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Russian Version of the Male Role Norms Inventory-Short Form: Structure, Validity, and Measurement Invariance

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The research presented here reports the process of adapting the Male Role Norms Inventory-Revised (MRNI-R) for use in Russian. The full (MRNI-R) and short form (Male Role Norms Inventory-Short Form; MRNI-SF) versions of the Inventory were tested in two studies. There were 1,016 participants in Study 1 and 1,038 participants in Study 2, which investigated second-order, seven-factor, and bifactor models. The analysis of construct validity indicated that the MRNI-R did not fit the data. Therefore, we developed a Russian-language MRNI-SF which fit the data well. The modified bifactor model of the MRNI-SF, which contained two covariances among the latent factors, demonstrated good construct validity and fit the data better than the unidimensional, seven-factor, second-order, oblique, and pure orthogonal bifactor models. Configural, metric, and scalar measurement invariance were supported for the modified bifactor model. The analysis of the MRNI-SF's convergent validity demonstrated that traditional masculinity ideology (TMI) was related to stereotypes about men, ambivalent attitudes toward them, and negative attitudes toward homosexuals. Taken together, we concluded that the Russian-language MRNI-SF might be used for a reliable assessment of TMI among groups based on gender and sexual orientation.

Public Significance Statement

The Male Role Norms Inventory-Short Form (MRNI-SF) is a popular and widely used measure of traditional masculinity ideology (TMI). However, it has mostly been used by researchers and clinicians in North America and has rarely been translated into other languages. The findings presented here provide evidence that the MRNI-SF might be used in the Russian context to measure TMI.

Keywords: MRNI, MRNI-SF, masculine norms, traditional masculinity ideology

Masculinity ideology has attracted the attention of scientists for 4 decades. Studies have shown that the endorsement of traditional masculinity ideology (TMI) has serious consequences. In particular, TMI has been found to be related to negative attitudes toward various marginalized groups and seeking psychological help, less paternal engagement, increased alcohol use and aggression, and with decreased emotional expression and life satisfaction (Gerdes et al., 2018).

Most of the inventories for measuring adherence to masculinity norms were created in English-speaking countries. However, to conduct research in other countries, it is necessary for inventories to undergo cross-cultural adaptation. Therefore, the aim of our study was to adapt the Male Role Norms Inventory-Revised (MRNI-R; Levant et al., 2007) for use in measuring TMI, on a Russian sample. This inventory was chosen for two reasons. First, different versions of this inventory have been used to measure TMI in different

countries. Second, the English-language versions of this inventory have demonstrated good psychometric properties, and its structure has been reproduced among people of different genders, races, and sexual orientations. Thus, the results obtained by using this inventory on a Russian-speaking sample could be compared with the results obtained in other studies.

Definition of Traditional Masculinity Ideology

Masculinity ideology is an individual's internalization of cultural belief systems and attitudes toward masculinity and men's roles. It informs expectations for men to conform to certain socially sanctioned masculine behaviors and to avoid certain proscribed behaviors (Levant & Richmond, 2007). The researchers are mostly interested in TMI, which reflects the dominant view of the male role in Western society prior to the feminist deconstruction of gender roles and rules (Pleck, 1995; Thompson et al., 1992).

Proponents of the research on TMI believe that it arises in social discourse and is closely related to the processes that occur in a social group. People adopt masculinity ideology in the course of socialization. As different people live in different conditions, they learn distinctive ideas about men. This is supported by the presence of gender, sexual, age, and cultural differences in the internalization of the TMI (e.g., Kimmel, 2004; Levant, 2011; Levant et al., 2009; Levant & Richmond, 2007; Pleck, 1995).

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For instance, some North American studies showed that cisgender men endorsed this ideology more compared with cisgender women, heterosexual men more than sexual minority men, younger people more than older ones, African Americans more than Hispanics, and Hispanics more than European Americans (Levant & Richmond, 2007). In addition, cross-cultural research demonstrated that the residents of some Asian countries (e.g., China, Japan, and Pakistan) endorsed such perceptions of men more than people in the United States did (Levant & Richmond, 2007), while residents of Turkey and the United States had a greater level of endorsement than residents of Norway (Lease et al., 2013).

Measures of Masculinity Ideology

TMI is measured using questionnaires. A recent meta-analysis described 16 inventories that are used to examine these ideas about men (Thompson & Bennett, 2015). Among the most well-known inventories are numerous versions of the Male Role Norms Inventory created by Levant and colleagues for adults (MRNI, MRNI-R, MRNI-Rr, and Male Role Norms Inventory-Short Form [MRNI-SF]) and adolescents (MRNI-A and MRNI-Ar). According to content analysis, various versions of the MRNI have been used in more than 90 studies with over 30,000 participants (Gerdes et al., 2018).

The first version of the MRNI was created about 30 years ago (Levant et al., 1992). It consists of 57 statements that formed 8 subscales. Later, it was amended to better operationalize the traditional masculinity standards of Western societies prior to the second wave of feminism (Levant & Fischer, 1998). This version included seven subscales describing elements of TMI: Avoidance of Femininity, Restrictive Emotionality, Achievement/Status, Aggression, Self-reliance, Fear and Hatred of Homosexuals, and Attitudes toward Sex, together with an additional subscale of Nontraditional Masculinity, which was later removed.

The amended MRNI was revised into the MRNI-R. It includes 53 statements that formed 7 subscales describing the elements of TMI: Avoidance of Femininity, Restrictive Emotionality, Dominance, Aggression, Extreme Self-Reliance, Fear and Hatred of Homosexuals, and Nonrelational Attitudes toward Sexuality. Subsequently, on the basis of this inventory, an even shorter version (MRNI-R-r) was created, including 39 statements that also formed 7 subscales (Levant et al., 2007, 2010).

Finally, the MRNI-R was used as a basis for a short form of the questionnaire (MRNI-SF; Levant et al., 2013, 2015, 2016; McDermott et al., 2017). This includes 21 statements which form 7 subscales. During the modification, the content and, as a consequence, the names of the four MRNI-R subscales were altered as follows: Extreme Self-reliance was renamed to Self-Reliance Through Mechanical Skills, Aggression became Toughness, Nonrelational Attitudes Toward Sexuality became Importance of Sex, and Fear and Hatred of Homosexuals became Negative Attitudes Toward Sexual Minorities.

