x_5} = 0.09$. Here it is the correlation of the two religious practice dimensions. No difference regarding the correlations in the two samples is found for $\Delta r_{x_2x_4} = 0.00$, which is the association between intellect and prayer.

Table Ru-27. Correlations of the core dimensions of the CRS-5 in the matched data of RM08 and RE19.

	CRS-5	**Ideology (x_1)**	**Intellect (x_2)**	**Interactive Experience (x_3)**	**Prayer (x_4)**
Ideology (x_1)	0.81/0.84				
Intellect. (x_2)	0.77/0.76	0.57/0.59			
Interactive experience (x_3)	0.78/0.76	0.59/0.64	0.58/0.55		
Prayer (x_4)	0.81/0.85	0.57/0.61	0.50/0.50	0.47/0.50	
Public practice (x_5)	0.70/0.72	0.41/0.46	0.42/0.41	0.43/0.38	0.49/0.58

Note. $N = 984$ for each cell. All listed correlations are significant at $p < 0.001$ level. In each cell, the number left of the slash is the RM08, and right to the slash is the RE19 correlation. CRS—Centrality of Religiosity Scale. RM08—data from the first wave of Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019.

5.3.1.2. Psychometric Properties of the CRSi-7

The CRSi-7 coefficients of internal consistency show numbers comparable to that of the CRS-5. Cronbach's α for the RM08 is $\alpha = 0.84[0.82; 0.85]$ and McDonald's ω differs only in the upper bound of the 95% confidence interval $\omega = 0.84[0.82; 0.86]$. The internal consistency in the RE19 data moves along the same range $\alpha = 0.84[0.82; 0.85]$ and $\omega = 0.85[0.83; 0.86]$.

Regarding the correlations of the subscales of CRSi-7, the picture is similar to that of the CRS-5. It is not surprising because only two core dimensions i.e., experience and private practice, differ. This means that scores of ideology, intellect, and public practice are the same. For the transformation of experience and private practice, only the maximum value of either the interactive or participative experience (experience) or meditation or prayer (private practice) is conveyed in the further analysis.

First, we have a look at the comparison between the two datasets before going to compare both the short scales with each other. The same pattern of data presentation as in Table Ru-27 is applied in Table Ru-28 where the number left of the slash is the RM08 and the number right of the slash is the RE19 correlation. The correlations of the RM08-data range from $r_{x_3x_5} = 0.37$ to $r_{x_1x_2} = 0.57$. In the 2019 dataset, the scope of correlations varies from $r_{x_3x_5} = 0.33$ to $r_{x_1x_2} = 0.59$. In both samples, the lowest value goes to the association of experience and public practice and the highest value to the association of ideology and intellect. The total range of correlations is smaller for the 2008 dataset.

At first sight, the coefficients lie close to each other if compared in pairs (numbers in the same cell), with the biggest difference for the correlation of public and private practice $\Delta r_{x_4x_5} = 0.07$ and the smallest change in $\Delta r_{x_2x_4} = 0.01$.

Table Ru-28. Correlations of the core dimensions of the CRSi-7 in the matched data of RM08 and RE19.

	CRSi-7	**Ideology (x_1)**	**Intellect (x_2)**	**Experience (x_3)**	**Private Practice (x_4)**
Ideology (x_1)	0.81/0.82				
Intellect. (x_2)	0.77/0.76	0.57/0.59			
Experience (x_3)	0.74/0.71	0.56/0.53	0.54/0.51		
Private practice (x_4)	0.81/0.84	0.56/0.58	0.49/0.50	0.44/0.47	
Public practice (x_5)	0.70/0.71	0.41/0.46	0.42/0.41	0.37/0.33	0.49/0.56

Note. $N = 984$ for each cell. All listed correlations are significant at $p < 0.001$ level. In each cell, the number left of the slash is the RM08, and right of the slash is the RE19 correlation. Experience is the maximum value of interactive or participative experience. Private practice is the maximum value of prayer or meditation. CRS—Centrality of Religiosity Scale. RM08—data from the first wave of Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019.

If we note that the difference between the CRS-5 and CRSi-7 is only in the core dimensions of religious experience and private practice, we can expect that the correlations of these two indicators with other indicators change in each sample. This effect is seen if one compares the numbers in the corresponding cells between Tables Ru-27 and Ru-28. Interestingly, only the correlations between experience and other core dimensions go up by $\Delta r_{x_1x_3} = \Delta r_{x_2x_3} = \Delta r_{x_3x_4} = 0.03$ with a slightly higher impact on the correlation with public practice $\Delta r_{x_3x_5} = 0.06$ in the RM08-data. The same effect is seen in the RP19-data. Here, the differences in the correlations between the CRS-5 and CRSi-7 are as following: $\Delta r_{x_1x_3} = 0.11$, $\Delta r_{x_2x_3} = \Delta r_{x_3x_4} = 0.03$ and $\Delta r_{x_3x_5} = 0.02$. Regarding the impact of the transformation of private practice only the correlations with ideology $\Delta r_{x_1x_4} = 0.03$ and public practice $\Delta r_{x_4x_5} = 0.02$ had an effect.

5.3.2. Results of the Exploratory Factor Analyses

We use an EFA to examine whether the presumed structure of one latent variable is suitable to explain the theoretical construct of the "centrality of religiosity" in Russian data from 2008 and 2019. To put it in other words, it is plausible to assume that a large part of the variance in the indicators is common variance and should be summed up under one unifying psychometrical construct.

Prechecks on the suitability of the data via Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) and Bartlett's sphericity test show decent parameter values for KMO (third row from left in Table Ru-29) and significant results for the comparison with an identity correlation matrix for Bartlett's sphericity test (Hutcheson and Sofroniou 1999, pp. 224–26). The latter test proves that there are substantial correlations among the indicators and that it is appropriate to run an EFA with the given sample. The results of the analyses for both short CRS scales in both datasets are summed up in Table Ru-29. Four examinations give a similar picture of the scale's factorial structure and its parameters. CRS-5 and CRSi-7 both have one factor underlying the indicators in both datasets. The explained variance by the "centrality of religiosity" factor moves around 50 ± 3% in all analyses (cf. right column in Table Ru-29).

All in all, the results of the EFA allow for further analyses of the CRS-5 and CRSi-7 in a CFA, modeling the time-invariance as a multigroup comparison between the two datasets RM08 and RE19.

Table Ru-29. Results of the exploratory factor analyses of the CRS short versions in RM08 and RE19.

Project	Scale	KMO	Bartlett's Test $\chi^2(df), p$	Factors with $eigenvalue > 1$	R^2
RM08	CRS-5	0.84	1753.87 (10), <0.001	1	50.58%
	CRSi-7	0.84	1640.88 (10), <0.001	1	48.91%
RE19	CRS-5	0.83	1967.43 (10), <0.001	1	52.71%
	CRSi-7	0.83	1742.89 (10), <0.001	1	50.03%

Note. The sample size for all listed samples is $N = 984$. RM08—data from the first wave of the Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019. CRS—Centrality of Religiosity Scale. CRSi—interreligious CRS. *KMO*—Kaiser-Meyer-Olkin criterion, p—probability level, *df*—degrees of freedom, R^2–proportion of the explained variance by the identified factor.

5.3.3. Results of the Confirmatory Factor Analyses

The systematical examination is done by stepwise restriction of the model parameters while comparing the nested models with each other and while observing the model performance according to the global and local fit measures. In a first step, we discuss the CRS-5 in its global and local fit indices. The same procedure follows for the CRSi-7 as a second part, in the CFA result section.

5.3.3.1. CRS-5

According to our hypothesis of the time-invariant performance of the CRS-5, the differences between model implied variance-covariance-matrices and the two sample-derived variance-covariance-matrices (here: From RM08 and RE19 samples) should not exceed the acceptable global model fit according to the established fit criteria.

5.3.3.1.1. Global Fit

The examination of nested models has shown that the model with restrictions on factor loadings, the residual variances, and the covariance of private and public practice being equal over time, performs well according to the set-up fit criteria cf. Appendix Ru-3, Table Ru-A15. Therefore, we report on the model parameters of the "equal indicator residual co-/variance" model. As can be seen from the goodness of fit statistics, there was an RMSEA of $RMSEA = 0.06, 90\% CI[0.04; 0.06], pclose = 0.18$, an SRMR of $SRMR = 0.03$, and a CFI and TLI of $CFI = 0.97$, $TLI = 0.97$, respectively. Compared with the recommendations by Hu and Bentler (1999) only the higher bound of the confidence interval of the $RMSEA$ does not fit with the proposed values. In combination with the close fit function's p-value of $pclose = 0.18$ (Browne and Cudeck 1993), it still means that the model reproduces the conditions in the population well. The fit indices taken together propose a good model fit of the CRS-5 "equal indicator residual co-/variance"-model.

5.3.3.1.2. Local Fit

The global fit of the selected model with restriction put on the co-/variances demonstrates that the overall populational conditions are well met. It allows for meaningful interpretation of the parameter estimates and localization of ill fits if present. Considering the local fit, one can see that all factor loadings are greater than $\lambda_x \geq 0.54$ which indicates at least salient to moderate association with the factor, see Table Ru-30 for more details.

Squared correlations range from $R_{x_5} = 0.30[0.26; 0.34]$ to $R_{x_1} = 0.66[0.63; 0.69]$ with the weakest for public practice and strongest for ideology following the magnitude pattern of the factor loadings.

The greatest residual variances go with the two practice dimensions, which means that a considerable part is not covered by the factor. The only correlation of residuals in the model is set between the residuals of private and public practice. This correlation is estimated to be $\delta_{x_4 x_5} = 0.26[0.21; 0.31]$, which is a medium effect size according to Cohen (1988, p. 82). The conventional significance level of 5% is not violated by any of the parameter estimates.

Table Ru-30. An overview of the parameter estimates of the time-invariant model of the CRS-5.

Core-Dimension	Designation	Factor Loading— λ [90% CI], p	Squared Correlations— R^2 [90% CI], p	Residual Variance— δ [90% CI], p
Ideology	x_1	0.82 [0.79; 0.83], 0.02	0.66 [0.63; 0.69], 0.02	0.47 [0.43; 0.51], 0.01
Intellect	x_2	0.73 [0.69; 0.75], 0.02	0.53 [0.48; 0.56], 0.02	0.53 [0.50; 0.59], <0.01
Interact. exp.	x_3	0.75 [0.73; 0.78], <0.01	0.56 [0.53; 0.61], <0.01	0.50 [0.46; 0.54], 0.01
Private practice	x_4	0.69 [0.67; 0.72], 0.01	0.48 [0.44; 0.51], 0.01	1.22 [1.14; 1.31], 0.01
Public practice	x_5	0.54 [0.51; 0.58], 0.01	0.30 [0.26; 0.34], 0.01	0.87 [0.81; 0.93], 0.02

Note. CRS—Centrality of Religiosity Scale. CRSi—interreligious CRS. Interact.—interactive; exp.—experience. Each cell contains a point estimate along with a 95% bootstrap confidence interval. All parameter estimates are reported with a 90% bootstrap confidence interval with $B = 200$ drawings. CI—confidence interval. p—probability. The modeled correlation of the residuals of private and public practice is $\delta_{x_4x_5} = 0.26[0.21; 0.31], p = 0.02$.

Modification indices greater than $\Delta\chi^2 = 4.00$ are present for the covariances of the residuals in the combination of δ_{x_4} with δ_{x_5} (private and public practice), of δ_{x_1} with δ_{x_4} (ideology and private practice, as well as δ_{x_1} with δ_{x_3} (ideology and experience). In terms of modification indices for variances only the residual of the intellect core dimension is not listed: Modification is therefore suggested for residual variances of ideology—δ_{x_1}, experience—δ_{x_3}, private— and public practice—δ_{x_5}. Modification indices for factor loadings are suggested for the regression of public practice on private practice ($x_5 \rightarrow x_4$) as well as for the regression of ideology on private practice ($x_1 \rightarrow x_4$). Implications of these modification indices are considered in the discussion section.

5.3.3.2. CRSi-7

The same hypothesis as for the CRS-5 was formulated for the CRSi-7. That is, the CRSi-7 model performs stably over time according to global fit criteria. Additionally, the covariance between the residuals of private and public practice is constant over time.

5.3.3.2.1. Global Fit

Considering the nested models, stepwise restrictions on factor loadings, the residual variances, and the covariance of private and public practice to be the same over time leads to good model performance according to the set-up fit criteria cf. Appendix Ru-3, Table Ru-A16. We, therefore, do not report on the comparison of nested models but only on the "equal indicator residual co-/variance"-model. As can be seen from the goodness of fit statistics the RMSEA is $RMSEA = 0.05, 90\% CI[0.04; 0.06], pclose = 0.49$, the SRMR is $SRMR = 0.03$, and the CFI and TLI are $CFI = 0.97$, $TLI = 0.97$. Considering the recommendations by Hu and Bentler (1999) the model performs well according to suggested goodness of fit values.

5.3.3.2.2. Local Fit

Each factor loading, squared correlation, residual variance, and the residual correlation of the residuals of private and public practice has a significance level under the conventional 5% which means that no local misfit is present in the estimated parameters. Therefore, we discuss each of them one after another. Table Ru-31 presents all parameter estimates in detail.

The core dimension of public practice shows the smallest parameter estimates as compared with others, still, the factor loadings are of a salient to a substantial size of $\lambda_x \geq 0.54$. Squared correlations vary from $R_{x_5} = 0.29[0.26; 0.34]$ to $R_{x_1} = 0.64[0.60; 0.67]$ following the magnitude pattern of the factor loadings. The residual variance is smallest for the core dimension of ideology $\delta_{x_1} = 0.50$ and biggest for the two practical core dimensions. The estimated correlation between the residuals of the practical dimensions is $\delta_{x_4x_5} = 0.25[0.21; 0.30]$ and is of a medium effect size according to Cohen (1988, p. 82).

Table Ru-31. An overview of the parameter estimates of the time-invariant model of the CRSi-7.

Core-Dimension	Designation	Factor Loading— λ [90% CI], p	Squared Correlations— R^2 [90% CI], p	Residual Variance— δ [90% CI], p
Ideology	x_1	0.80 [0.77; 0.82], 0.02	0.64 [0.60; 0.67], 0.01	0.50 [0.46; 0.56], <0.01
Intellect	x_2	0.74 [0.71; 0.76], 0.01	0.54 [0.50; 0.58], 0.01	0.52 [0.47; 0.57], 0.01
Interact. exp.	x_3	0.69 [0.66; 0.72], <0.01	0.47 [0.44; 0.52], <0.01	0.60 [0.55; 0.64], 0.01
Private practice	x_4	0.69 [0.66; 0.71], 0.01	0.47 [0.44; 0.51], 0.01	1.23 [1.13; 1.32], 0.01
Public practice	x_5	0.54 [0.51; 0.58], 0.01	0.29 [0.26; 0.34], 0.02	0.88 [0.81; 0.93], 0.03

Note. CRS—Centrality of Religiosity Scale. CRSi—interreligious CRS; exp.–experience. Each cell contains the point estimate along with a 95% bootstrap confidence interval. All parameter estimates are reported with a 90% bootstrap confidence interval with $B = 200$ drawings. CI—confidence interval. p—probability. The correlation of the residuals of private and public practice $\delta_{x_4x_5} = 0.25[0.21; 0.30]$ $p = 0.01$.

Modification indices greater than $\Delta\chi^2 = 4.00$ were suggested for the covariances of the residuals in combination with δ_{x_4} with δ_{x_5} (private and public practice), of δ_{x_1} with δ_{x_4} (ideology and private practice, as well as δ_{x_3} with $\xi_{centrality}$ (ideology and centrality-factor). The modification indices for variances affect all but the variance of the core dimension of intellect: i.e., modification is suggested for residual variances of ideology— δ_{x_1}, experience— δ_{x_3}, private – δ_{x_4} and public practice—δ_{x_5}, and for the variance of the centrality-factor—$\varphi_{centrality}$. Modification indices for factor loadings are suggested for the regression of private practice on public practice $(x_5 \rightarrow x_4)$, for the regression of experience on public practice $(x_5 \rightarrow x_3)$ and the modification of the factor loading λ_{x_3} (experience core dimension). These modification indices are to be reviewed in the following discussion section.