Factor Structure of the MRNI-SF

The structure of several MRNI-SF's factors have been tested previously. First, the unidimensional model in which all items load on a single factor, constantly demonstrated the worst fit (McDermott et al., 2017). Second, the seven-factor structure in which items load

on different factors of TMI, usually had an acceptable fit (Levant et al., 2013). At the same time, researchers suggested that the MRNI-SF should include both specific factors and a general TMI factor (Levant et al., 2013; McDermott et al., 2017).

Previous studies in the United States tested two types of MRNI-SF structures that included a general TMI factor—a second-order structure and a bifactor one (Levant et al., 2013, 2015, 2016; McDermott et al., 2017). The first implies a hierarchical structuring of a broad TMI factor at the top level with narrower, lower-level factors representing specific TMI domains. The higher-level factor (i.e., general TMI) accounts for any observed relationships among the set of lower-order factors (i.e., the MRNI-SF subscales) and ultimately the variance explained in each item by its respective first-order latent variable (Chen et al., 2006).

In contrast, the bifactor structure imposes no hierarchy upon the factors and suggests that the variability in responses to the items is potentially attributable both to the general factor (i.e., a broad TMI construct) and to specific factors (i.e., the seven domains of the TMI). Three types of bifactor models—oblique, orthogonal, and modified—have previously been investigated (Levant et al., 2015, 2016; McDermott et al., 2017). The oblique bifactor model allows covariances between specific factors (i.e., the seven TMI domains) to be freely estimated. The orthogonal bifactor model, in turn, constrains all covariances between specific factors to zero. Finally, the modified bifactor model is the same as the orthogonal one but with some covariances among the specific factors (Levant et al., 2015; McDermott et al., 2017).

A strong preference for the bifactor model of TMI was previously found (Levant et al., 2013, 2015, 2016; McDermott et al., 2017). It was suggested that individuals may have both an overall conception of what it means to be traditionally masculine and a separate understanding of specific aspects of TMI that exist independent of a general TMI factor. McDermott et al. (2017), however, indicated that the MRNI-SF might be modeled as a completely orthogonal or modified model without any technical errors. A completely oblique bifactor model, however, may result in technical errors (e.g., convergence problems).

Moreover, scholars (Levant et al., 2013; McDermott et al., 2017) have tested the measurement invariance of the bifactor models. Measurement invariance is concerned with whether or not individuals in different groups have a common understanding of the construct (Kline, 2016). Because TMI represents White, male, Eurocentric, and heterosexual cultural values, it is crucial to examine whether cisgender women and sexual minorities share this meaning. McDermott et al. (2017) found that the MRNI-SF holds both a configural (i.e., the basic factor structure in each group is similar) and a partial metric (i.e., items are measuring similar constructs in each group) invariance across White cisgender men and women along with White heterosexual men and White gay men.

The Current Study

Several studies enabled us to suggest the presence of TMI in Russia. For instance, mass polls conducted on a representative Russian sample demonstrated that people tend to value intellect, the ability to earn money, and striving for success in men (Levada-Center, 2018) and describe men as hardworking, responsible, executive, and logical (Levada-Center, 2020). Moreover, Sperling (2014) demonstrated a strong presence of TMI domains in the

Russian political context, namely, homophobia, dominance, toughness, and avoidance of femininity, as well as the tendency to promote a binary view of gender and sexual orientation.

In this study, we analyzed the factor structure and validity of the MRNI in a Russian sample. We proceeded in accordance with the logic proposed by the authors of the inventory: We analyzed the structure of the long and short versions of the questionnaire, analyzed several factor models, tested different types of invariance in different gender and sexuality groups, determined the validity of the questionnaire. Thus, our research included two studies.

Participants in Study 1 completed the full Russian-language version of the MRNI-R, which examined a number of factor models: the unidimensional, the seven-factor, the second-order, and the three types of bifactor (oblique, orthogonal, and modified) models. Based on the results, a short Russian-language version of MRNI-R (MRNI-SF) was developed. Participants in Study 2 completed a short version of the questionnaire and three scales to determine the validity of the MRNI-SF. At this stage, we replicated the structure of the MRNI-SF from Study 1 and examined the measurement invariance among people of different genders and sexual orientations as well as convergent validity.

We formulated two research questions that were related to the structure and invariance of the inventory. We were interested in identifying which factor model would best reflect the understanding of TMI among Russian individuals (Research Question 1), and what types of invariance would be supported for the best factor model chosen (Research Question 2).

We did not formulate hypotheses about the advantages of the models due to the following reason. Previous studies conducted with American samples have shown that the bifactor modeling of the MRNI-SF demonstrated the best solution (Levant et al., 2015; McDermott et al., 2017). However, it has been suggested that content and structure of TMI may differ in different cultural contexts (see Levant & Richmond, 2016); therefore, we could not directly advance hypotheses for the Russian context.

To examine convergent validity (Campbell & Fiske, 1959), we used three indicators, namely, gender stereotypes, ambivalent gender attitudes, and an assessment of the normality of male homosexuality. These indicators were chosen because they reflect the traditional perceptions of men that are prevalent in Russian society and there are reliable Russian-language scales to measure them.

Studies on gender stereotypes—sets of characteristics that are attributed to people of different genders—show that men are perceived to have strong competence-related, domination-related, and leadership-related traits (Ellemers, 2018). Therefore, we expected that traditional masculine norms would be positively related to stereotypes about men as dominant (Hypothesis 1a) and leaders (Hypothesis 1b) but be negatively associated with stereotypes about men as weak (Hypothesis 1c).

According to ambivalent sexism theory (Glick & Fiske, 1999), attitudes toward men include two components: hostility and benevolence. Hostility toward men (HM) is a gender ideology that portrays men as people who are arrogant, infantile, and sexually predatory. At the same time, benevolence toward men (BM) reflects the perception of men as competent, protective, and deserving of women's nurturance (Glick & Fiske, 1999). Therefore, we suggested that traditional masculine norms would be positively related to both HM (Hypothesis 2a) and BM (Hypothesis 2b).

Finally, Russian studies showed that the perception of male homosexuality as abnormal was associated with negative emotions in relation to homosexuals and support for various restrictions toward them (Gulevich et al., 2021). Therefore, we expected that the traditional masculine norms that regulate human emotions and behaviour toward gay men would be negatively related to the perception of male homosexuality as normal (Hypothesis 3).