5.4. Discussion

Previous studies have shown that the short forms of the CRS represent a reasonably universal and reliable psychometric tool to record common expressions of religious life. With this study, we pursued the objective of testing the validity and time-invariance performance of the two short forms of the Centrality of Religiosity Scale in Russia. Despite its mainly good to excellent τ-equivalent reliability coefficients in many countries (Huber and Huber 2012) the question of consistency of the measurement over time was raised only once. The sole scientific investigation that posed the question of invariance of the short forms of the CRS over time is Ackert et al. (2020a) in the Orthodox context of Georgia, which served as a prototype in some regards in this investigation. In this article, we addressed the question of the time-invariant performance of the CRS and examined it in the Orthodox context of Russia. Along with the investigation of time-invariance of the short forms of the CRS a special focus was given to the association of the private and public practice core-dimensions—a hypothesized particularity of the Orthodox church traditions. With the mainly Russian Orthodox background of the participants in the samples from 2008 and 2019, we link the idea of a stable association of private and public practice operationalized as a time-invariant association of both residuals of private and public practice in the CFA.

In summary, the main results are: (1) The Russian versions of the CRS-5 and the CRSi-7 both have excellent internal consistencies and (2) both short scales could prove time-invariance, therefore, consistency of the measurement of the centrality of religiosity in the given samples, (3) both scales, the CRS-5 and CRSi-7, perform comparably well in the given samples, (4) a time-stable association between private and public practices is found in the mainly Orthodox samples.

Our hypothesis of the CRS-5 performing better than the CRSi-7 did not withstand this examination, however all other hypotheses are verified by the present study i.e., both short forms perform well according to conventional criteria of confirmatory factor analysis, delivering consistent psychometric properties over time. The association of the residuals of both practice dimensions is also stable over time, showing that a particular pattern is inherent for the Russian Orthodox tradition, same as in Georgian Orthodox samples (Ackert et al. 2020a). More detailed findings are in the next paragraphs.

5.4.1. Preliminary Observations and Remarks

Upon examining the means in 2008 and 2019, it is revealed that the mean values of the CRS-5 and CRSi7 (see Table Ru-26) increased over time with a small Cohen's d. Nevertheless, we would like to bring the fact that this change should be tracked if talking about the changes in religiosity in Russia to future investigations attention. Technically, this article offers the norm values for future investigations to compare the mean development throughout time.

We leave out the in-depth discussion of the indicator means or the indicator intercepts and latent mean of the factor as it is not the goal of the present study. What is, however, of importance to this article is that the change in the standard deviations of the core-dimensions remained quite stable between 2008 and 2019 (Table Ru-26). The stable variance of the core-dimensions is in itself a central observation; nonetheless, the stability of the concept of investigation—the centrality of religiosity—cannot be concluded by this alone. Therefore, the covariance, which is found in each combination of the core-dimensions (Tables Ru-27 and Ru-28), is of interest to this analysis and for this purpose constitutes the main input in the EFA and CFA.

It is worth looking at the covariance pattern prior to the EFA or CFA. The relatively stable covariance pattern in RM08 and RE19 already slightly suggests the hypothesized consistency of the underlying structure. In the covariance pattern, none of the combinations of the core-dimensions dominate each other. None of them correlate perfectly with each other or do not correlate at all, whereby the correlation with the total score is always higher than the correlation among the dimensions. This means that each of the core-dimensions contributes to the total score by enclosing the existing common variance and adding some specific nature to the underlying core-dimension on top of it. Hence, none of the core-dimensions seem to be redundant. It is a vital point of the theory behind the concept of the centrality of religiosity that every core-dimension has its place and should be taken into account while investigating religiosity. Therefore, we recommend to researchers not to cut the CRS in items of interest but rather to take the short form as is and calculate the centrality of religiosity based on all core-dimensions.

If looking at the separate core-dimensions, a major split can be made between inward and outward processes. On the one hand, ideology, intellect, and religious experience are inner processes that are not observable if not inquired in oral or in written form. These three can be summed up under the term religious attitudes and experience. On the other hand, private and public practice are at least potentially observable, which leads to higher visibility hence the possibility of social control among believers. Based on the theory behind the CRS that each core-dimension has its own social expectation, it is a crucial point in the scale evaluation. When thinking about religious behavior, private practices such as prayer or meditation are commonly practiced during religious ceremonies, which is also true for Orthodox churches. Bearing this in mind it seems plausible that the stable extra-factorial association between private and public practice that we face in the models can be of that kind of ceremonial origin or linked to some religion-related items. For example, it is common for a Russian Orthodox believer to "do a sign of the cross" (Latin: signum crucis) and say a short prayer or praise in front of icons, be it in churches or at home where icons are common household items.

Coming back from the content of the practical core-dimension to their quantification one can see that except meditation—as a sub-form of private practice—which is about $M \cong 1.50$ all other indicators range somewhere between $M \cong 2.00$ and $M \cong 3.50$. Ideology shows the highest mean in the RM08 and RE19; at the same time, it is the only core-dimension that surpasses the normal distributed expected mean of $M = 3.00$ in RE19-dataset. Moreover, there is neither a ceiling- nor a floor effect with any of the indicators, which is not always the case. For example, Huber and Huber (2012) identified five countries i.e., Turkey, Nigeria, Morocco, Guatemala, and Indonesia where the CRS had ceiling effects and the variance of the items collapsed, blocking any calculations with the scale. Hence, datasets from Russia are of good quality in this regard and comparable with many others across the world where the CRS has been applied successfully.

One special observation to mention is that public practice is the only dimension that decreased from 2008 to 2019, whereas intellect and interactive experience increased by about 40% of their standard deviations. A distinctiveness of private practice is that it has the highest variance among all

core-dimensions in both datasets, which is a sign of greater diversion in this practice among believers than for the other dimensions. This condition leads to a particularity that seems plausible in religious traditions where private practices like prayer not only happen in private but occur as a part of public practice e.g., prayer during Sunday ceremonies. Both private and public practice are rituals in which a person refers to higher reality/transcendence. Churchgoers have regular ceremonies that contribute to private prayer. The collective prayer may stimulate the prayer at home or in private as a kind of socialization process. Another remark is again linked with the social expectation towards religion-specific practices that are directly visible, therefore, people asked anonymously may answer more honestly and not conform to the social desirability, which causes greater variance of the private practice core-dimension.

Adding the EFA on top of the descriptive statistics shows that a unifying concept of a factor that explains around 50% of the variation in the data is reasonable. None of the indicators drop in the analyses and none of the samples show more than one underlying factor. The scale works as expected allowing for the calculation of a total consistent score for categorization of the respondents if needed.

Finally, considering the CRS-index, the CRSi-7 yields a higher total score than the CRS-5, which is expected because of the algorithm behind the composite score calculation. Both composite scores grew by the exact same amount $\Delta M = 0.27$ from 2008 to 2019, and the standard deviations decreased by a small amount of around $\Delta SD = -0.10$ from 1.00 to 0.90. These observations are to be tested for their statistical significance and practical importance in future analyses.

5.4.2. Deduction from Statistical Models

The preliminary observations of the descriptive statistics and the EFA suggest that the concept of the centrality of religiosity is confirmed in the data and that its consistency is a reasonable question. One thing to consider is that the concept of the centrality of religiosity work under certain statistical conditions. A large threat to the statistical models occurs, for example, when the indicators are highly correlated or if they do not correlate at all, as well as if the variance is too small or too large. Some examples where the CRS does not properly work because of such phenomena can be found in Huber et al. (2020).

Statistically, the models in this article do not face the problem of multicollinearity or even singularity or variance limitations in CFA. This can be seen from the correlations: The highest values for bivariate correlations found for CRS-5 are $r_{x_1x_3} = 0.59$ in RM08 data and $r_{x_1x_3} = 0.64$ in RE19 data, similar values appear for the CRSi-7 $r_{x_1x_2} = 0.57$ in the RM08 dataset and $r_{x_1x_2} = 0.59$ in RE19 dataset, thus no multicollinearity appears there. On the other hand, correlations are high enough to provide sufficient common variance. The smallest correlations in the CRS-5 are: $r_{x_1x_5} = 0.41$ in RM08-data and $r_{x_4x_5} = 0.38$ in RE19-data; in CRSi-7: $r_{x_3x_5} = 0.37$ in the RM08-dataset and $r_{x_3x_5} = 0.33$ in the RE19-dataset. Furthermore, the common indicator variance of about 50% represented by the one-factor solution in the EFA is further evidence for a one-factor solution. All in all, these initial reflections of the data lead to the idea of examining the scales' consistency over time.

We leave the discussion of nested models as well as that of standardized residuals out because the χ^2-test is sensitive to sample size and the differences in our analyses are caused by this factor. Nevertheless, the nested model with the highest grade of restrictions still has acceptable fit indices indicating that this model is close to the sample variance-covariance matrix, therefore, close to the empirical data. Considering the modification indices, we tested the model where all indicator residuals covariances were restricted to be zero. The result was that the time-invariant models only become acceptable according to posited parameters by including an association between private and public practice. This pattern seems to be essential for the tested samples.

Modification indices (MIs) greater than $\Delta\chi^2 = 4.00$ are given in both CFA models for CRS-5 and CRSi-7 with "equal residual co-/variances". In both models, the MIs are related to the restrictions, which are the result of the multigroup comparison. For CRS-5, expected parameter changes in variance, covariance, or factor loadings do not exceed 0.15. The same applies to the CRSi-7 modification indices. In both models, the highest change would affect the variance of the residual of public practice. We think that the restrictions we put on the models justify such a trade-off and do

not think that any kind of modifications proposed after the restrictions would make theoretical sense with the knowledge we have by now.

Looking at the cut-off criteria, we would like to draw attention to alternatives to the recommendations by Hu and Bentler (1999). There is an option to run parametric based Monte Carlo simulations within specialized software e.g., *R* or Mplus to establish model-specific cut-off criteria for $SRMR$, CFI, and $RMSEA$. An article by McNeish and Wolf (2020) has considered this topic and developed a parametric bootstrap procedure which calculates a 95% confidence interval for the above-mentioned fit indices. Such sample-specific cut-off criteria would allow for a stricter estimation of the model parameters e.g., putting restrictions on the intercepts and mean structure without violating the global goodness of fit and should be considered in future investigations.

5.4.2.1. CRS-5

The factor loadings in descending order are ideology, experience, intellect, and private and public practice. This means that the non-behavioral core-dimensions have the strongest predictive potential in the model. On the one hand, this means that both practical core-dimensions have less statistical weight in predicting the centrality of religiosity and therefore religiosity itself according to its multidimensional definition. Both practical core-dimensions are linked together by a medium-size correlation of $\delta_{x_4x_5} = 0.26$. The same pattern was found in the Orthodox context of Georgia with a size of $\delta_{x_4x_5} = 0.31$ (Ackert et al. 2020a). Any further investigations about Christian Orthodox traditions should keep this in mind and preferably extend the methodological access to this association by using the intermediate or the long form of the Abrahamitic CRS i.e., CRS-10 and CRS-15, respectively.

The model with configural invariance between 2008 and 2019 has excellent fit indices. Moreover, with an increasing number of restrictions, it stands the test of time-invariance with factor loadings, variance, and covariance of the residuals set equal between RM09 and RE19. This means that it has consistent psychometric properties and is, therefore, suitable to examine the changes of religiosity in time.

5.4.2.2. CRSi-7

The CRSi-7 has its particularities with the measurement of the experience and private practice core-dimensions. The items for the other three core-dimensions are the same as with the CRS-5. On the contrary, the CRSi-7 incorporates the maximum values on the two dimensions of experience and private practice, which leads to slightly higher composite values if a person is practicing meditation or experiencing being one with all. The participative aspect of religious practice and experience addressed in the CRSi-7 broadens the scope of application of the CRS and has the potential to contribute empirical arguments to the debate about the association of religiosity and spirituality. Considering its short length and the inclusion of the CRS-5, the CRSi-7 also has potential in the Abrahamitic context. A further argument to apply the CRSi-7 in Abrahamitic religious traditions is that it has a comparable global model fit and performs equally well in the local estimates. Considering the bootstrapped confidence intervals for the parameters of the CRSi-7 and CRS-5, they differ only in the experience core-dimension, where the factor loading in the CRS-5 is higher. The very close model fit of the CRSi-7 to CRS-5 is assumed to be due to the fact that the participative religious pattern is not yet well established and that the ongoing individualization in society can change the pattern or religious practices in Russia. In conclusion, with the CRSi-7 one can capture the changes in the individualization of private and public religious practices, which is our recommendation for future empirical work with the CRS in Russia.

5.4.3. Limitations and Strengths

The CRS is a widely used scale when it comes to the assessment of religiosity. Not many scales in the psychology of religion underwent such a strict examination of time-invariance. Nevertheless, we are aware of the fact that we left out the restriction on the mean structure of the latent variables

and the intercepts of the indicators. Such a step will certainly change the global fit indices and increase the χ^2-test value of model implied and observed matrices. They will differ considerably with such large sample sizes. Higher values of the χ^2-test of model fit will affect many derived fit indices rendering the models not acceptable according to conventional recommendations by Hu and Bentler (1999). We, therefore, would like to draw attention to alternatives to the cut-off criteria. A recently proposed alternative is to run parametric-based Monte Carlo simulations to establish model-specific cut-off criteria for $SRMR$, CFI, and $RMSEA$. An article by McNeish and Wolf (2020) has considered this topic and developed a parametric bootstrap procedure that calculates a 95% confidence interval for the above-mentioned fit indices. This paper came up as we were about to finish our report, which is why we did not introduce this method in the present study.

Staying with the statistical matters we point out that the preprocessing of the data leads to a harmonization of the sample covariates (i.e., sex, gender, religious affiliation), hereby the bias of the covariates is lessened. Such an approach is a way that does not reduce the statistical power of the analyses as e.g., listwise deletion and in addition, in EFA and CFA it leads to an equal weight of two samples, which reduces the distortion that is often the case with unequal sample sizes in multigroup-CFAs. The samples did not allow for matching on the important demographic covariate of education. This is a limitation to a generalization of the present analyses even though in both sampling procedures it was taken care of representativeness of the sample regarding the educational level.

Regarding the content-related position of the CRS, we see its suitability to be an alternative to the Index of Churching as it covers all the relevant dimensions and allows for the categorization of personal religiosity of every person regardless of membership in a religious community. Such an approach may be in favor of the research questions of the sociology of religion in Russia. Moreover, the CRS-Index still clearly distinguishes between the non-religious, religious, and highly religious. In combination with the religious affiliation, it is more flexible and independent than scales that are built on specific religious knowledge or participation in specific ceremonies.

If taking the perspective of the psychology of religion, moving along the personality trait paradigm, and taking the well-known example of the Intelligence Quotient (IQ), the CRS-index would represent the general IQ of a person and the core-dimensions portray the structure of the IQ of an individual. Hence, the CRS provides all possibilities which are inherent to Differential Psychology i.e., comparing test scores over time (longitudinal) as well as with other individuals at the same time (cross-sectional). While the personality trait paradigm is an established view, the CRS itself is based on the psychology of personal constructs (Kelly 1991). This leads to another way of interpretation of the CRS-index. The higher the index, the more importance religiosity has in the personal construct system of an individual. This means that religiosity becomes more and more relevant in all domains of human life. We give this example with the two different paradigms in psychology to demonstrate the universality of the CRS which is an advantage of this scale.

5.5. Conclusions and Outlook

Generally said, the multidimensional model of religiosity operationalized by the Centrality of Religiosity Scale works well. This study is a further examination that shows the ability of the scale to encompass various expressions of religion in human life and to condense it to a working statistical model. We tried to break down the complex statistical models and calculations for the reader. For comprehensibility reasons, we sum up the study in short concluding sentences in a final step.

Both the CRS-5 and the CRSi-7 perform well and are suitable for future studies on religiosity not only in Russia but in many other cultural, religious, and linguistical contexts (cf. Huber and Huber 2012). There is now evidence that the CRS can statistically capture particularities of the Christian Orthodox tradition. A test should be done in a country where orthodox and other religious denominations are present, to examine whether the covariance of private and public practice is exclusively orthodox.

When compared, the CRSi-7 is not necessary for the Orthodox tradition; the more frugal CRS-5 is sufficient in this case, but the CRSi-7 has only two more items and includes the CRS-5. This

circumstance and the additional possibility of assessing participative religiosity patterns favor the CRSi-7.

In further studies, it should be taken into account that the respondents are more ready to report on non-behavioral core-dimensions because they are less controllable. Such tendencies are usually present in surveys as well as in interviews and should not be forgotten while interpreting the statistical estimates.

It is desirable to investigate the change of the latent mean, which would reveal the change in the centrality of religiosity. Such a statistical approach is less prone to bias as compared to an ANOVA for example and should be run even if the CRS has good to excellent internal consistency.

All things considered, we encourage the use of the CRS, its further development, and statistical examination.

5.6. Appendix Ru-1. Translated Russian CRS Items with the Correspondence Items in English

Table Ru-A1. Overview of the CRS items in English and Russian with corresponding core-dimensions.

Item	Dimension	English	Russian	Answer Pattern
1	Intellect	How often do you think about religious issues?	Как часто вы задумываетесь на религиозные темы?	b
2	Ideology	To what extent do you believe that God or something divine exists?	Насколько сильно вы верите в существование Бога или некоей божественной силы?	a
3	Public practice	How often do you take part in religious services?	Как часто вы принимаете участие в религиозных службах?	c
4	Private practice	How often do you pray?	Как часто вы молитесь?	d
4b	Private practice	How often do you meditate?	Как часто вы медитируете?	d
5	Experience	How often do you experience situations in which you have the feeling that God or something divine intervenes in your life?	Как часто вы переживаете ситуации, в которых у вас появляется чувство, что Бог или некая божественная сила вмешивается в вашу жизнь?	b
5b	Experience	How often do you experience situations in which you have the feeling that you are in one with all?	Как часто вы переживаете ситуации, в которых у вас возникает чувство, что вы и мир единое целое?	b
6	Intellect	How interested are you in learning more about religious topics?	Насколько вам интересно больше узнавать о религиозных темах?	a
7	Ideology	To what extent do you believe in an afterlife—e.g., immortality of the soul, resurrection of the dead, or reincarnation?	Насколько сильно вы верите в существование жизни после смерти–например, в бессмертие души, воскресение из мертвых или реинкарнацию?	a
8	Public practice	How important is to take part in religious services?	Насколько для вас важно принимать участие в религиозных службах?	a

Item	Dimension	English	Russian	Answer Pattern
9	Private practice	How important is personal prayer for you?	Насколько важна для вас личная молитва?	a
9b	Private practice	How important is meditation for you?	Насколько важна для вас медитация?	a
10	Experience	How often do you experience situations in which you have the feeling that God or something divine wants to communicate or to reveal something to you?	Как часто вы переживаете ситуации, в которых возникает ощущение, что Бог, или некая божественная сила хочет вам что-то сказать или показать?	b
10b	Experience	How often do you experience situations in which you have the feeling that you are touched by a divine power?	Как часто вы переживаете ситуации, когда у вас появляется чувство, что вас коснулась божественная сила?	b
11	Intellect	How often do you keep yourself informed about religious questions through radio, television, internet, newspapers, or books?	Как часто вы поддерживаете свою осведомленность о религиозных вопросах с помощью радио, телевидения, Интернета, газет или книг?	b
12	Ideology	In your opinion, how probable is it that a higher power really exists?	По вашему мнению, насколько вероятно, что действительно существует высшая сила?	a
13	Public practice	How important is it for you to be connected to a religious community?	Насколько для вас важно принадлежать к религиозной общине?	a
14	Private practice	How often do you pray spontaneously when inspired by daily situations?	Как часто вы незапланированно молитесь в связи с возникающими повседневными ситуациями?	b
14b	Private practice	How often do you try to connect to the divine spontaneously when inspired by daily situations?	Как часто вы незапланированно пытаетесь войти в контакт с божественным в связи с возникающими повседневными ситуациями?	b
15	Experience	How often do you experience situations in which you have the feeling that God or something divine is present?	Как часто вы переживаете ситуации, когда у вас появляется чувство присутствия Бога или некой божественной силы?	b

Note. Item translation is taken from Huber and Huber (Хубер and Хубер 2019). CRS—Centrality of Religiosity Scale. Items marked with "b" are additional items for the constitution of the interreligious form of the CRS, see Table Ru-A2 for more details. Answer patterns are coded as letters and can be found in Table Ru-A3 in Appendix Ru-1.

Table Ru-A2. Composition of the short, intermediate and long form of the CRS.

Format	Basic	Interreligious
Short	1; 2; 3; 4; 5	short + 4b; 5b
Intermediate	above + 6; 7; 8; 9; 10	above + 9b; 10b
Long	above + 11; 12; 13; 14; 15	above + 14b

Note. CRS—Centrality of Religiosity Scale. See Table Ru-A1 for an overview of the items.

Table Ru-A3. Answer options as Likert-scales in English and Russian with its corresponding recoding scheme.

	Pattern	English	Russian	Numerical Code
Importance/ Salience	a	very much so—quite a bit—moderately—not very much—not at all	очень—довольно сильно—средне—слабо—совсем нет	5-4-3-2-1
Frequency	b	very often—often—occasionally—rarely—never	очень часто—часто—иногда—редко—никогда	5-4-3-2-1
	c	more than once a week—once a week—one to three times a month—a few times a year—less often—never	чаще, чем раз в неделю—раз в неделю—от одного до трёх раз в месяц—несколько раз в год—реже, чем раз в год—никогда	5-5-4-3-2-1
	d	several times a day—once a day—more than once a week—once a week—one to three times a month—a few times a year—less often—never	несколько раз в день—один раз в день—чаще, чем раз в неделю—раз в неделю—от одного до трёх раз в месяц—несколько раз в год—реже, чем раз в год—никогда	5-5-4-3-3-2-2-1

Note. Answer options "a" and "b" are subjective, while answer options "c" and "d" are objective. The numerical code shows the recoding scheme after the collection of the data. For the pattern "c", it means that 6-5-4-3-2-1 becomes 5-5-4-3-2-1 i.e., 6 is recoded to 5. For the pattern "d" it means that 8-7-6-5-4-3-2-1 becomes 5-5-4-3-3-2-2-1 i.e., 8 and 7 are recoded to 5, 6 is recoded to 4, 5 and 4 are recoded to 3, 3 and 2 are recoded to 2. The original wording of the answer options is established by Huber and Huber (2012). For the scales "c" and "d" one more answer option was added in the "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia"—projects. The additional answer option was "once a year/один раз в год" and was placed between "a few times a year/несколько раз в год" and "less often/реже чем раз в год" with the numerical code of "2". This answer option was tested in Russia for technical reasons but did not change the scale characteristic, or the respondent answering patterns and was therefore dropped in analyses in the present article.

5.7. *Appendix Ru-2. Results of the Matching Procedure of the Datasets RM08 and RE19 in Russia*

Table Ru-A4. Overview of the missing values before data imputation.

Dataset	N	Ideology	Intellect	Interactive Experience	Participative Experience	Prayer	Meditation	Church Attendance	Average	Percent
RM08	984	35	11	59	102	36	64	23	47	4.8
RE19	1729	55	19	54	94	83	60	26	56	3.2

Note. RM08—data from the first wave of Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019. *N*—number of cases. Numbers in cells indicate the number of missing values per variable. Average—count of average missing values in the dataset. Percent—count of average missing values in the dataset presented in percent of the total sample size.

After the data imputation. The complete data is passed to the matching procedure. The formula, the so-called "call" in *R* with the package "MatchIt" to match both datasets:

matchit(formula = GR ~ sex + rel + age, data = CRSRUS, method = "optimal") (A1)

The results of the matching procedure can be shown graphically. Figures Ru-A10–Ru-A14 show the difference before and after data preprocessing.

Both datasets RM08 and RE19 combined to one file with the name "CRSRUS" and distinguished by the dichotomous group variable "GR" are processed at once. The formula has an arrangement of a multiple regression calculation in R. The group "GR" is matched by (~) three covariates "sex"—sex, "rel"—religious affiliation, and "age"—age of the respondents by the "optimal" algorithm which means that every respondent in one group is associated with one respondent in the other group with a minimal distance on all covariates. RE19 has 1.78 times more cases than RM08 which leads to the result that every case in RM08 receives an associated case in RE19. Tables Ru-A5–Ru-A9 show the results.

Table Ru-A5. Summary of balance for all data.

	Means RE19	Means RM08	SD RE19	Mean Difference	eQQ Median	eQQ Mean	eQQ Max
Distance	0.42	0.33	0.12	0.09	0.09	0.09	0.17
Female	0.34	0.53	0.50	-0.19	0.00	0.19	1.00
Male	0.66	0.47	0.50	0.19	0.00	0.19	1.00
Rel (other)	0.05	0.05	0.22	0.00	0.00	0.00	1.00
Rel (none)	0.15	0.27	0.45	-0.13	0.00	0.13	1.00
Age	46.54	39.81	13.09	6.73	7.00	6.83	28.00

Note. RM08—data from the first wave of Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019. SD—standard deviation. eQQ—empirical quantile function. rel—religious affiliation with the category in parenthesis; rel (Christian) does not appear in the table because it is the reference category for the three-level categorical variable and therefore set to zero. Female and male are representations of a dichotomous variable coded 1–male, 0–female therefore means can be interpreted as percentages, the standard deviations, and the median have no meaningful interpretation in this case with a dichotomous variable. Distance–the mathematical coefficient for the propensity score between the two samples.

Table Ru-A6. Summary of balance for matched data.

	Means RE19	Means RM08	SD RE19	Mean Difference	eQQ Median	eQQ Mean	eQQ Max
Distance	0.42	0.38	0.12	0.04	0.01	0.04	0.15
Female	0.34	0.38	0.49	-0.05	0.00	0.05	1.00
Male	0.66	0.62	0.49	0.05	0.00	0.05	1.00
Rel (other)	0.05	0.05	0.22	0.00	0.00	0.00	1.00
Rel (none)	0.15	0.17	0.38	-0.03	0.00	0.03	1.00
Age	46.54	42.20	13.30	4.34	3.00	5.20	28.00

Note. RM08—data from the first wave of Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019. SD—standard deviation. eQQ Med, eQQ Mean, and eQQ Max—median, mean, and maximum value of differences in empirical quantile functions.

Table Ru-A7. Percent of balance improvement.

	Mean Difference	eQQ Median	eQQ Mean	eQQ Max
Distance	56.43	84.66	56.42	15.14
Female	75.67	0.00	75.66	0.00
Male	75.67	0.00	75.66	0.00
Rel (other)	48.95	0.00	50.00	0.00
Rel (none)	78.01	0.00	77.95	0.00
Age	35.48	57.14	23.94	0.00

Note. eQQ Med, eQQ Mean, and eQQ Max—median, mean, and maximum value of differences in empirical quantile functions. The improvement of the categorical covariate religious affiliation is represented by two of three categories "no religious affiliation" and "other religious affiliation", the third category "Christian" is the reference category for the variable "religious affiliation" and does not appear in the table.

Table Ru-A8. Sample sizes of all, matched, unmatched, and discarded cases.

	N in RE19	*N* in RM08
All	1729	984
Matched	984	984
Unmatched	745	0
Discarded	0	0

Note. RM08—data from the first wave of the Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019. *N*—number of cases.

Table Ru-A9. Summary of the Centrality of Religiosity Scale items distributions in the matched data.

	Minimum	Median	Mean	Maximum
Ideology	1.00	3.00	3.07	5.00
Intellect	1.00	3.00	2.64	5.00
Interactive experience	1.00	3.00	2.56	5.00
Participative experience	1.00	2.00	2.34	5.00
Prayer	1.00	2.00	2.64	5.00
Meditation	1.00	1.00	1.40	5.00
Attendance of religious service	1.00	2.00	2.12	5.00

Note. The table contains CRS-5 as well as CRSi-7 items.

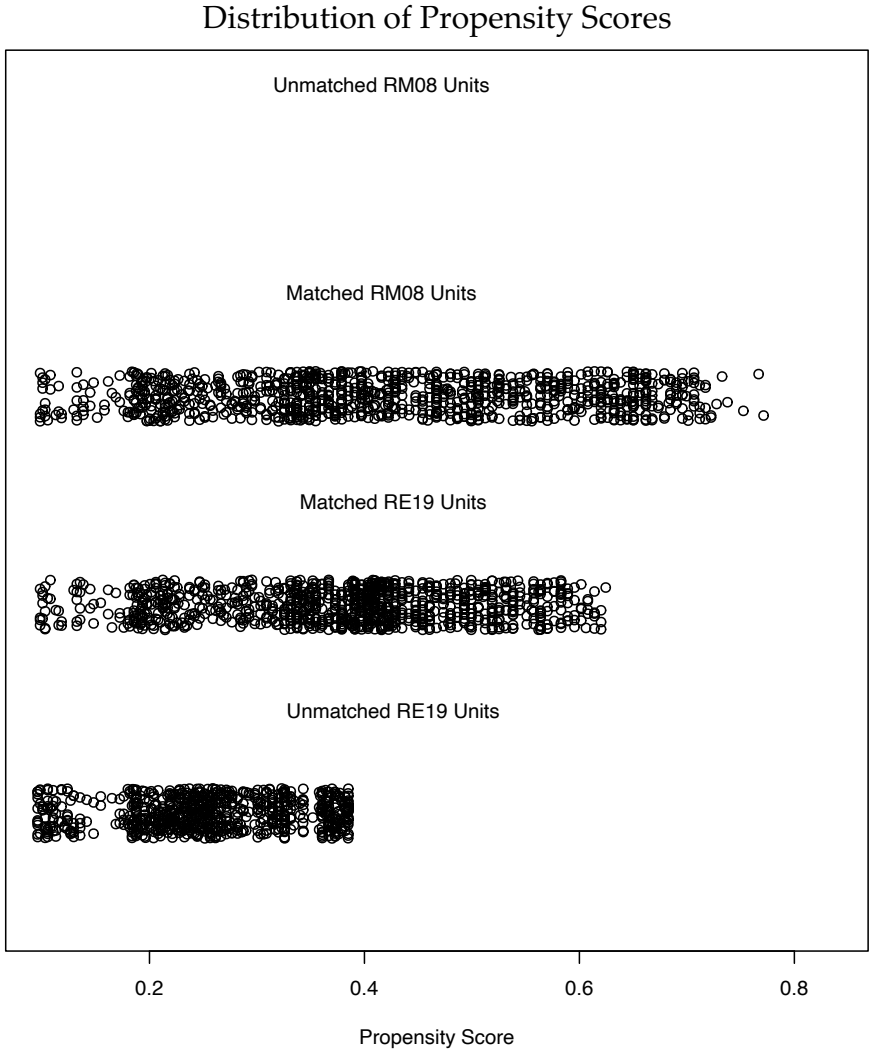

Figure Ru-A10. Distribution of the propensity scores of the samples before and after matching preprocessing. Each circle represents a case. RM08—data from the first wave of Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019. The upper void bar titled "Unmatched RM08 Units" shows that all units were matched. The bottom bar titled "Unmatched RE19 Units" shows the units which were not matched to any case in RM08 data. The two bars in the middle "Matched RM08 Units" and "Matched RE19 Units" show the distribution of 984 cases which has been associated according to the matching algorithm.