Study 1

Method

Participants and Procedure

The data were collected during July 2020. Participants for this study were recruited through Yandex.Toloka, a Russian-language resource similar to Amazon Mechanical Turk, which provides an online marketplace for work in which anyone can participate. Yandex.Toloka enabled the recruitment of equal numbers of cisgender men and women who were current residents of Russia. Participants were provided with an online link to the questionnaires hosted on 1KA, an open Slovenian source application with tools for online surveys including questionnaire design and the gathering of different types of data. Informed consent was obtained from all participants (i.e., participants were asked to click “agree” after reading the consent form), and participants were assured that their data would remain anonymous and confidential. To ensure that the survey takers' attention was at a high level throughout the entire questionnaire, we used attention checks. Participants were paid 20 cents each after successful completion of the questionnaire.

From the initial sample ($N = 1,559$), we removed the records of 543 individuals who failed the attention checks. This left a total of $N = 1,016$ participants. As part of the research, the participants were asked about their gender, age, sexual orientation, and ethnicity. Self-identified cisgender females comprised 52% of the sample, while the remaining 48% identified as cisgender males. The age of the participants ranged from 17 to 71, with the mean = 35.96 ($SD = 11.13$). Most of the participants self-identified as heterosexual (93%), 5% identified as bisexual, and 2% as homosexual. Most of the participants identified as Russian (92%), 2.4% as Tatar, 1.3% as Ukrainian, and 4.3% indicated other.

Measures

Male Role Norms Inventory-Revised

The English-language inventory was translated into Russian by a group of researchers and then translated back into English by an independent scholar who speaks both languages and did not participate in conducting the research (International Test Commission, 2018). Following that, back translations and initial items were compared by an external translator of professional psychological literature. During this comparison, it was discovered that some of the items needed to be reformulated. We saved the content of the original statements, but some statements were altered to reflect the cultural context:

Item 2: “President of the U.S.” was replaced with “President of the Russian Federation.”

Item 5: “talk with a lisp” was translated as “a mannered voice,” as in Russian to “talk with a lisp” means to “speak with drawl,” which is not associated with being gay.

Item 9: “Men should not be interested in talk shows such as Oprah” was translated as “Men should not watch talk shows,” as there is no analogue to Oprah’s show in Russia.

Item 10: “contact sports” were specified as “wrestling, hockey, or football” due to the fact that these are traditional masculine sports in the Russian context, while the phrase “contact sports” is barely used.

Item 11: there is no direct translation of “action figures” into Russian; therefore, we specified the wording as “soldiers and transformers.”

Item 13: “Men should have home improvement skills” was translated as “Men should be capable of doing house renovations,” due to the fact that “improvement skills” usually implies being able to fix things at home, which is too close to item 14 (“Men should be able to fix most things around the house”).

Item 22: “discipline in the family” was translated as “household rules,” as in a Russian context discipline is usually maintained by women, while the rules of the family and the household are usually established by men.

Item 30: “Boys should not throw baseballs like girls” was translated and reformulated as “In sports, boys should not behave ‘like a girl’.” Baseball is not popular in Russia, so we used a broader meaning of the item.

The final Russian-language version of the questionnaire included 53 statements. For each item, participants were asked to express the extent of their agreement with the statement on a 7-point scale ranging from 1 (“*strongly disagree*”) to 7 (“*strongly agree*”).

Analytical Strategy

The models’ structures were assessed via confirmatory factor analysis (CFA). The chi-square goodness-of-fit statistic has been demonstrated to be overly sensitive to minor and theoretically uninteresting sources of model misfit, especially when sample sizes are large (Chen, 2007), as was the case with the current research. Therefore, the overall fit of the CFA models was assessed with a set of alternative fit indices that are typically consulted to determine whether a model demonstrates adequate fit (Kahn, 2006).

These indices and the criteria used to assess their values (Kline, 2016) were

- the comparative fit index (CFI) and Tucker–Lewis index (TLI) in which a reasonable model fit is suggested by values of $\geq .90$. and values of $\geq .95$ suggest a good fit;
- the root-mean-square error of approximation (RMSEA) in which a good model fit is suggested by values of $.05$ or lower, and values between $.05$ and $.08$ suggest a reasonable fit; and
- the standardized root-mean-square residual (SRMR) in which values of less than $.08$ are considered good.

If a bifactor model represented better fit than a second-order model, we calculated several indices to evaluate the model. Following best practices in bifactor modeling (Rodriguez et al., 2016), we calculated

- Coefficient omega hierarchical (ω_H) that estimates the proportion of variance in total scores that can be attributed to a single general factor;
- Coefficient omega hierarchical subscale (ω_{HS}) that reflects the reliability of a subscale score after controlling for the variance due to the general factor;
- Percent uncontaminated correlations (PUCs) in which higher values ($\geq .80$) suggest low biasing effects of the group factors;
- Explained common variance (ECV) which is the percent of common variance explained by the general factor; and
- Item ECV (I-ECV) which is the percent of item common variance attributable to a general dimension.

To compare the models, we used the Bayesian information criterion (BIC). The difference in BIC among models equal to or greater than 10 was considered as significant and the model with the lowest BIC was considered the best (Kline, 2016).

The analysis was conducted in the R environment (R Core Team, 2020). To analyze the full and short versions of the MRNI-R, we applied CFA within the lavaan package (Rosseel, 2012). To compute the indices for bifactor models, we used the psych package (Revelle, 2020). The maximum likelihood robust (MLR) estimation was used to accommodate any abnormalities in the data.

Results

Full Version of the Male Role Norms Inventory-Revised

The full Russian version of the questionnaire is presented in Appendix A. To test the robustness of the findings, the sample was randomly split into two equal groups: training and test samples. The full version was examined using the training sample. The unidimensional ($\chi^2(1325) = 5420.954, p < .001, CFI = .730, TLI = .719, RMSEA = .089, 90\% CI [.086, .091], SRMR = .064$), second-order ($\chi^2(1318) = 3670.953, p < .001, CFI = .847, TLI = .840, RMSEA = .067, 90\% CI [.065, .070], SRMR = .066$), and seven-factor ($\chi^2(1304) = 3614.489, p < .001, CFI = .850, TLI = .841, RMSEA = .067, 90\% CI [.064, .069], SRMR = .064$) models demonstrated a poor fit. At the same time, oblique and orthogonal bifactor models did not converge, and a solution was not found. The misspecification analysis of the second-order model indicated that some of the items were highly related to the scales that they were not expected to load on (i.e., cross-loadings), and some of the items loaded on the expected factor only weakly.