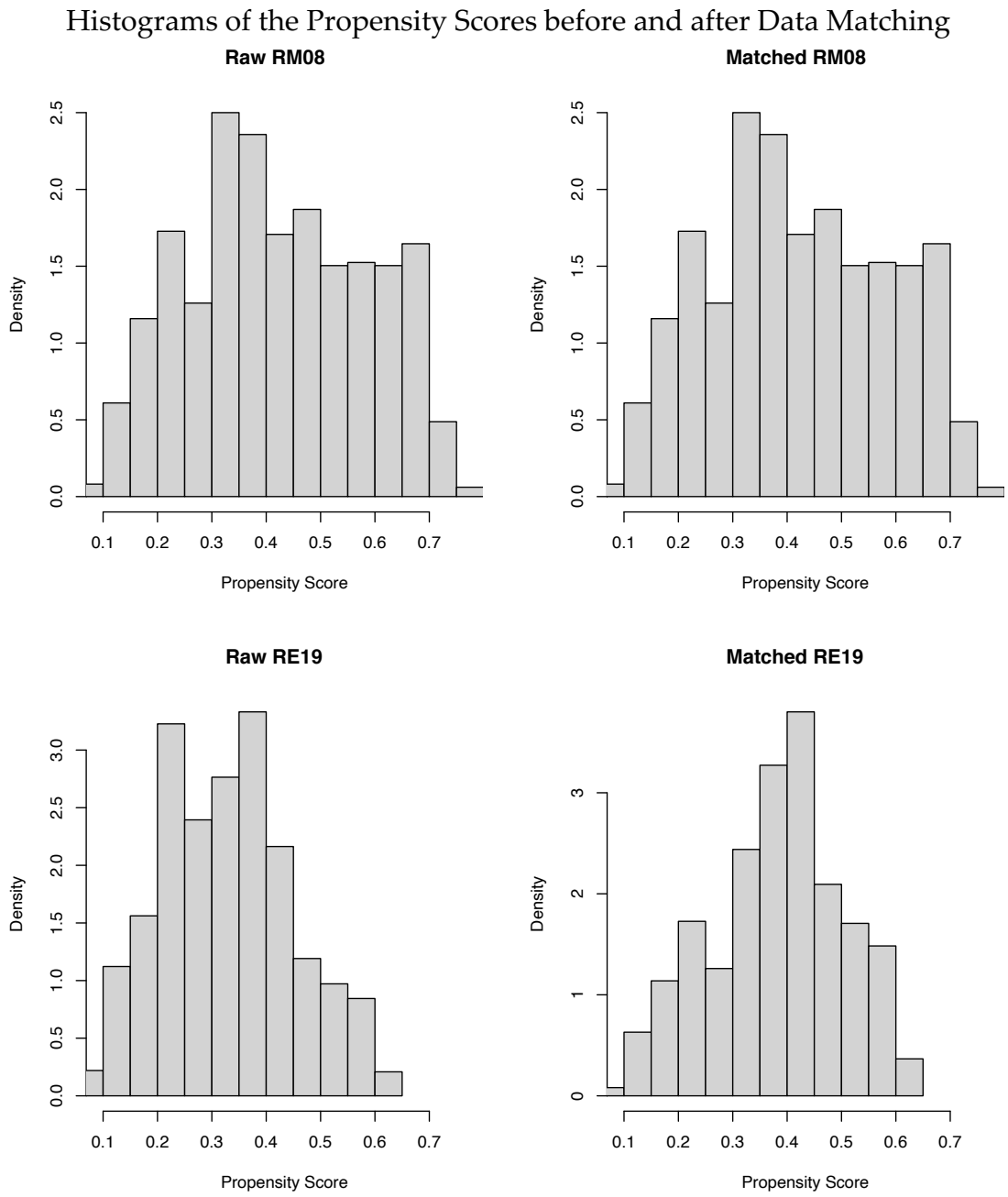

Figure Ru-A11. Histograms of the propensity scores of the samples before and after matching preprocessing. RM08—data from the first wave of the Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019.

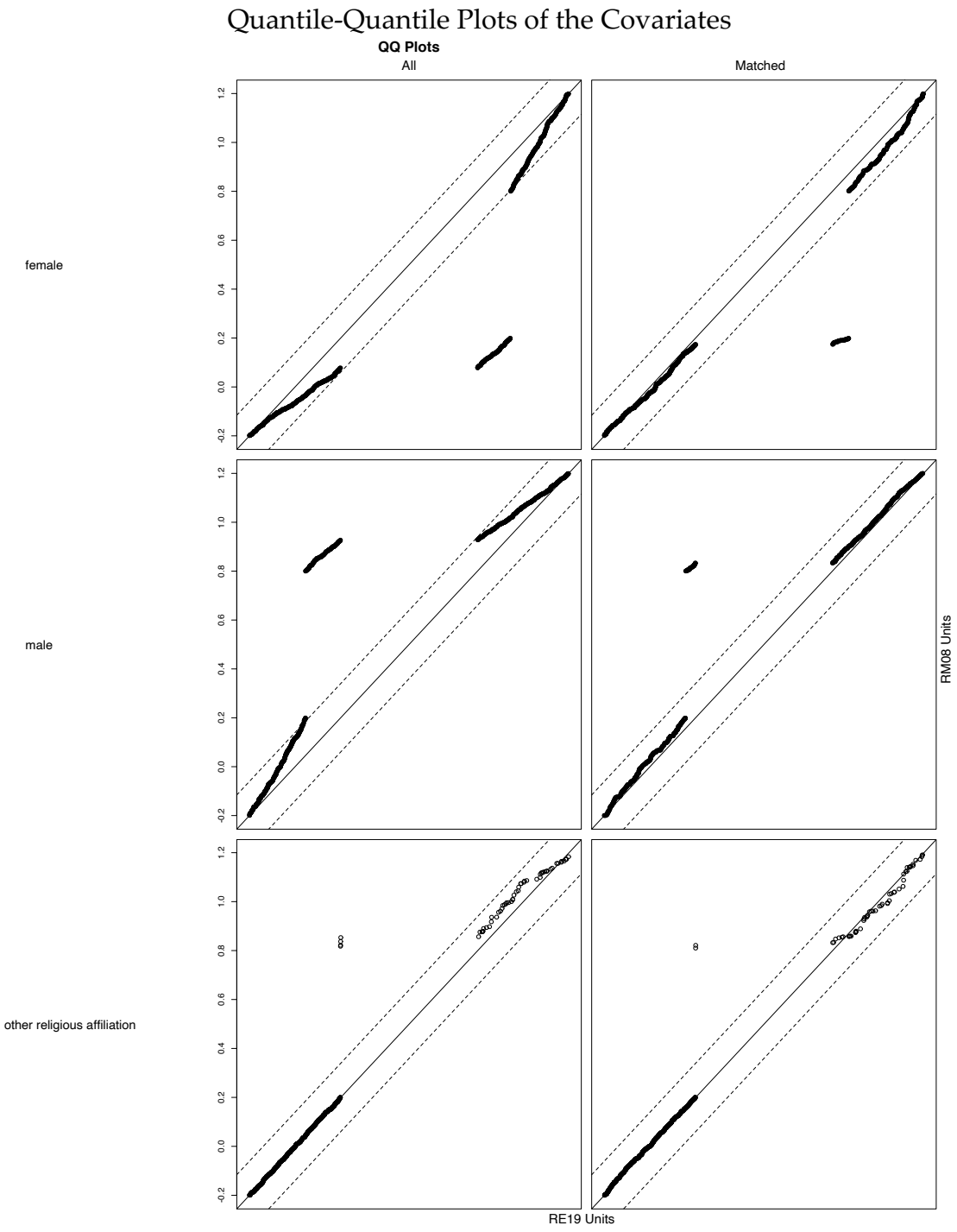

Figure Ru-A12. Quantile-Quantile Plots for the dichotomous sex covariate and the categorical religious affiliation covariate with the category "other religious affiliation". Each circle represents a case. RM08—data from the first wave of Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019.

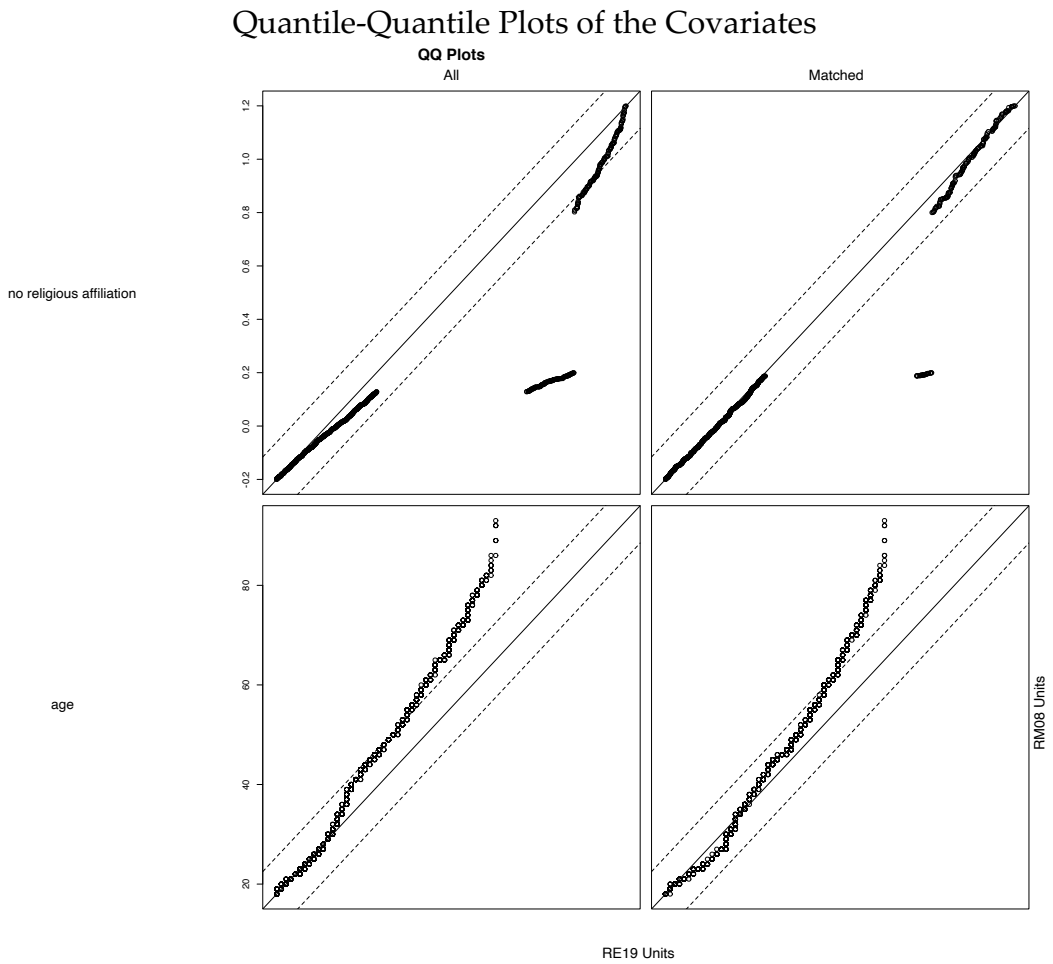

Figure Ru-A13. Quantile-Quantile Plots for the continuous age covariate and the categorical religious affiliation covariate with the category "no religious affiliation". Each circle represents a case. RM08—data from the first wave of the Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019.

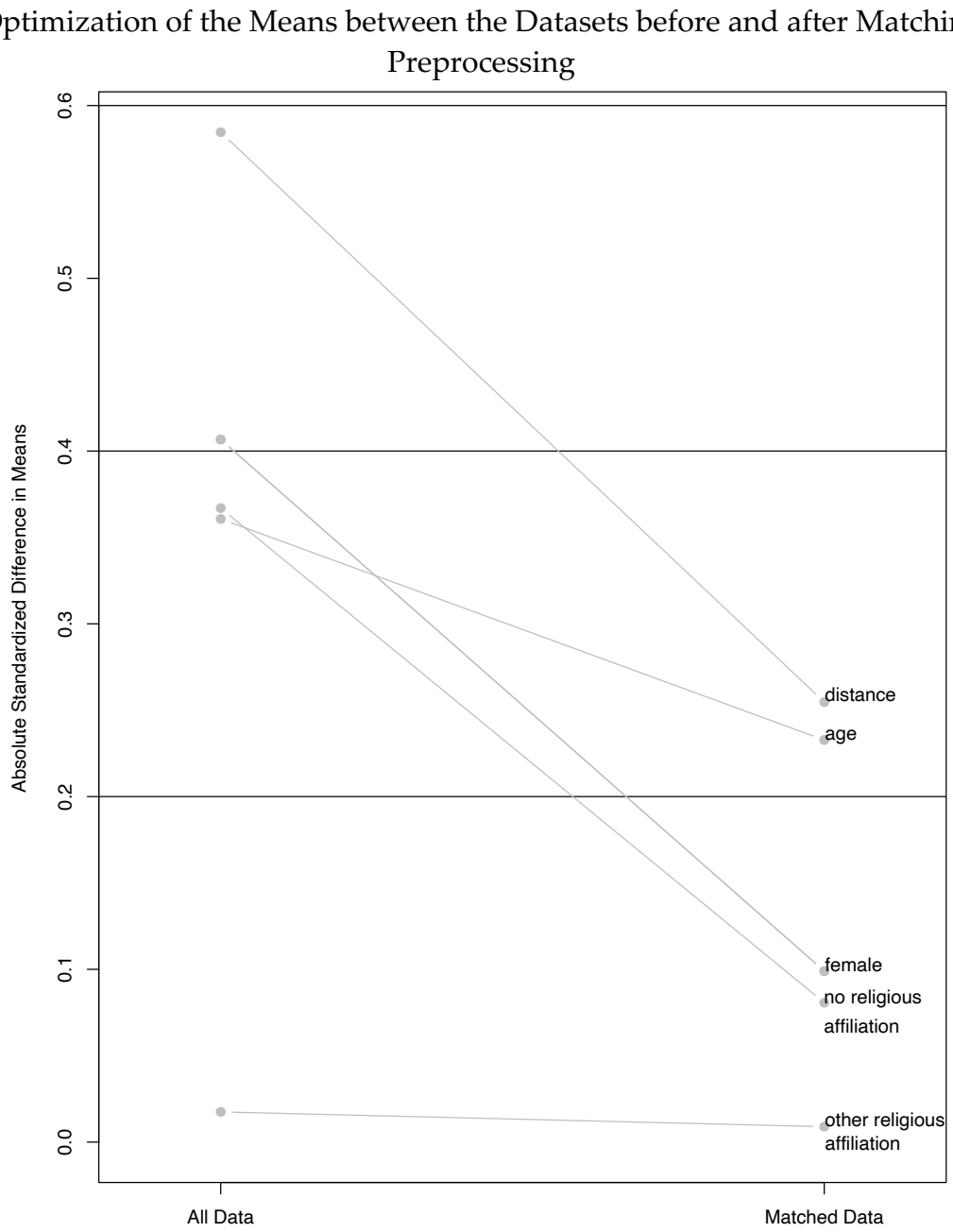

Figure Ru-A14. "distance"–the global score of improvement; "age"–an improvement on the continuous covariate of age; "female"–the dichotomous sex covariate is represented by only the improvement for the cases coded as female; the improvement on the categorical covariate religious affiliation is represented by two of three categories "no religious affiliation" and "other religious affiliation", the third category "Christian" is the reference category for the variable "religious affiliation" and does not appear in the plot.

5.8. *Appendix Ru-3. Results of the Confirmatory Factor Analyses and Histograms of the CRS items*

Table Ru-A15. Overview of the models of time-invariance test: comparison of nested models for the CRS-5 between 2008 and 2019.