Due to the poor fit of the full version, we decided to create a short Russian-language version of the MRNI-R. When selecting statements for the short version, factor loadings were taken into account. We used a general principle proposed by Levant et al. (2016). First, each factor included three items, with the largest factor loadings in the full version and not highly related to another factor. Second, four subscales, namely, Extreme Self-reliance, Aggression, Nonrelational Attitudes toward Sexuality, and Fear and Hatred of Homosexuals, were renamed Self-Reliance Through Mechanical Skills, Toughness, Importance of Sex, and Negativity Toward Sexual Minorities, respectively, to correspond to their content (see Table 1).

Table 1

Study 1. Factor Loadings From Single-Group Confirmatory Factor Analysis of the Full Version of MRNI-R Using Training Sample (TMI = Traditional Masculinity Ideology)

Scale and item	TMI	F1	F2	F3	F4	F5	F6	F7
<i>F1: Avoidance of femininity (AF)</i>	.907							
6. Men should not wear makeup, cover-up, or bronzer.		.616						
7. Men should watch sports programs instead of soap operas.		.731						
9. Men should not watch talk shows.		.633						
11. Boys should play with action figures, not dolls.		.859						
15. A man should prefer watching action movies to reading romantic novels.		.795						
19. Boys should prefer to play with trucks rather than dolls.		.876						
26. A man should avoid holding his wife's purse at all times.		.472						
30. Boys should not throw baseballs like girls.		.735						
<i>F2: Self-reliance through mechanical skills (SR)</i>	.791							
4. A man should be able to perform his job even if he is physically ill or hurt.			.505					
12. Men should not borrow money from friends or family members.			.504					
13. Men should have home improvement skills.			.834					
14. Men should be able to fix most things around the house.			.830					
27. A man must be able to make his own way in the world.			.592					
29. A man should never count on someone else to get the job done.			.649					
36. A man should know how to repair his car if it should break down.			.738					
<i>F3: Negativity toward sexual minorities (NT)</i>	.846							
1. Homosexuals should never marry.				.792				
5. Men should not talk with a lisp because this is a sign of being gay.				.543				
8. All homosexual bars should be closed down.				.858				
17. Homosexuals should not be allowed to serve in the military.				.737				
18. Men should never compliment or flirt with another male.				.795				
23. Men should never hold hands or show affection toward another.				.798				
25. Homosexuals should never kiss in public.				.774				
32. A man should not continue a friendship with another man if he finds out that the other man is homosexual.				.786				
37. Homosexuals should be barred from the teaching profession.				.839				
52. It is disappointing to learn that a famous athlete is gay.				.799				
<i>F4: Toughness (TO)</i>	.968							
10. Men should excel at contact sports.					.683			
34. If another man flirts with the women accompanying a man, this is a serious provocation and the man should respond with aggression.					.635			
35. Boys should be encouraged to find a means of demonstrating physical prowess.					.685			
39. Men should get up to investigate if there is a strange noise in the house at night.					.596			
42. It is important for a man to take risks, even if he might get hurt.					.660			
45. When the going gets tough, men should get tough.					.696			
48. I think a young man should try to be physically tough, even if he's not big.					.715			
<i>F5: Dominance (DO)</i>	.895							
2. The President of the Russian Federation should always be a man.						.659		
3. Men should be the leader in any group.						.762		
21. A man should always be the boss.						.827		
22. A man should provide the discipline in the family.						.829		
44. A man should always be the major provider in his family.						.661		
49. In a group, it is up to the men to get things organized and moving ahead.						.798		
51. Men should make the final decision involving money.						.801		
<i>F6: Importance of sex (IS)</i>	.833							
16. Men should always like to have sex.							.853	
20. A man should not turn down sex.							.831	
24. It is ok for a man to use any and all means to "convince" a woman to have sex.							.722	
28. Men should always take the initiative when it comes to sex.							.725	
40. A man shouldn't bother with sex unless he can achieve an orgasm.							.449	
43. A man should always be ready for sex.							.866	
<i>F7: Restrictive emotionality (RE)</i>	.918							
31. A man should not react when other people cry.								.657
33. Being a little down in the dumps is not a good reason for a man to act depressed.								.837
38. A man should never admit when others hurt his feelings.								.833
41. Men should be detached in emotionally charged situations.								.717
46. I might find it a little silly or embarrassing if a male friend of mine cried over a sad love story.								.615
47. Fathers should teach their sons to mask fear.								.773
50. One should not be able to tell how a man is feeling by looking at his face.								.831
53. Men should not be too quick to tell others that they care about them.								.784

Note. Item numbers refer to the number of the item in the Initial Validation of the Male Role Norms Inventory-Revised (MRNI-R). Standardized factor loadings are reported. All factor loadings are statistically significant at $p < .001$.

Short Version of the MRNI-R

The short Russian version of the MRNI-R is presented in Appendix B. First, we examined the short version using the training sample that was used to test the full version of the MRNI-R. Second, we replicated the results using another part of the sample (a test sample). As shown in the first part of Table 2, although the chi-square test for each model was significant, the second-order, seven-factor, and bifactor (oblique and orthogonal) models all yielded acceptable CFI, TLI, RMSEA, and SRMR values. However, the unidimensional model evidenced an extremely poor fit.

The oblique bifactor model yielded the strongest fit overall, followed by the completely orthogonal bifactor model. However, the oblique bifactor model yielded a nonpositive definite matrix, as evidenced by a negative error variance for several of the items. This may be an indicator that the oblique bifactor model might not be trustworthy (Kline, 2016). In contrast, the orthogonal bifactor model converged without any technical errors and evidenced an acceptable fit, suggesting that it may be appropriate for further use (see Table 3 for factor loadings).

As shown in the second part of Table 2, we were able to replicate the results obtained from the first part of the sample. The seven-factor, second-order, and bifactor models all yielded acceptable CFI, TLI, RMSEA, and SRMR values, while the unidimensional model evidenced an extremely poor fit again. The oblique bifactor model yielded the strongest fit overall, followed by the completely orthogonal bifactor model. At the same time, the oblique bifactor model yielded a nonpositive definite matrix once again, which was evidenced by a negative error variance for several of the items. Nevertheless, the orthogonal bifactor model converged without any technical errors and evidenced an acceptable fit.