	Model	Npar	χ^2	*df*	*p*	$\Delta\chi^2$	Δdf	*SRMR*	*CFI*	*TLI*	RMSEA [90% CI]	*pclose*
Single group	RM08	11	9.65	4	0.05	-	-	0.01	1.00	0.99	0.04 [0.00; 0.07]	0.70
	RE19	11	20.15	4	<0.001	-	-	0.02	0.99	0.98	0.06 [0.04; 0.09]	0.17
Measurement invariance	equal form	22	29.80	8	<0.001	-	-	0.01	0.99	0.99	0.04 [0.02; 0.05]	0.92
	equal factor loadings	18	39.35	12	<0.001	9.56	4	0.02	0.99	0.99	0.03 [0.02; 0.05]	0.99
	equal residual variances	13	101.67	17	<0.001	62.31	5	0.03	0.98	0.97	0.05 [0.04; 0.06]	0.46
	equal residual co-/variances	12	124.02	18	<0.001	22.35	1	0.03	0.97	0.97	0.06 [0.05; 0.06]	0.18

Note. RM08—data from the first wave of the Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019. The sample size for the singe group models is $N = 984$, the sample size for the measurement invariance models is $984 \times 2 = 1968$; Npar–number of estimated parameters; χ^2—chi-square test value; *df*—degrees of freedom; $\Delta\chi^2$—the difference in chi-square value to the previous model; Δdf—the difference in degrees of freedom to the previous model; *SRMR*—standardized root mean square residual; *CFI*—comparative fit index; *TLI*—Tucker-Lewis index; *RMSEA*—root mean square error of approximation; *CI*—confidence interval; *pclose*—probability value of the Close-Fit-function proposed by Browne and Cudeck (1993).

Table Ru-A16. Overview of the models of time-invariance test: comparison of nested models for the CRSi-7 between 2008 and 2019.

	Model	Npar	χ^2	*df*	*p*	$\Delta\chi^2$	Δdf	*SRMR*	*CFI*	*TLI*	RMSEA [90% CI]	*pclose*
Single group	RM08	11	8.73	4	0.07			0.01	1.00	0.99	0.04 [0.00; 0.07]	0.75
	RE19	11	12.92	4	0.01			0.01	1.00	0.99	0.05 [0.02; 0.08]	0.50
Measurement invariance	equal form	22	21.65	8	0.01			0.01	1.00	0.99	0.03 [0.02; 0.05]	0.99
	equal factor loadings	18	32.18	12	0.001	10.53	4	0.02	0.99	0.99	0.03 [0.02; 0.04]	1.00
	equal residual variances	13	91.14	17	<0.001	58.96	5	0.03	0.98	0.97	0.05 [0.04; 0.06]	0.67
	equal residual co-/variances	12	106.25	18	<0.001	15.11	1	0.03	0.97	0.97	0.05 [0.04; 0.06]	0.49

Note. RM08—data from the first wave of Religion Monitor from Russia in 2008. RE19—combined data from the projects "Religion & Economics" and "The Paradox of Interrelation between Religion and Family in Modern Russia" in Russia in 2019. The sample size for the single group models is $N = 984$, the sample size for the measurement invariance models is $984 \times 2 = 1968$; Npar–number of estimated parameters; χ^2—chi-square test value; *df*—degrees of freedom; $\Delta\chi^2$—the difference in chi-square value to the previous model; Δdf—the difference in degrees of freedom to the previous model; *SRMR*—standardized root mean square residual; *CFI*—comparative fit index; *TLI*—Tucker-Lewis index; *RMSEA*—root mean square error of approximation; *CI*—confidence interval; *pclose*—probability value of the Close-Fit-function proposed by Browne and Cudeck (1993).

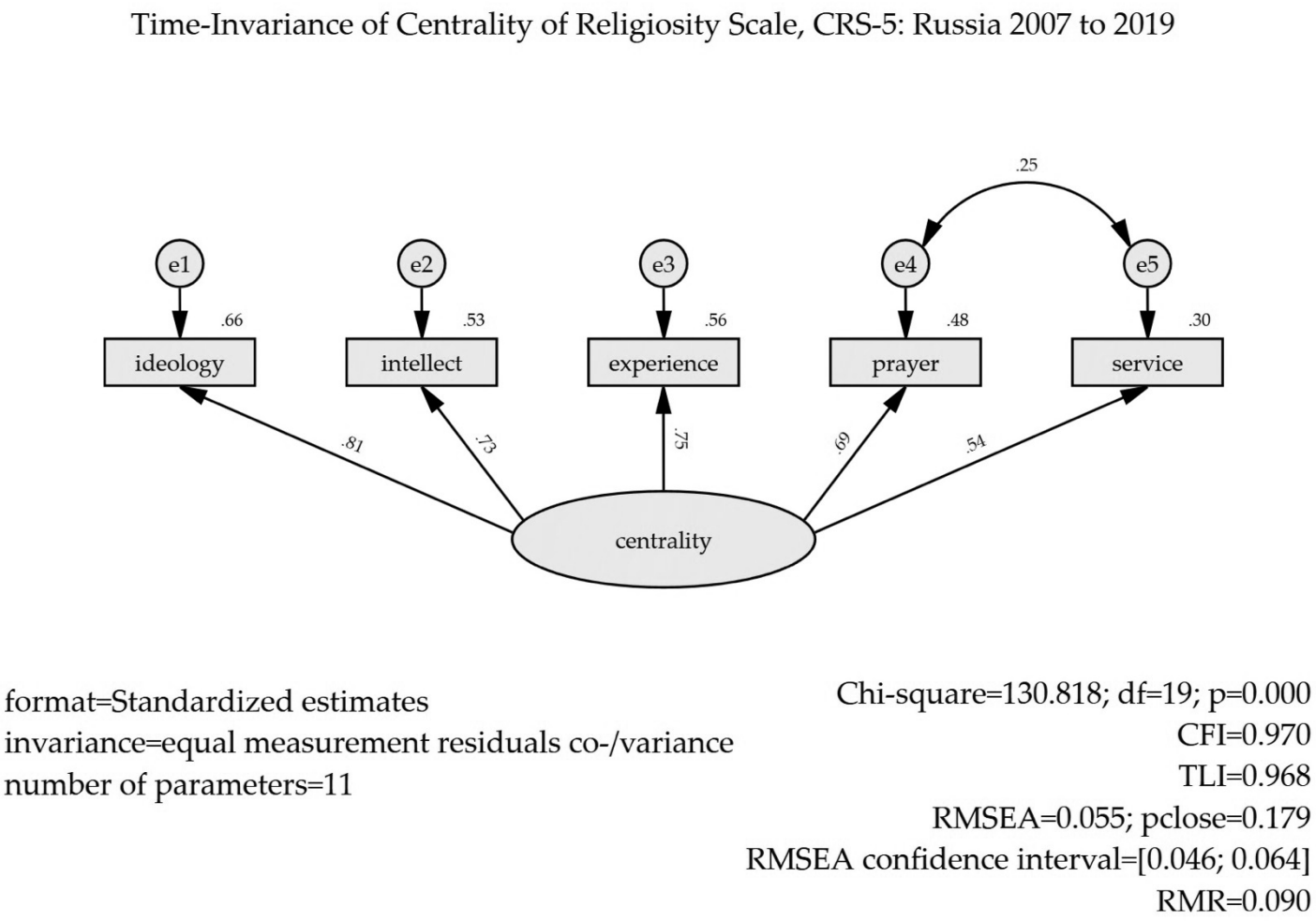

Figure Ru-A17. IBM SPSS AMOS output of the final confirmatory factor analysis time-invariant model of the Centrality of Religiosity Scale CRS-5 in Russia in 2007 and 2019. Standardized Root Mean Residual for the model is $SRMR = 0.02$.

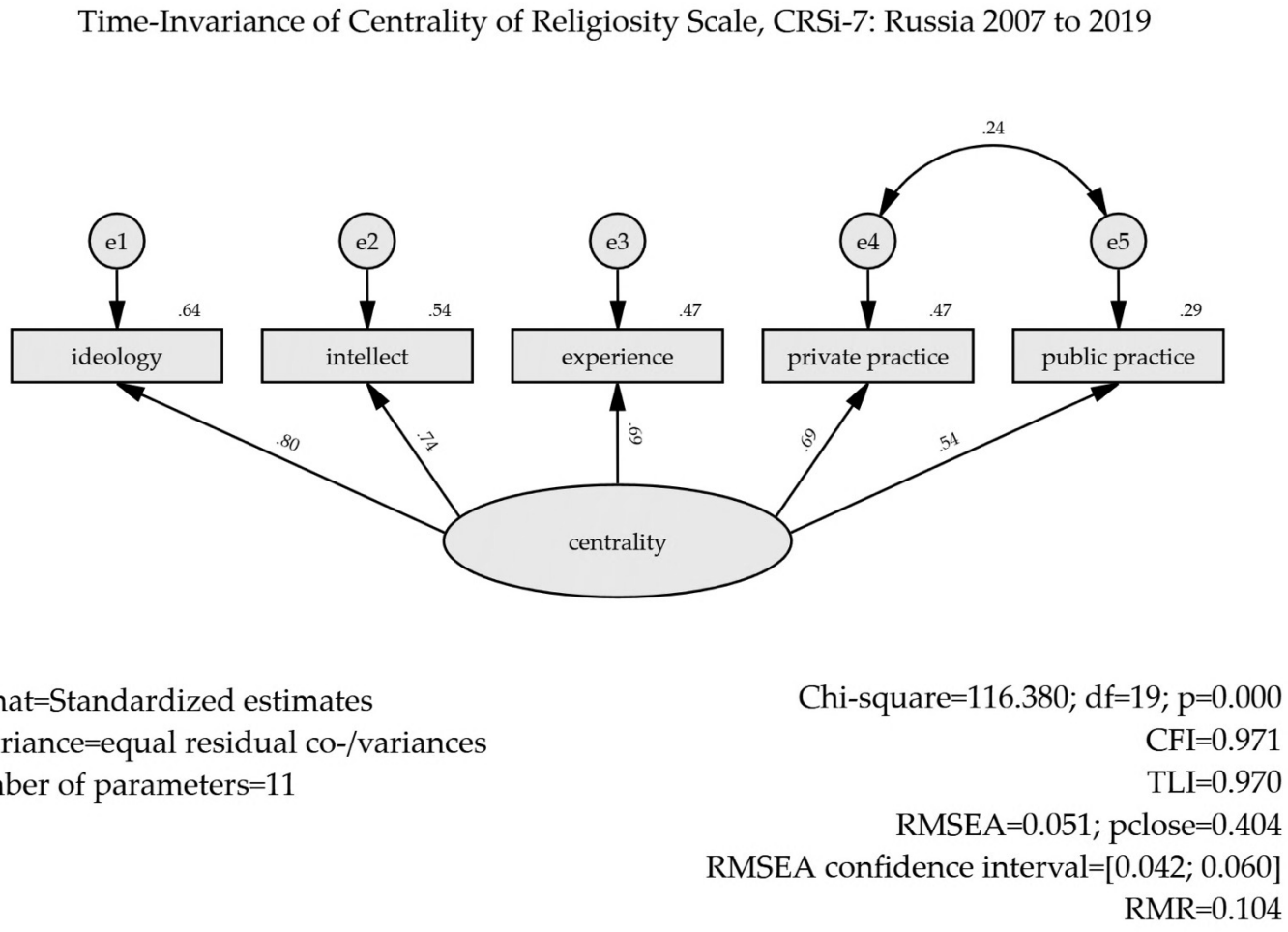

Figure Ru-A18. IBM SPSS AMOS output of the final confirmatory factor analysis time-invariant model of the Centrality of Religiosity Scale CRSi-7 in Russia in 2007 and 2019. Standardized Root Mean Residual is $SRMR = 0.01$

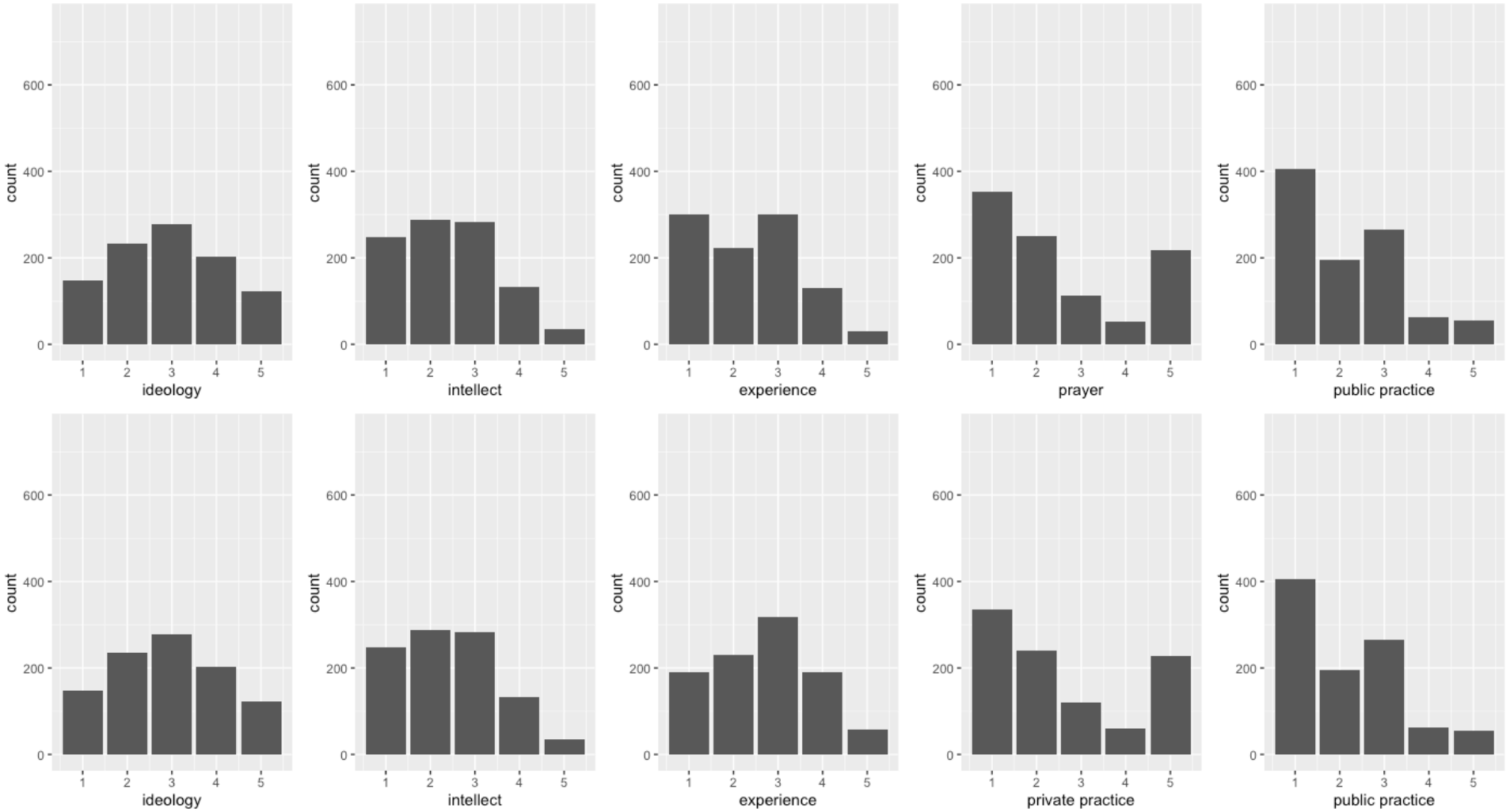

Figure Ru-A19. Histograms of the CRS-5 and CRSi-7 indicators from the 2007 sample. Upper row CRS-5, lower row CRSi-7 indicators.

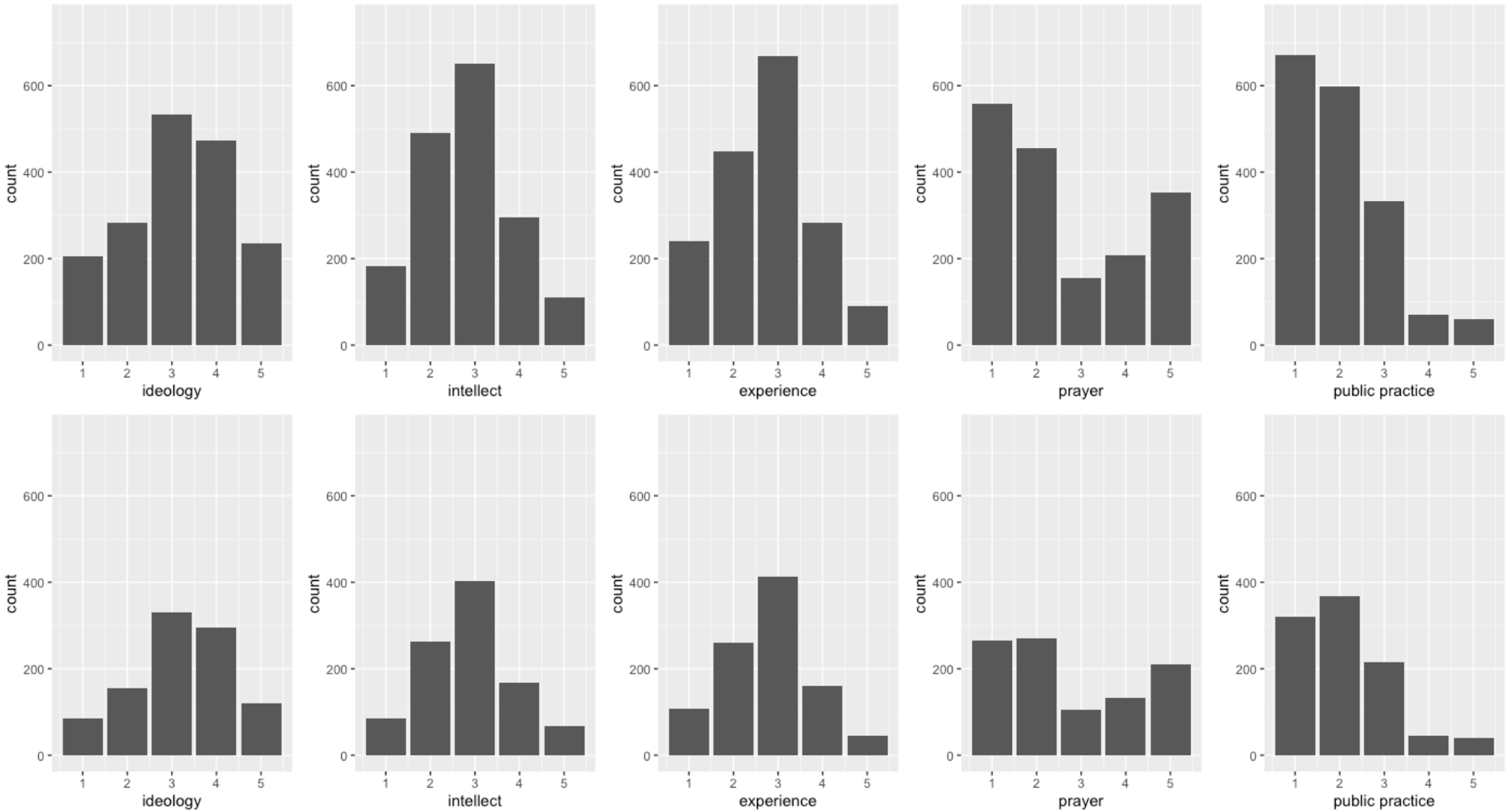

Figure Ru-A20. Histograms of the CRS-5 indicators from the 2019 sample. Upper row data before, lower row data after matching procedure.

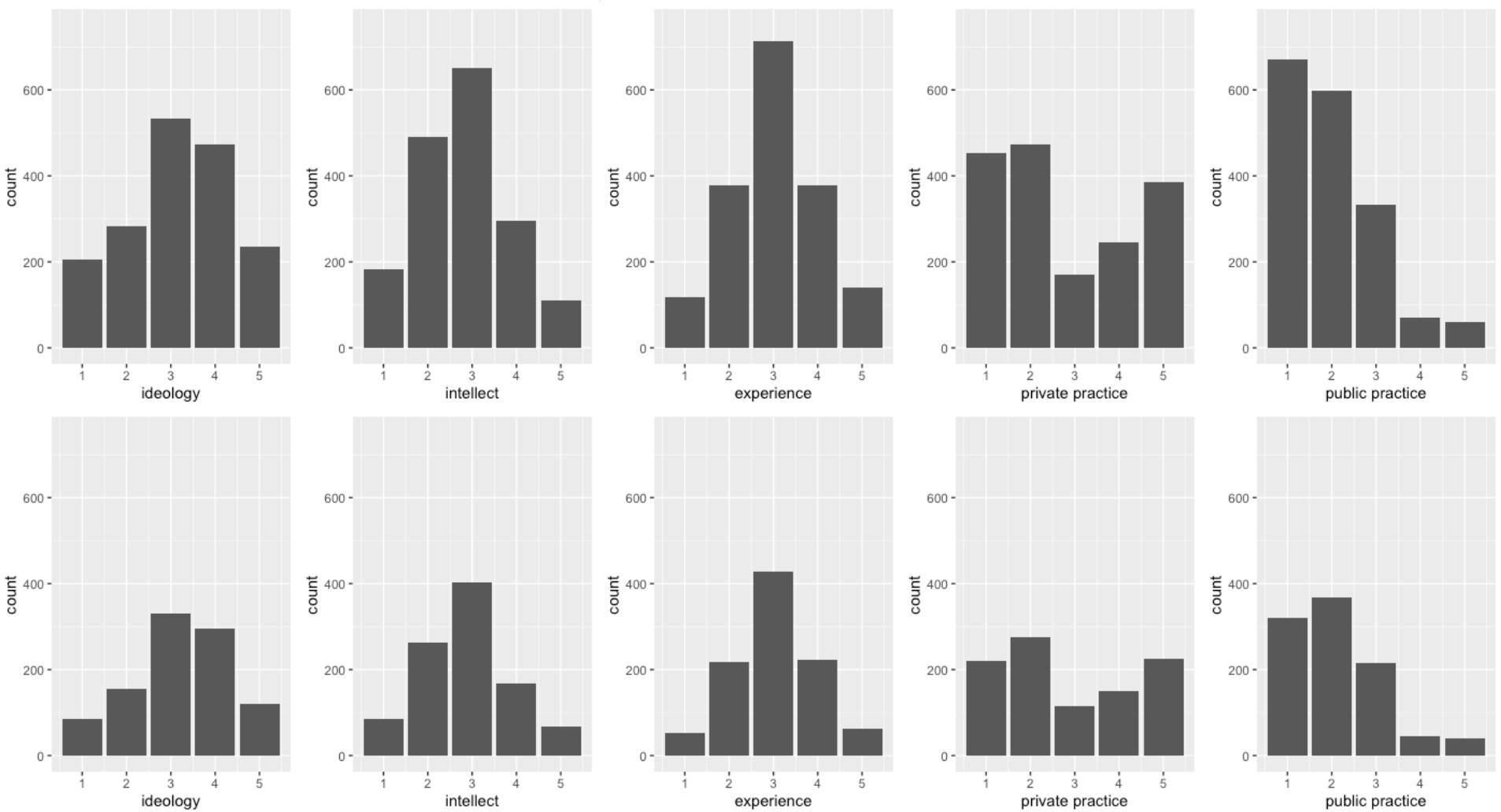

Figure Ru-A21. Histograms of the CRSi-7 indicators from the 2019 sample. Upper row data before, lower row data after matching procedure.

5.9. Results and Interim Conclusions From the Study in Russia

The data from Russia was prepared for further analyses in the most sophisticated way among the three studies. The homogenization of the samples according to the covariates age, gender, and religious affiliation via matching preprocessing made the data very handy for the factorial analyses. Two samples equal in sample size are balanced in regard to the χ^2-test of model fit. Thus, the global model fit indices based on the χ^2-minimisation algorithm are straightforwardly comparable.

The internal consistency coefficients are good for both short forms of the CRS in both available samples from 2008 and 2019. This fact is reflected in the higher mean factor loadings in both CFAs compared to the other two studies included in this thesis (see Tables 34 and 35 for more details).

In the investigation in Russia, both short forms are modeled with a multigroup-CFA with restrictions on the co-/variance and with a correlated residual of private and public practice indicators. Global fit indices show a good model fit for the CRS-5 and CRSi-7 models. The weakest local fit in the models is the factor loading of public practice explaining 29% of the variance in the indicator. On the other hand, the strongest factor loading in both models is the indicator ideology with 67% and 64% of explained variance in CRS-5 and CRSi-7 models respectively.

The overall model test results from Russia demonstrate that the centrality of religiosity-factor can be replicated in yet a new population, additionally indicating time-invariance for both short forms of the CRS. These findings suggest that the time-invariance found in the study in Georgia is not an incidental result. To show this metric invariance of the factor loadings and the residuals of the indicators of the private and public practice was sufficient. Scalar invariance is not possible to achieve with the data from Russia. This is a sign to the fact, that the means of the indicators have changed substantially from 2008 to 2019.

Table 32. Overview of the CRS invariance hypotheses' tests with the data in Russia.

	Configural invariance	**Metric invariance**	**Scalar invariance**
CRS-5	found	found	not found
CRSi-7	found	found	not found

Note. Configural invariance is found between the years 2007 and 2019 with the CRS-5 and CRSi-7. Metric invariance was supported with the data for the CRS-5 and CRSi-7. Scalar invariance could not be established with the given data from Russia due to statistically significant differences in the indicator intercepts.

6. Summary of the Results

In this section, the results from the internal consistency and factorial analyses are brought together and contrasted in form of tables. Subscripts are used to distinguish different samples and short forms from each other in the text.

Before the evaluation of the factor analytical results, the internal consistency coefficients are considered. Table 33 shows that Cronbach's α and McDonald's ω_t are close to each other or even equal in the respective samples. The lowest $\alpha_{CRS-5} = \alpha_{CRSi-7} = 0.67$ is observed in the sample in Georgia in 2018 with both the CRS-5 and CRSi-7, the same applies to coefficients $\omega_{t_{(CRS-5)}} = 0.65$ and $\omega_{t_{(CRSi-7)}} = 0.66$. The highest values for internal consistency with coefficients $\alpha_{2008} = \alpha_{2019} = 0.85$ are found in the CRS-5 in the samples in Romania with the Orthodox believers and both Russian samples. Moreover, the same pattern applies to coefficients $\omega_{t_{(2008)}} = 0.85$ and $\omega_{t_{(2019)}} = 0.86$. The internal consistency coefficients of the CRSi-7 in the Russian samples are close to those of the CRS-5 (see Table 33 for more details).

Table 33. Overview of the internal consistency parameters in Romania, Georgia, and Russia.

	Romania 2019				**Georgia**				**Russia**			
Sample	Orthodox		Pentecostal		2012		2018		2008		2019	
N	273		274		2238		1906		984		984	
Coefficient	α	ω_t	α	ω_t	α	ω_t	α	ω_t	α	ω_t	α	ω_t
CRS-5	0.85	0.85	0.78	0.79	0.73	0.72	0.67	0.65	0.85	0.85	0.85	0.86
CRSi-7	0.82	0.82	0.74	0.74	n.a.	n.a.	0.67	0.66	0.84	0.84	0.84	0.85

Note. N–sample size; α–Cronbach's coefficient alpha; ω_t–McDonald's non-hierarchical coefficient omega; n.a.–not available because there were no data on CRSi-7 items in 2012 in Georgia.

The results of the exploratory factor analyses which were calculated for the samples from Georgia and Russia are not reported in any table. However, it is worth mentioning that a one-factor solution with an explained variance of 31.87% (CRS-5, Georgia 2018) to 52.71% (CRS-5, Russia 2019) was found for the CRS-5 as well as the CRS-7 within each of the four samples. These results correspond with the outcomes of the confirmatory analyses. Before moving on to the Georgian and Russian sample's results a few comments must be made regarding the results from the CFAs in the Romanian sample.

In Romania, two Christian denominational samples were contrasted with each other with both the CRS-5 (see Table 34) and CRSi-7 (see Table 35). Due to the scale construction principle in the CRSi-7 data, the CRS-5 shows slightly better performance for both the Orthodox and Pentecostal groups. This has to do with the higher means and pruned variances of the core dimensions of private practice and experience. The change in the variance/covariance matrices between the CRS-5 and CRSi-7 is reflected in the change of the factor loadings which slightly drop in the CRSi-7 models. Considering the 90% confidence interval of the estimates only the factor loading of the core dimension of ideology in the CRS-5-model differs between the two groups of Orthodox and Pentecostal Christians.

Results from Romania suggest that the short versions of the CRS differ in the way they assess religiosity. This is of interest, because, if there were no difference the practical use of the longer CRSi-7 version would be questionable. A more intriguing question is whether the scales pass the examination of reliability over time. Hence the question of time-invariance is the focal point in the studies in Georgia and Russia.

Time-invariance could only be tested in Russia and Georgia with the CRS-5 but not in the Romanian dataset. The interreligious short version CRSi-7 was only tested for time-invariance with the Russian data. Therefore, before starting with the report on time-invariance some words on the performance of the CRSi-7 in Georgia with the dataset from the year 2012 need to be said. Even though the mean of the factor loadings for the CRSi-7-model is slightly lower compared to the CRS-5-model, considering the 90% confidence interval the factor loadings can be seen as equal. However, if taking the performance of the CRSi-7 in Russia no difference can be found compared to the

performance of the CRS-5. Regarding the 90%-bootstrapped confidence interval the factor loadings are overlapping, and the global fit indices are all in a good range. See Tables 34 and 35 for the factor loadings and Tables 36 and 37 for global fit indices.

Table 34. Overview of the factor loadings in the CRS-5 models in Romania, Georgia, and Russia.

	Romania 2019		**Georgia**		**Russia**	
Sample	Orthodox	Pentecostals	2012	2018	2008	2019
Sample Size	273	274	2238	1906	984	984
Ideology	0.84 [0.76; 0.92]	0.55 [0.28; 0.72]	0.66 [0.64; 0.69]		0.82 [0.79; 0.83]	
Intellect	0.53 [0.43; 0.61]	0.34 [0.19; 0.48]	0.68 [0.66; 0.71]		0.73 [0.69; 0.75]	
Interactive Experience	0.71 [0.64; 0.77]	0.56 [0.37; 0.68]	0.76 [0.74; 0.78]		0.75 [0.73; 0.78]	
Prayer	0.75 [0.66; 0.81]	0.74 [0.53; 0.85]	0.44 [0.42; 0.47]		0.69 [0.67; 0.72]	
Public Practice	0.81 [0.74; 0.88]	0.88 [0.69; 0.96]	0.37 [0.33; 0.40]		0.54 [0.51; 0.58]	
Mean λ	0.73	0.61	0.58		0.71	
SD λ	0.12	0.21	0.17		0.10	

Note. *SD*–standard deviation; λ–factor loading. All listed parameter estimates have a *p*-value of at least $p \leq 0.03$. The exact *p*-values can be found in the articles. For the data in Georgia and Russia multigroup confirmatory factor analysis is used with restrictions on the factor loadings to be equal across the groups.

In all three studies included in the thesis, the measurement models were complemented by correlations between the residuals of the indicators. These residuals are a critical part of the models as the measurement models didn't fit well without the loosening of the restriction of uncorrelated residuals. The estimated parameters of the residuals in the CRS-5 models were as follows:

- Romania 2019, Orthodox: correlation of the residuals of ideology and public practice $\delta_{x_1x_5} = -0.43[-1.00; -0.19], p \leq 0.01$, correlation of the residuals of intellect and experience $\delta_{x_3x_4} = 0.29[0.19; 0.40], p \leq 0.01$
- Romania 2019, Pentecostal: correlation of the residuals of ideology and experience $\delta_{x_1x_3} = 0.24[0.13; 0.36], p \leq 0.01$, correlation of the residuals of intellect and experience $\delta_{x_3x_4} = 0.29[0.19; 0.39], p \leq 0.01$
- Georgia 2012 and 2018: correlation of the residuals of private and public practice $\delta_{x_4x_5} = 0.31[0.27; 0.33], p = 0.01$
- Russia 2008 and 2019: correlation of the residuals of private and public practice $\delta_{x_4x_5} = 0.26[0.21; 0.31], p = 0.02$

The descriptive comparison of the overall mean factor loading (average of all $\lambda -$ point estimates) in all analyzed samples show that the factor means of the CRS-5 are slightly higher and disperse a bit more with a $M_{\lambda(CRS-5)} = 0.66, SD_{\lambda(CRS-5)} = 0.15$ compared to CRSi-7 $M_{\lambda(CRSi-7)} = 0.62, SD_{\lambda(CRSi-7)} = 0.13$.