Previously, Levant et al. (2015) and McDermott et al. (2017) tested the alternative modified bifactor model in which some covariances among specific factors were freed. In the current study, two large modification indices (MIs) and an expected parameter change (EPC) were observed. Based on the largest MIs and EPC,

Negativity Toward Sexual Minorities was allowed to covary with Avoidance of Femininity ($MI = 29.353$, $EPC = .348$), and Toughness was allowed to covary with Self-Reliance Through Mechanical Skills ($MI = 30.037$, $EPC = .385$). As shown in the second part of Table 2, such modified bifactor model fit the data better than the pure orthogonal one.

In addition, to fit indices, we calculated statistical indices for the orthogonal bifactor model (see Table 4). First, the general factor ECV was .65, indicating that 65% of the common variance across the 21 items was due to the general factor. The remaining 35% of the common variance is due to the set of seven specific factors. Second, I-ECV coefficients ranged from .41 to .92, with an average value of .72. It suggested that on average, items measured the general factor to a greater degree than the intended specific one. Third, the PUC value (.90) was greater than .70, further indicating that bifactor modeling of Russian version of the MRNI-SF would not result in biased item factor loadings.

Moreover, ω_H and ω_{HS} were calculated. For the general TMI factor, the ω_H value (.87) was above the threshold (.75) proposed by Reise et al. (2013). This result indicated that it is acceptable to interpret the MRNI-SF's total score as a reliable measure of TMI. Coefficient omega hierarchical subscale was low ($\omega_{HS} \leq .75$) for all specific factors (see Table 4). These results suggested that specific factors were better measures of the general TMI construct than of their intended subdomain constructs. Descriptive statistics are shown in Table 5.

Nevertheless, this study had several limitations. First, participants were recruited from a specific platform, which may have resulted in bias. In particular, participants were not representative of general population, they might have been motivated by the reward and might have self-selected. Second, the sample largely included heterosexual participants; therefore, to test the robustness of the structure, it should be examined using participants with different sexual orientations. Third, in Study 1, we did not measure other constructs to examine the convergent validity of the MRNI-SF. These limitations were taken into account in Study 2.

Table 2

Study 1. Goodness of Fit From Single-Group Confirmatory Factor Analysis of the MRNI-SF (MRNI-SF = Male Role Norms Inventory-Short Form)

Model	χ^2	<i>df</i>	RMSEA [90% CI]	SRMR	CFI	TLI	BIC
<i>Training sample (508 participants)</i>							
Unidimensional	1495.004***	189	.144 [.137, .151]	.072	.749	.721	39385.501
Bifactor-oblique	253.758***	140	.046 [.037, .052]	.023	.981	.971	37852.289
Bifactor-orthogonal	294.337***	168	.046 [.037, .051]	.031	.977	.971	37764.833
Second-order	381.058***	182	.056 [.048, .064]	.050	.963	.958	37808.835
Seven-factor	406.151***	168	.063 [.056, .071]	.050	.957	.946	37837.114
<i>Test sample (508 participants)</i>							
Unidimensional	1747.389***	189	.150 [.144, .157]	.073	.748	.720	38287.418
Bifactor-oblique	265.122***	140	.047 [.038, .055]	.024	.981	.972	36774.586
Bifactor-orthogonal	361.772***	168	.054 [.047, .062]	.038	.970	.962	36742.560
Bifactor-modified	293.003***	166	.044 [.036, .052]	.029	.980	.975	36662.239
Second-order	483.669***	182	.066 [.059, .073]	.057	.953	.945	36820.561
Seven-factor	449.418***	168	.066 [.059, .073]	.055	.956	.945	36811.080

Note. CFI = Comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual; BIC = Bayesian information criterion.

*** $p < .001$.

Table 3

Study 1. Factor Loadings from Single-Group Confirmatory Factor Analysis of the MRNI-SF Using Training Sample (MRNI-SF = Male Role Norms Inventory-Short Form; TMI = Traditional Masculinity Ideology)

Scale and item	TMI	F1	F2	F3	F4	F5	F6	F7
<i>F1: Avoidance of femininity (AF)</i>								
11. Boys should play with action figures, not dolls.	.726	.580						
15. A man should prefer watching action movies to reading romantic novels.	.713	.496						
19. Boys should prefer to play with trucks rather than dolls.	.763	.592						
<i>F2: Self-reliance through mechanical skills (SR)</i>								
13. Men should have home improvement skills.	.570		.669					
14. Men should be able to fix most things around the house.	.591		.690					
36. A man should know how to repair his car if it should break down.	.594		.429					
<i>F3: Negativity toward sexual minorities (NT)</i>								
8. All homosexual bars should be closed down.	.671			.534				
37. Homosexuals should be barred from the teaching profession.	.688			.521				
52. It is disappointing to learn that a famous athlete is gay.	.672			.461				
<i>F4: Toughness (TO)</i>								
35. Boys should be encouraged to find a means of demonstrating physical prowess.	.663				.433			
45. When the going gets tough, men should get tough.	.664				.547			
48. I think a young man should try to be physically tough, even if he's not big.	.654				.564			
<i>F5: Dominance (DO)</i>								
21. A man should always be the boss.	.771					.427		
22. A man should provide the discipline in the family.	.719					.652		
51. Men should make the final decision involving money.	.721					.529		
<i>F6: Importance of sex (IS)</i>								
16. Men should always like to have sex.	.710						.611	
20. A man should not turn down sex.	.716						.545	
43. A man should always be ready for sex.	.728						.568	
<i>F7: Restrictive emotionality (RE)</i>								
33. Being a little down in the dumps is not a good reason for a man to act depressed.	.736							.670
38. A man should never admit when others hurt his feelings.	.761							.545
50. One should not be able to tell how a man is feeling by looking at his face.	.759							.499

Note. Item numbers refer to the number of the item in the Initial Validation of the Male Role Norms Inventory-Revised (MRNI-R). Standardized factor loadings are reported. All factor loadings are statistically significant at $p < .001$.