Table 35. Overview of the factor loadings in the CRSi-7 models in Romania, Georgia, and Russia.

	Romania 2019		**Georgia**		**Russia**	
Sample	Orthodox	Pentecostals	2012	2018	2008	2019
Sample Size	273	274	n.a.	1906	984	984
Ideology	0.79 [0.69; 0.87]	0.67 [0.39; 0.81]	n.a.	0.62 [0.58; 0.66]	0.80 [0.77; 0.82]	
Intellect	0.51 [0.39; 0.60]	0.38 [0.21; 0.53]	n.a.	0.63 [0.58; 0.67]	0.74 [0.71; 0.76]	
Experience	0.72 [0.64; 0.79]	0.65 [0.50; 0.76]	n.a.	0.74 [0.70; 0.78]	0.69 [0.66; 0.72]	
Private Practice	0.64 [0.51; 0.76]	0.50 [0.16; 0.69]	n.a.	0.38 [0.32; 0.42]	0.69 [0.66; 0.71]	
Public Practice	0.71 [0.64; 0.79]	0.73 [0.51; 0.87]	n.a.	0.35 [0.31; 0.41]	0.54 [0.51; 0.58]	
Mean λ	0.67	0.59	n.a.	0.54	0.69	
SD λ	0.11	0.14	n.a.	0.17	0.10	

Note. *SD*–standard deviation; λ–factor loading. All listed parameter estimates have a *p*-value of at least $p \leq 0.03$. The exact *p*-values can be found in the articles. n.a.–not available because there was no data on the CRSi-7 in 2012 in Georgia. For the data in Russia multigroup confirmatory factor analysis is used with restrictions on the factor loadings to be equal across the groups.

The same as for the CRS-5 models the covariance of indicator residuals can be seen in the CRSi-7 models, indicating that residual correlations were installed in the measurement models as suggested by the modification indices to achieve a good model fit. The correlations of the residuals are:

- Romania 2019, Orthodox: correlation of the residuals of intellect and public practice $\delta_{x_2x_5} = 0.18\ [0.05;\ 0.29], p \leq 0.03$, correlation of the residuals of intellect and experience $\delta_{x_3x_4} = 0.27\ [0.15;\ 0.38], p \leq 0.01$
- Romania 2019, Pentecostal: correlation of the residuals of intellect and experience $\delta_{x_3x_4} = 0.25\ [0.05;\ 0.34], p \leq 0.06$
- Georgia 2018: correlation of the residuals of private and public practice $\delta_{x_4x_5} = 0.25[0.21; 0.30], p = 0.01$
- Russia 2008 and 2019: correlation of the residuals of private and public practice $\delta_{x_4x_5} = 0.31[0.25; 0.34], p = 0.01$

From the statistical models of the short version of the CRS, model parsimony should be considered if comparing the models with each other. From Tables 36 and 37 one can learn that the models of multigroup-CFA have more degrees of freedom as they include more restrictions than the simple CFA models. Even though their chi-square test values are much higher than the simple CFA models it is taken into account by the different goodness of fit criteria. Especially the RMSEA is adjusted for model parsimony and shows that the models perform comparably to each other.

Table 36. Global fit indices of the CRS-5 measurement models in Romania, Georgia, and Russia.

	Romania 2019		**Georgia**		**Russia**	
Sample	Orthodox	Pentecostals	2012	2018	2008	2019
Sample Size	273	274	2238	1906	984	984
Degrees of freedom	3	3	24		19	
Chi-square, *p*	5.83, 0.12	6.78, 0.08	259.09, <0.001		130.82, <0.001	
CFI	1.00	0.99	0.95		0.97	
TLI	0.98	0.97	0.96		0.97	
RMSEA, p	0.06, 0.33	0.07, 0.26	0.05, 0.63		0.06, 0.18	
RMSEA LB	0.00	0.00	0.04		0.05	
RMSEA UB	0.13	0.14	0.05		0.06	
SRMR	0.02	0.03	0.04		0.03	

Note. CFI–comparative fit index; TLI–Tucker-Lewis-index; RMSEA–Root Mean Squared Error of Approximation; LB-lower bound and UB–upper bound of the 90% confidence interval; SRMR–Standardized Root Mean Residual; *p*–p value. For the data in Georgia and Russia multigroup confirmatory factor analysis is used with restrictions on the factor loadings to be equal across the groups.

Another point to mention is the nested models which apply in the case of multigroup-CFA when the restrictions are set stepwise, starting with the factor loadings and going up to the covariance of the residuals in the time-invariant modeling. The process of nesting the models is reported in the original publications and is not reported here because the models with the highest degree of restriction hold up to the set-up goodness of fit criteria.

Table 37. Global fit indices of the CRSi-7 measurement models in Romania, Georgia, and Russia.

	Romania 2019		**Georgia**		**Russia**	
Sample	Orthodox	Pentecostals	2012	2018	2008	2019
Sample Size	273	274	n.a.	1906	984	984
Degrees of freedom	3	4	n.a.	4	19	
Chi-square, *p*	6.19, 0.10	4.73, 0.32	n.a.	26.71, <0.001	116.38, <0.001	
CFI	0.99	1.00	n.a.	0.99	0.97	
TLI	0.98	0.99	n.a.	0.97	0.97	
RMSEA, p	0.06, 0.30	0.03, 0.62	n.a.	0.06, 0.31	0.05, 0.40	
RMSEA LB	0.00	0.00	n.a.	0.04	0.04	
RMSEA UB	0.13	0.10	n.a.	0.08	0.06	
SRMR	0.02	0.02	n.a.	0.02	0.03	

Note. n.a.–not available because there was no data on the CRSi-7 in 2012 in Georgia. CFI–comparative fit index; TLI–Tucker-Lewis-index; RMSEA–Root Mean Squared Error of Approximation; LB-lower bound and UB–upper bound of the 90% confidence interval; SRMR–Standardized Root Mean Residual; *p*–p value. For the data in Russia multigroup confirmatory factor analysis is used with restrictions on the factor loadings to be equal across the groups.

The results of the correlational, exploratory, and confirmatory factor analyses suggest that the centrality-component and the core dimensions of religiosity hold evidence in the data and should be discussed in light of the underlying model.

7. Discussion

Based on the I/E-concept (Gordon W. Allport) and multiple dimensions of religion (Charles Y. Glock) the centrality and content-model introduced a reconstructed approach and a new measurement of religiosity to the field of psychology of religion. The centrality-component represents the object under investigation in the present thesis. It refers to an absorbing psychological construct and includes five core dimensions of religiosity namely the ideological, intellectual, experiential core dimensions and the core dimensions of private and public practice. The scales constructed by Stefan Huber render the reconstructed and integrated centrality-component available for assessment of religiosity. The relevant versions for this thesis are the shortest ones, the CRS-5 which is applicable in Abrahamitic religious contexts and the CRSi-7 which is an extension created to be used in other contexts than Abrahamitic ones. The scales were tested with data available from Romania (samples of Orthodox and Pentecostal believers), Georgia (samples from the years 2012 and 2018), and Russia (samples from the years 2008 and 2019), three predominantly Christian Orthodox countries in Eastern Europe. The main goal was to examine the internal consistency and the time-invariance performance of the short versions of the CRS in the contexts of the aforementioned countries.

7.1. Consistency of the Centrality and the Core Dimensions of Religiosity

Generally, the statistical models show that the configuration of one latent variable and five reflective indicators could be reproduced in all six given samples. Though not without modifications on the covariances of indicator residuals, indicating that centrality of religiosity cannot completely capture the dynamics of the dimensions and that some systematic variation is still present beyond the factor. That kind of systematic variation seems to depend on the characteristics of the sample. More on this later in the discussion section.

7.1.1. The Centrality of Religiosity

Exploratory factor analyses with one identified factor with an eigenvalue higher than 1 point to the fact that the core dimensions have one underlying uniting element. In the next step, in alignment with the theory, the postulated psychologic centrality of religiosity-component was operationalized as a latent variable in the confirmatory factor analyses. The analyses show that this factor is suitable to endorse a substantial share of the variances of the five indicators. Therefore, the construct of the centrality of religiosity proves utile in research on religiosity in addition to the five dimensions of religiosity. In its function as a unifying psychological concept, it corresponds with the idea of religious commitment by Glock as well as the intrinsicality of religious motives by Allport. A systematic cross-validation of the CRS with the scales by Glock, Allport, or their derivates is a desirable test as it was not done yet. Some other comparisons already exist. Drawing from the data of the Religion Monitor, Huber and Krech (2009) report a correlation of the CRS with a single-item measure of "relevance of religious commandments to daily life" of $r = 0.67$ and with a single item measure of "strength of an individual's religious self-concept" of $r = 0.73$. A non-peer-reviewed study by Vazquez and McClure (2017) shows a correlation of $r = -0.77$ between the Intrinsic-scale and the CRS. The size of the correlation seems reasonable while the mathematical sign might be negative due to a wrong re-coding procedure. It is theoretically more plausible to see a positive sign with this correlation hence $r = 0.77$. More recently developed scales e.g., the Multidimensional Religiosity Measure by Rohrbaugh and Jessor (1975), the Spiritual Transcendence Scale by Piedmont (1999) or the Brief Multidimensional Measure of Religiousness/Spirituality by Fetzer Institute (2003) would be also suitable for cross-validation in the field of assessment of general religiosity and spirituality.

Regarding the factor loadings, the observations from the statistical models suggest that the assumption of τ-equivalence cannot be sustained. Thus, the use of Cronbach's α as an estimator for internal consistency is discouraged while the use of τ-congeneric McDonald's ω_t for the short version of the CRS and the hierarchy-respecting McDonald's ω_h for the intermediate and long versions of the CRS is encouraged. Although the latter shows no direct support in the data a look at

the assumptions of a general factor for internal consistency à la Cronbach's α a consideration of a fanning out factorial structure with highly likely non- τ-equivalent indicators of the intermediate and long version of CRS speaks in favor of the McDonald's hierarchical ω_h. One possible reason for both coefficients being so close to each other in the CRS-5 and CRSi-7 models in all analyzed samples is that the configuration of one latent variable is congruent with the assumptions of a general factor in Cronbach's α calculations.

The estimation of latent means was only introduced in the Georgian data but it showed that it is possible to estimate the change of the latent mean κ which is an alternative to e.g., an ANOVA with composite CRS-indices of any of the CRS versions. However, this can only be calculated in software packages with structural equation modelling abilities. With a translated, well-validated version of the CRS, it is also possible to track the changes in the centrality of religiosity by using the CRS-index as an approximation of the latent mean κ in a population of interest.

7.1.2. The Core Dimensions

The CRS-5 and CRSi-7 each assess five core dimensions of religiosity:

- ideology
- intellect
- experience
- private practice
- public practice

Whereby the CRSi-7 contains extensions in the core dimensions of experience and private practice. The analyses within the mainly Christian Orthodox samples show that the Abrahamitic CRS-5 fulfils its functions well. A hint concerning the usefulness of the interreligious version of the CRSi-7 is seen in the analyses of the Pentecostal group where the religious individualism shows tendencies which can be better captured by a scale which includes alternative expressions on the core dimension of private practice (meditation vs. prayer) and the core dimension of experience (participative vs. interactive).

An interesting question in the context of the discussion of the core dimensions is whether one could shorten the CRS by leaving out one of the dimensions. The correlational analyses give a hint on this matter. Each dimension's correlations with the CRS-index (composite score of the scale) are always higher than among each other, hence, the core dimensions are not redundant. The often-heard critique that one can reduce the amount of work by measuring only one dimension and having a similar predictive power cannot be maintained. If a researcher is looking for a particular aspect of religiosity the assessment of only one of the dimensions is justified. However, if a researcher is going to measure religiosity, she or he should consider covering all dimensions by at least one item each. Leaving out one of the core dimensions would imply a degradation of the representativity of religious expressions of an individual creating a blind spot in the measurement of religiosity.

7.2. Invariance

Illustrated by the multigroup-CFA with the CRS-5 in the Georgian and Russian data and with the CRSi-7 within the Russian samples, consistency of the CRS over time receives support from the statistical modelling. Moreover, configural invariance of the statistical models shows general support for the universality of the core dimensions as already postulated by Glock (1962). The model not only shows configural invariance in all samples, further, it shows metric invariance in the data from Russia, and scalar invariance in the CRS-5 examination in Georgia. It is the first time that the short versions of the CRS undergo such an examination. Drawing a closing line below the invariance testing, even though the consistency over time is found in two different linguistic and cultural backgrounds, Russia and Georgia, the results should be replicated in other samples. For example, data for time-invariance testing with the CRS-5 and CRSi-7 is available from Germany and Switzerland in the Religion Monitor 2007, 2012, and 2017. Only the data from 2007 is available as an

open-source dataset (Huber and Bertelsmann Stiftung 2010), other datasets must be requested for analyses, which is worth doing it.

An interesting development with the confirmatory factor analysis is the fact that with Monte-Carlo parametric bootstrapping technique some global fit indices can be generated for a given sample. Thus, by calculating a sample specific confidence interval the error level can be kept to a specified level, say the conventional α-error level of 5%. An auspicious approach is described by McNeish and Wolf (2020), with a web-based application[16] for calculation of 90% and 95% confidence intervals for CFI, SRMR and RMSEA. The technique is not included in this thesis because by the time of writing there is no peer-reviewed publication but only a preprint and a beta-version of the new method. Individual cut-off values will strengthen the confidence in model testing and it's results.

Furthermore, the researcher should take into account that if consistency over time is a point of interest and correlated residuals are necessary to fit the covariance pattern in the data then it is required that the correlations of the residuals are also constrained in all models. A further point to consider is that there are two options for the estimation of constrained parameters in CFA. As it is done in the data from Georgia not only the variance and covariance parameters (λ, δ) are constrained but also the mean structure i.e., the intercepts of the indicators and the mean of the latent variable (τ, κ). In data from Russia, only the variances and covariances and the estimates based on them are set to be equal over time. If the mean structure is constrained, changes in the latent mean can be calculated by a method proposed by Sörbom (1974).

Generally spoken the tests of invariance of the measurement model make sure that the same psychological construct is assessed in different populations. Consequently, if e.g., the factor loadings differ substantially one cannot speak of assessing the same construct. Future examinations of the CRS should take into account e.g., such questions as "Do the centrality of religiosity represent the same psychological construct for men and woman?", "…for people of different age groups?" etc. Establishing at least partial metric invariance should be a prerequisite of comparisons of groups on the centrality of religiosity. Cross-cultural comparisons of the CRS are at hand and invariance testing should be taken into consideration by the researchers. A rationale of how to proceed in cross-cultural invariance testing is given for example by Milfont and Fischer (2010).

7.3. Correlated Residuals

The detection of correlated indicator residuals in the measurement models of the short version of the CRS raises questions. The size of these correlations moves in a range of a small to medium effect (J. Cohen 1988, 82). Such a configurational modification to the measurement model is theoretically not anchored in the centrality and content-model. Therefore, a new branch of model discussions might be driven by systematic observation of the covaried indicators correlations. That these correlations are not incidental can be seen in the CFA from the Russian data (correlation of the residuals of the indicators of private and public practice in CRS-5- and CRSi-7–models), the Georgian data (correlation of the residuals of the indicators of private and public practice in CRS-5–model), and in Romanian data (correlation of the residuals of indicators of experience and intellect in all four CFA-models).

In a situation when (correlated) residuals are not ignorable Brown (2015, 184) speaks of minor factors. In the study in Romania, such observation is true for the correlated indicator residuals of the core dimensions of intellect and experience. One possible explanation of this is the sample composition with a high proportion of highly religious believers in both the Orthodox and Pentecostal groups. The centrality of religiosity cannot completely explain the covariations of the core dimensions of intellect and experience which means that apart from the common variance of all core dimensions which is covered by the latent variable of centrality of religiosity some cognitive and experiential phenomena stand out. This point is discussed further in reference to section 9.8. in the outlook of this thesis.