Study 2

Method

Participants and Procedure

The data were collected during August and September 2020. As with Study 1, participants completed an online form on the 1KA platform. The link to this questionnaire was distributed via social media (VKontakte and Telegram). Informed consent was obtained from all the participants (i.e., participants were asked to click “agree” after reading the consent form), and the participants were assured that their data would remain anonymous and confidential.

Participation was completely voluntary, and the participants did not receive any remuneration.

From the initial sample ($N = 1,144$), we removed the records of 106 individuals who were younger than 16. This left a total of $N = 1,038$ individuals who were used in the study. The participants were asked about their gender, age, sexual orientation, and ethnicity. Cisgender females comprised 58% of the sample, while the remaining 42% identified as cisgender males. The age of the participants ranged from 16 to 59, with the mean = 24.82 ($SD = 6.85$). Most of the participants self-identified as heterosexual (56%), 32% as bisexual, and 12% as homosexual. Most of the participants identified as Russian (79.7%), 4.1% as part-Russian, 3.1% as Ukrainian,

Table 4

Study 1. Model-Based Reliability Estimates and Explained Common Variance for the Russian Version of Male Role Norms Inventor-Short Form Using Test Sample

Reliability index	General factor	Avoidance of femininity	Self-reliance through mechanical skills	Negativity toward sexual minorities	Toughness	Dominance	Importance of sex	Restricted emotionality
Omega	.98	.91	.88	.88	.78	.88	.91	.88
Omega hierarchical subscale	—	.26	.46	.27	.21	.24	.34	.19
ECV	.65	.06	.07	.04	.04	.05	.05	.04

Note. ECV = explained common variance.

Table 5
Study 1. Descriptive Statistics Using Test Sample

Scale	Cronbach- α	Cisgender men ($N = 494$)		Cisgender women ($N = 521$)	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
F1: AF	.89	4.36	1.84	3.55	1.91
F2: SR	.87	4.45	1.71	4.49	1.68
F3: NT	.88	4.21	2.08	3.23	2.00
F4: TO	.77	4.56	1.51	4.11	1.54
F5: DO	.87	3.84	1.70	2.98	1.62
F6: IS	.90	3.58	1.78	2.86	1.62
F7: RE	.87	3.99	1.73	2.86	1.52
TMI	.95	4.14	1.45	3.44	1.38

Note. AF = Avoidance of femininity; SR = self-reliance through mechanical skills; NT = negativity toward sexual minorities; TO = toughness; DO = dominance; IS = importance of sex; RE = restrictive emotionality; TMI = total traditional masculinity ideology scale.

2.4% as Tatar, and 1.6% as Belarusian, while 2.3% left no response, and 6.8% indicated other.

Measures

Participants were asked about different ideas of men. The measures included four inventories: The short form of the MRNI developed in Study 1 was used, as well as scales aimed at measuring stereotypes about men, ambivalent attitudes toward men, and attitudes toward homosexuals.

Stereotypes About Men

To measure stereotypes about men, we used three subscales: Weakness-Related Traits (weak, timid, fearful, or cowardly), Domination-Related Traits (controlling, bossy, dominant, or feels superior), and Leadership-Related Traits (decisive, ambitious, confident, or showing leadership abilities). These characteristics were selected from a cross-cultural study of stereotypes by Williams et al. (1990) based on appropriateness for the context of the research and ease of translation. For each item in the scales, participants were asked to rate “the extent to which a man should possess the following traits” on a 7-point scale, from 1 (“*not at all*”) to 7 (“*definitely should*”). The mean scores were calculated, with higher scores indicating greater support for the stereotypes. All traits were randomly presented to the participants. The internal consistency reliability coefficients appear in Table 9.

Ambivalent Attitudes Toward Men

To measure ambivalence toward men, we used the Ambivalence toward Men Inventory (AMI) developed by Glick and Fiske (1999). The short Russian-language version of this questionnaire included six statements about HM and six statements about BM. The Russian-language version of the AMI has previously demonstrated a reliable factor structure and was invariant across gender and sexuality groups (Krivoshchekov et al., 2018). Participants were asked to express the extent of their agreement with each statement on a 6-point scale, from 0 (“*strongly disagree*”) to 5 (“*strongly agree*”). The mean scores were calculated, with higher scores indicating a greater endorsement of HM and BM. The internal consistency reliability coefficients appear in Table 9.

Attitudes Toward Homosexuals

To measure attitudes toward homosexual people, we used one scale, measuring the perceived abnormality of male homosexuals, from the Russian Attitudes to Homosexual Inventory (RAHI; Gulevich et al., 2016). The latter has previously demonstrated a reliable factor structure across gender and age groups. The scale used in the current study consisted of three direct (e.g., “Male homosexuality is a sexual perversion”) and two reverse (e.g., “Male homosexuality is one of the natural forms of human sexuality”) statements. For each item in the scale, the participants were asked to express the extent of their agreement with the statement on a 5-point scale, from 1 (“*strongly disagree*”) to 5 (“*strongly agree*”). The mean score was calculated, with higher scores indicating more negative attitudes toward homosexuals. The internal consistency reliability coefficient appears in Table 9.

Analytical Strategy

The models’ structures were assessed via CFA as in Study 1. The indices and the criteria used to assess the model fit remained the same. The best-fitting model was used as a basis for specifying multigroup models testing measurement invariance across cisgender men and women, and sexual minority and heterosexual individuals.

To examine the measurement invariance of the modified bifactor model, we used multigroup CFAs of the MRNI-SF. The first model required that the loading patterns were the same across groups, that is, the same indicators had nonzero loadings on the same constructs in all groups (i.e., configural invariance). The second model constrained factor loadings to be equal for gender groups as well as sexuality ones (i.e., metric invariance). The third model, in addition to the assumption of equal loadings, required that item intercepts were equal across groups (i.e., scalar invariance). Following the recommendations for testing measurement invariance (Kline, 2016), instead of using chi-square, we used a change of CFI equal to or less than .01 and a change of RMSEA equal to or less than .015 as criteria to support invariance at each level.

To examine the convergent validity of the MRNI-SF, the correlations between each scale of male norms and stereotypes about men, ambivalence toward men, and attitudes toward homosexuals were computed.

The analysis was conducted in the R environment (R Core Team, 2020). To analyze the full and short versions of the MRNI-R, we

applied CFA within the lavaan package (Rosseel, 2012). The MLR estimation was used to accommodate any abnormalities in the data. Due to the small number of participants that self-identified as homosexual or bisexual, we analyzed them as one group (hereinafter referred to as sexual minority).