[16] https://www.dynamicfit.app/cfa/, last accessed on 13.08.2020

Another even stronger corroborated observation is the correlated indicator residuals of private and public practice in the time-invariant models with the CRS-5 in Georgia and Russia and with the CRSi-7 in Russia. These samples are close to a representative cross-section of the population in these countries regarding religious affiliation and level of religiosity. The same explanation as with the correlated indicator residuals in Romania applies here. The factor of centrality of religiosity does not cover all the systematic covariation of the indicators of the core dimensions and some covariance is happening outside. In the data from Russia and Georgia, these covariations are in the frequency of prayer/meditation and church attendance. This might be a hint that outwardly seen religious behavior is established as a part of this religious tradition apart from the inner processes like experiencing God´s intervention or presence, belief in God or divinity and thinking about religious issues. Karpov, Lisovskaya, and Barry speak of ethnodoxy in such a case (Карпов, *Лисовская*, and Barry 2012). Meaning that belonging to a certain ethnological background e.g., Georgian or Russian is strongly linked with a religious tradition, in this case, local form of Christian Orthodoxy. Thus, some kind of normed religious behavior by a believer is associated with his or her belonging to the group without the requirement for a profound faith. An argument in favor of this interpretation would be the findings with the Orthodox group of highly religious respondents in Romania where no correlation is needed between the indicator's residuals of private and public practice.

7.4. Strengths and Limitations

Discussing the performance of the Centrality of Religiosity Scale in three different countries with different cultural and linguistic but similar religious settings unveil up- and downsides. The samples in Russia and Georgia for example are big relative to many psychological studies and close to the cross-section of the population while the sample from Romania contrasts two predominantly highly religious respondent groups of Christian Orthodox and Pentecostals with each other. From the perspective of the examination of the CRS all three settings are beneficial but there is no representativity in Romania and thus no conclusions can be made about the general religiosity in that country. The weighting of the data would not provide a solution. A highlight of the dataset from Romania is that it contains balanced groups of an Orthodox majority and a Pentecostal minority. The proportion of highly religious respondents causes a restricted variance which could not be addressed in the study but was not a big issue either. Unlike the Romanian dataset, the data collected in Russia via telephone and in Georgia via house visits meet high standards of data collection. The downside of such a procedure is the bias of social desirability but as much care as possible was taken to reduce such influence. If the CRS is presented as a self-report measure as in Romania limitations of self-report questionnaires apply e.g., guessing the hypothesis of the study, try to appear more likeable and therefore exaggerate or understate etc. An antidote to this are the frequency and importance answer options which are based on neutral formulations.

The methods used in the analyses are adequate to study the CRS and this is an exceptional study among many which apply CFA on CRS where the CRS is examined systematically for configural, metric, and scalar invariance. Data preprocessing used in the study in Russia show how important it is to take care of the data adequately in order to achieve results that are related to the measurement itself and not biased by any random fluctuations in the data. Applying bootstrapping to get confidence intervals of parameter estimates provides a further methodological finesse that lets the researcher base his or her conclusions on statistical fundamental notions and not just point estimates. Systematic differences can be identified as not being random which is important for the model comparison in terms of construct validity across cultural and linguistic backgrounds.

This thesis shows a new way of handling the deviations in the measurement model by looking at the correlated indicator residuals in the light of the centrality and content-model. The interpretations given to the detected model modifications are of diagnostical value and might open a new window to the researchers who have theoretical but not an empirical approach to detect particularities among different religious traditions.

8. Conclusions

8.1. CRS Performance

According to the performance of the CRS, the internal consistency coefficients fluctuate (see Table 33). The factor loadings vary between different samples. Residuals of the indicators of the core dimensions have to be correlated to reproduce the covariance patterns in the data. Despite all this, the scale has shown invariance up to the scalar level which is a rigorous condition. For the most applications a check on configural and metric invariance would suffice. According to their psychometric characteristics, the short versions of the CRS are suitable for further research in the psychology of religion.

8.2. Application Within Orthodox Christianity

The examinations in three predominantly Christian Orthodox countries showed similarities and differences, with some particularities of highly religious believers. Generally, both the CRS-5 and the CRSi-7 are adopted to be used in Orthodox religious traditions. The CRSi-7 is applicable when two more items are bearable and a comparison of the participative versus interactive patterns of religiosity is of interest to the research goal. The detected correlated indicator residuals seem to be caused by the level of religiosity rather than by the cultural or linguistic setting. If possible, researchers should run at least an exploratory, even better a confirmatory factor analysis to check for a unifying latent construct and possibly correlated indicator residuals in their data.

8.3. General Conclusion

The Annual Review of Psychology, a top-ten journal in psychology according to the h5-index has featured a chapter on psychology of religion twice since its start (Emmons and Paloutzian 2003; Gorsuch 1988). Both included the topic of measurement of religion and spirituality. While Gorsuch (1988) argued for a moratorium on the development of new scales in the field, Emmons and Paloutzian (2003, 383) state that: "Measurement is fundamental to scientific progress. Major advances in scientific disciplines are typically preceded by major breakthroughs in measurement methods. The psychology of religion, like other fields of scientific inquiry, will progress neither slower nor faster than allowed by current measurement instruments.".

The CRS is one of the latest developments in the quantitative assessment of dispositional religiosity in the field. Its configuration with five core dimensions and a unifying index of the centrality of religiosity can be compared to a hand which has five fingers. Each of the fingers has particular importance and is a great tool on its own but they need the palm to collaborate. Likewise, the core dimensions and the centrality of religiosity work together in the CRS. Same as a hand is a great and practical tool to people, researchers in the psychology of religion should consider the application of the CRS as a psychometric tool in their research. Simply put, why use only one, two, three, or four fingers of your hand when you want to grab something, and you have five of them to your disposition. Surely, hands cannot replace feet, like eyes cannot replace ears, thus, this argument is not an argument for reductionism in the measurement of general religiosity but an argument for a comprehensive and reliable assessment with validated scales like the CRS.

To finish the conclusion with a yet another citation about measurement in psychology of religion and spirituality: "Doing psychological research on religiousness [religiosity] requires that you measure the multiple variables that in combination best reflect the way a particular form of religiousness is conceptualized. In fact ,[…] some property of behavior, attitudes, or experience has to be assessed in order to explore a psychological question about religiousness [religiosity]." (Paloutzian 2017, 116). That said, the outlook is a collection of some ideas how to explore the psychological questions about religiousness or religiosity with the CRS.

9. Outlook

Multiple branches of research on religiosity or psychology of religion and spirituality are thinkable with the CRS. Presented in the next paragraphs are some methodological as well as content-driven possibilities of going on with the scale.

9.1. Test of the Intermediate and Long Versions of the CRS

Intermediate (CRS-10 and CRSi-14) and long (CRS-15 and CRSi-20) versions of the CRS offer themselves to be tested for configural, metric, scalar, and time-invariance as an extension of the present work. Their factorial configuration is more complex and includes a second-level factor (see Figure Ge-12) while a general factor model is also imaginable. Regarding the latter, one-factor with either 10 or 15 indicators would be an operationalization of the centrality of religiosity while the more complex model would introduce a latent variable for each core dimension with either two or three indicators. The five factors of core dimensions would themselves be reflected by a unifying second-level factor of centrality of religiosity. Tests for a configuration with a second-level factor of centrality of religiosity already exists but not for the invariance of it (e.g., Huber 2003).

9.2. Measurement of Centrality of Religiosity with Highly Religious Believers

The investigation with the data from Romania immediately shows the upper limit of the answer options of the scale. A ceiling effect occurred and the problem of singularity of data was almost present within the Orthodox subsample and was there in the data from the Pentecostal group. The calculation of the internal coefficients' confidence interval was not possible due to this singularity error produced in the software package.

The formulation of the items with a focus on frequency and importance/salience is appropriate for an extension regarding answer options. The scale could easily be adjusted for highly religious believers if the ceiling of the Likert-scale were elevated that means making the item more difficult in diagnostic terms. For example, the items for private practice "How often do you pray/meditate?" has the following answer options: several times a day—once a day—more than once a week—once a week—one to three times a month—a few times a year—less often—never. The item difficulty can be increased by setting the upper end to e.g., "taken together on average longer than 60min per day". The same could be done with the answer options of public practice with the answer option "taken together in average longer than 120min a week" because daily exercises in prayer and weekly attendance of community activities are common to highly religious believers and the measurement must be based on the daily/weekly time spent engaged in these activities.

9.3. Interaction of the Dimensions

A further perspective and a field not examined so far are the interactions of the dimensions among each other and their relative position to one another. The single items can be used without constructing an index to look at their inner dynamics or to interact with other psychological or sociological constructs in addition to the centrality of religiosity. The longer versions of the CRS have subscales for each of the core dimensions which serve this purpose. Thus, variations of different kinds of statistical models are imaginable. For example, which of the core dimensions drives the changes in other core dimensions? If longitudinal data is at hand this can be tested. Moreover, the researcher could construct Markov chains from a series of measurements and track e.g., time effects.

9.4. Cross-Cultural Comparisons and Interdisciplinary Applications

The many recent applications of the CRS worldwide (see Table 4 in the general introduction section) suggest a review or meta-analysis on the CRS with possible directions of cross-cultural comparison (Huber & Krech 2009; Huber, Scheiblich & Ackert 2020). A recent special issue on the

CRS[17] nourishes the database and broadens the scope to new domains e.g., religiosity of Baha'i (Demmrich 2020), the religiosity of secular individuals (Demmrich and Huber 2019), religiosity and prejudice (Yendell and Huber 2020 on Islamophobia) religiosity and psychotherapy outcome (Friedrich-Killinger 2020) religiosity of adolescents (Künkler, Faix, and Jäckel 2020), religiosity and family functioning (Perveen and Malik 2020) etc. Even though it seems that the centrality of religiosity has a broad scope of applications attention should be given to the fact that the cultural understanding of the term religion and spirituality and thus religiosity on the individual level might differ. The question of whether researchers are measuring the same construct is a sensitive one in cross-cultural examinations. Traphagan (2005) for example, discusses the usefulness of the health and religion-related scales which are developed in the US and Europe for research in Asian countries. The same applies to other subdomains of psychology (cf. A.B. Cohen et al. 2017 for a general discussion on the topic).

9.5. Differentiation-, Relevance-, and Contentthesis

The CRS-index is a criterion which builds a basis for a categorical view on religiosity. The author himself proposes a hermeneutic (Huber and Huber 2012) with three categories of 1.00 to 1.99 for "non-religious" with no to marginal presence of the religious contents, from 2.00 to 4.00 for "religious" which is a transition area with a background presence of religious contents, and from 4.01 to 5.00 for "highly religious" with a clear presence of religious contents within the personal construct system. According to these corresponding ranges the quality of religious experience and behavior changes. The three theses linked with these changes are: the relevance-thesis, the differentiation-thesis, and the content-thesis (Huber 2008; Huber, Allemand, and Huber 2011). The three theses postulate the following:

- Relevance-thesis: The higher the centrality of religiosity the more relevant the expressions within each of the core dimensions become. For instance, the frequency of the private practice will increase within a believer if his or her CRS-index rises. For example, if he or she used to pray occasionally when he or she had a CRS-index of 2.00 the frequency of the private practice will increase if the CRS-index increases to e.g., 4.00. This occurs because the believer needs to intensify his or her expression of religiosity in all potential domains, as the relevance to his or her life grows stronger.
- Differentiation-thesis: The higher the centrality of religiosity is the better a believer can differentiate the contents of his or her faith life and he or she becomes more sensitive in the perceptions and expressions of the core dimensions. For example, imagine a believer who can only think of feeling good or bad towards God while a highly religious respondent can distinguish between love, thankfulness, joy, awe, guilt and so on. An example of how differentiation by the centrality of religiosity works with the emotions toward God can be seen by Künkler, Faix, and Jäckel (2020).
- Content-thesis: With an increasing centrality of religiosity the contents of the dimensions change. This means that the increasing CRS-index indicates not only quantitative but also a qualitative change. For example, while a religious believer visits the Sunday Service to have people around and drink a cup of coffee after the gathering, a highly religious person, in contrast, will visit the Sunday Service and have a cup of coffee afterward but with the goal of devoting his/her time to God and other believers.

Systematic integration of these theses within the research with the CRS has yet to be done.

9.6. Longitudinal Studies

Data from Georgia or Russia was structured as two rounds of a cross-sectional survey. Their samples could be used to examine reliability over time, however, to examine the dynamics of the

[17] https://www.mdpi.com/journal/religions/special_i0ssues/CRS

centrality of religiosity and the individual dimensions it is more advisable to use panel data. An imaginable project could be done with suitable panel data e.g., the Swiss Household Panel. By 2020 there are three waves from 2012, 2015, 2018, the fourth wave with the religious variables should be available by 2022 and the fifth by 2025. The Swiss Household Panel includes the CRSi-7 which is beneficial for the study of religiosity in a country with a rapidly changing religious landscape. The longitudinal perspective would provide insight into the interaction of the dimensions that is to say into the inner dynamics of religiosity. Furthermore, not only the questions of the inner development could be examined but also questions related to life events and other external factors like "Which dimension is more volatile to the changes in life?" or indicative questions e.g., "Which dimension is more prone to react in positive and which in negative stress?", questions related to gender, age, occupational status, physical and mental health, political attitudes, migration, relationship status etc. can be addressed either in a cross-sectional or a longitudinal design. Conceivable models are e.g., multigroup-CFA with three groups of data from 2012, 2015, and 2018 for a stricter test of the time-invariance of the CRS-5 and CRSi-7 in Switzerland.

9.7. Interactions of the Centrality-Component and the Content-Component

The centrality and content-model of measurement of religiosity is treated from the psychological side of the measurement of centrality in this thesis. The content-component is left untouched, e.g., the emotions in a religious context are not covered at all even though they and their regulation constitute a key part of faith life. In his dissertation Huber (2003) proposes to assess the religious content via a religious self-concept grid (RSG; Huber 2002, 2004) a derivative instrument from the repertory grid technique developed by Kelly (1955a). To assess emotions Huber proposes an Emotions toward God-scale (Huber and Richard 2010). Even though the theoretical framework is given, and the psychometrical instruments are at hand a systematic examination of the interrelatedness and underlying principles has to be empirically explored and tested.

9.8. Particularities of Religious Traditions

The studies included in this thesis demonstrated that particularities of some religious traditions can be captured by some systematic associations of the residuals of the indicators of the core dimensions. This means that the factor of centrality of religiosity is not covering all the systematic covariances among the indicators. With the stable correlations among some of the residuals it become clear that this is not ignorable as a measurement error. Hypothetically, if systematic interpretable covariance is detectable with the CRS the research can use it for identification of particularities in religious traditions. Table 38 show the possible combinations.

Table 38. Overview of the possible residual covariances combinations.

	Ideology	**Intellect**	**Experience**	**Private practice**
Intellect	$\delta_{x_1} - \delta_{x_2}$			
Experience	$\delta_{x_1} - \delta_{x_3}$	$\delta_{x_2} - \delta_{x_3}$*		
Private practice	$\delta_{x_1} - \delta_{x_4}$	$\delta_{x_2} - \delta_{x_4}$	$\delta_{x_3} - \delta_{x_4}$	
Public practice	$\delta_{x_1} - \delta_{x_5}$	$\delta_{x_2} - \delta_{x_5}$	$\delta_{x_3} - \delta_{x_5}$	$\delta_{x_4} - \delta_{x_5}$*

Note. * The combination $\delta_{x_4} - \delta_{x_5}$ was detected with the Georgian and the Russian data. The combination $\delta_{x_2} - \delta_{x_3}$ was detected with the data from Romania.

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10. Appendix

Figure 15. Overview of the applications of the Centrality of Religiosity Scale worldwide by September 2020.

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