Results

Assessment of the MRNI-SF’s Structure

First, we tested the models of the short version from Study 1. As shown in Table 6, we were able to replicate the results obtained in Study 1. The unidimensional model evidenced an extremely poor fit. The seven-factor, second-order, and all the bifactor models yielded acceptable CFI, TLI, RMSEA, and SRMR values. Although the oblique bifactor model yielded the strongest fit overall, a nonpositive definite matrix was evidenced. The modified and orthogonal bifactor models converged without any technical errors and evidenced an acceptable fit. Compared to other models, the modified bifactor model demonstrated the best fit.

Four models (seven-factor, second-order, bifactor-orthogonal, and bifactor-modified) demonstrated an acceptable fit. Because strong evidence was demonstrated for the presence of the TMI general factor of the MRNI-SF (Levant et al., 2013; McDermott et al., 2017) and the orthogonal and modified bifactor models evidenced a good fit, we examined these models further. As shown in Table 7, the orthogonal and modified bifactor models also yielded an acceptable fit in the subsamples of female, male, heterosexual, and sexual minority participants. Nevertheless, the orthogonal bifactor models indicated a negative variance of one item (“Boys should play with action figures, not dolls”) in the subsamples of male and heterosexual participants, while the modified bifactor model converged without any issues. Therefore, the modified bifactor model was tested for measurement invariance.

Assessment of the MRNI-SF’s Measurement Invariance

Second, we used multigroup CFAs of the MRNI-SF to assess configural, metric, and scalar invariance of the modified bifactor model. A series of nested models were estimated, treating cisgender men and women as two separate groups in simultaneous estimations. The same procedure was followed for individuals with different sexual orientations (heterosexual vs. sexual minority).

The chi-square was statistically significant for all models, and the CFI, TLI, RMSEA, and SRMR were at acceptable levels. The first model required that the loading patterns were the same across groups, that is, the same indicators had nonzero loadings on the same constructs in all the groups. The modified bifactor model demonstrated a good fit to the data for the gender and sexual orientation groups (see Table 8).

The second model required factor loadings to be equal both for the gender and sexuality groups, and thus provided a test of full metric invariance. Overall, the fit of this model was good (see Table 8). When the metric invariance model was compared with the configural invariance model, we found that the ΔCFI and ΔRMSEA were below the cutoff points in both the gender and sexuality groups.

The third model, in addition to the assumption of equal loadings, required that item intercepts were equal across the groups. Overall, the fit of this model was also good (see Table 8). The scalar invariance model was compared with the metric invariance model for the modified bifactor model in gender and sexuality groups. The ΔCFI and ΔRMSEA were in the acceptable range; thus, the scalar invariance was supported for the modified bifactor model.

Descriptive Statistics

Given the support for the structure of the MRNI-SF in the total sample, and for scalar invariance across groups for the modified bifactor model, we calculated the scores of specific factors, as well as for the general TMI factor, separately for cisgender men and women with different sexual orientations. Mean values, standard deviations, and Cronbach-alpha coefficients for the factors (as well as the other study variables) are reported in Table 9 for all subsamples. All scales demonstrated good internal consistency reliability.

Convergent Validity

We assessed the convergent validity of the MRNI-SF using correlation analysis. We investigated correlations of the MRNI-SF subscales with Stereotypes About Men, Ambivalence Toward Men, and Attitudes Toward Homosexuals. The analysis was made separately for subsamples of cisgender men and women with different sexual orientations.

Correlation coefficients are reported in Table 10 for the male subsamples and in Table 11 for the female ones. They demonstrated

Table 6

Study 2. Goodness of Fit From Single-Group Confirmatory Factor Analysis of the MRNI-SF (MRNI-SF = Male Role Norms Inventory-Short Form)

Model	χ^2	df	RMSEA [90% CI]	SRMR	CFI	TLI	BIC
Unidimensional	2531.229***	189	.155 [.150, .161]	.086	.721	.690	66296.160
Bifactor-oblique	223.113***	140	.032 [.024, .040]	.018	.991	.987	61920.593
Bifactor-orthogonal	425.493***	168	.052 [.046, .059]	.045	.972	.965	62111.060
Bifactor-modified	395.005***	166	.050 [.043, .056]	.041	.975	.968	61961.312
Second-order	510.213***	182	.058 [.052, .064]	.052	.963	.958	62195.327
Seven-factor	340.036***	168	.043 [.036, .050]	.033	.976	.981	61977.478

Note. CFI = Comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual; BIC = Bayesian information criterion.

*** $p < .001$.

Table 7

Study 2. Goodness of Fit From Single-Group Confirmatory Factor Analysis of the Short Version of the MRNI-R in Different Subsamples (MRNI-R = Male Role Norms Inventory-Revised)

Subsample	χ^2	df	RMSEA [90% CI]	SRMR	CFI	TLI
<i>Bifactor-orthogonal</i>						
Cisgender women	215.453***	117	.050 [.039, .060]	.025	.975	.968
Cisgender men	212.918***	117	.052 [.041, .063]	.024	.976	.969
Heterosexuals	256.055***	117	.057 [.048, .067]	.024	.972	.963
Sexual minorities	204.673***	117	.054 [.042, .066]	.023	.972	.963
<i>Bifactor-modified</i>						
Cisgender women	244.043***	166	.038 [.027, .048]	.035	.983	.979
Cisgender men	291.880***	166	.050 [.041, .060]	.050	.974	.967
Heterosexuals	305.809***	166	.049 [.040, .057]	.040	.976	.970
Sexual minorities	277.625***	166	.053 [.042, .063]	.040	.969	.960

Note. CFI = Comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual.

*** $p < .001$

that, in general, masculinity norms were positively related to domination-related and leadership-related traits, HM and BM, and negative attitudes toward homosexuals. At the same time, masculinity norms were negatively associated with weakness-related traits. These results supported Hypotheses 1–3.

Discussion

In the current study (comprising Studies 1 and 2 above), we investigated the structure and validity of the Russian-language version of the Male Role Norms Inventory-Revised. We analyzed six possible structures of this inventory in Russia and examined the parameters of the full and short versions. The results of the study indicated that the models tested on the Russian sample have both similarities and differences with the results obtained in American studies.

First, we demonstrated that the MRNI-SF, compared with the full MRNI-R, corresponds better to the data. As with the English version of the MRNI-SF (Levant et al., 2013), the Russian version includes 21 statements that form 7 specific TMI factors. The content of Self-Reliance Through Mechanical Skills and Importance of Sex in the Russian and English versions of the inventories matched completely, while the subscales Toughness, Restrictive Emotionality, Avoidance of Femininity, Negativity Toward Sexual Minorities, and Dominance demonstrated cross-cultural peculiarities.

The Russian-language subscale Restrictive Emotionality included three items reflecting the idea that men should not show their weaknesses (weak condition, fear, and resentment) to others; Avoidance of Femininity included statements describing how men should differ from women in their preferences for games and movies; Dominance was formed by statements describing the role of men in making decisions; Toughness included statements about physical toughness; and Negativity Toward Sexual Minorities was formed by statements describing activities that are not prohibited by law but are often viewed as undesirable in Russian public discourse.

Second, it was demonstrated that the bifactor models are superior to the second-order model. The final modified bifactor model included covariances between Negativity Toward Sexual Minorities and Avoidance of Femininity, and between Toughness and Self-Reliance Through Mechanical Skills. (All remaining covariances were left fixed at zero.) We believe that the content of Toughness and Self-Reliance Through Mechanical Skills are closely connected to each other: Cisgender men are usually expected to be physically strong to perform household duties. Furthermore, in Russian culture, cisgender men who do not avoid femininity are usually perceived as gay, and gays are perceived as feminine; therefore, the content of Negativity Toward Sexual Minorities and Avoidance of Femininity are not the same but reflect similar widespread perceptions.

These results indicated that, in Russia, TMI can be also considered as a single construct. Bifactor indices indicated that the

Table 8

Study 2. Model Fit Statistics and Comparisons of Nested Multiple-Group Models Invariance

Groups	Invariance model	χ^2	df	RMSEA [90% CI]	SRMR	CFI	Δ CFI	Δ RMSEA
Cisgender (men, women)	Configural	530.490***	332	.044 [.037, .050]	.040	.979	—	—
	Metric	603.218***	366	.046 [.040, .053]	.063	.974	.005	.002
	Scalar	633.385***	379	.047 [.040, .053]	.063	.972	.002	.001
Sexual orientation (heterosexual, sexual minority)	Configural	581.539***	332	.050 [.044, .057]	.039	.973	—	—
	Metric	672.890***	366	.055 [.048, .061]	.065	.965	.008	.005
	Scalar	692.915***	379	.054 [.047, .060]	.065	.965	.000	.001

Note. CFI = Comparative fit index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual.

*** $p < .001$.

Table 9
Study 2. Descriptive Statistics

Scale	Cronbach- α	Cisgender men ($N = 437$)				Cisgender women ($N = 601$)			
		Heterosexual ($N = 267$)		Sexual minority ($N = 170$)		Heterosexual ($N = 315$)		Sexual minority ($N = 286$)	
		M	SD	M	SD	M	SD	M	SD
F1: AF	.90	2.61	1.74	1.73	1.19	1.53	.97	1.26	.75
F2: SR	.86	2.99	1.64	2.68	1.59	2.56	1.43	2.21	1.31
F3: NT	.91	2.34	1.90	1.19	.62	1.38	.97	1.15	.69
F4: TO	.79	3.48	1.65	2.79	1.52	2.65	1.34	2.15	1.11
F5: DO	.91	2.89	1.93	1.92	1.26	1.58	1.08	1.28	.73
F6: IS	.86	1.98	1.29	1.74	1.22	1.40	.84	1.27	.74
F7: RE	.86	2.32	1.50	1.98	1.25	1.50	.78	1.42	.80
TMI	.95	2.66	1.32	2.00	.96	1.80	.83	1.53	.69
BM	.88	2.14	1.28	1.46	1.09	1.02	.96	.66	.57
HM	.73	1.92	.85	1.79	.93	2.20	.94	2.28	1.01
Weakness-related traits	.86	2.72	1.14	3.03	1.04	3.21	.87	3.46	.90
Domination-related traits	.88	3.67	1.50	3.18	1.21	2.63	1.21	2.42	1.05
Leadership-related traits	.86	5.27	1.12	5.09	1.00	4.80	.91	4.62	.96
Attitudes to homosexuals	.80	2.29	1.36	1.15	.42	1.38	.75	1.12	.39

Note. AF = Avoidance of femininity; SR = self-reliance through mechanical skills; NT = negativity toward sexual minorities; TO = toughness; DO = dominance; IS = importance of sex; RE = restrictive emotionality; TMI = total traditional masculinity ideology scale; BM = benevolence toward men; HM = hostility toward men.

MRNI-SF's total score primarily reflects a single general TMI factor among Russian participants. These results suggest that it is feasible to interpret the raw MRNI-SF total score as a sufficiently reliable and appropriate measure of the general construct of TMI. At the same time, bifactor indices also indicated that the raw subscale scores do not capture unique variance to justify their calculation or interpretation outside of a bifactor framework. These results are consistent with those obtained in previous research in the United States (Levant et al., 2015; McDermott et al., 2017).

Preference for bifactor modeling of the Russian version of MRNI-SF also supports Kon's (2009) suggestion that masculinity in Russia is usually perceived not as a set of norms and expectations but as a monolithic construct. It does not contradict the idea that there are several masculine norms within the TMI; however, the support for bifactor structure demonstrated that participants tended to perceive them together.

Furthermore, the study included two types of samples recruited from completely different environments: One type was rewarded for participating, while the other participants took part voluntarily. Despite this fact, the bifactor structure of the Russian version of the MRNI-SF was demonstrated to be robust, and the bifactor model was preferred in both Study 1 and Study 2.

Third, the analysis of measurement invariance indicated that the modified bifactor model evidenced configural, metric, and scalar invariance among people of different genders (cisgender women and men) and sexual orientations (sexual minority and heterosexual participants). Our findings indicated that cisgender men and women as well as heterosexual and sexual minority individuals may have a shared understanding of both the general meaning and specific aspects of TMI that are presented in Russian culture.

Our results are partially consistent with those obtained by McDermott et al. (2017). The researchers demonstrated that cisgender men and women may share an understanding of specific aspects of masculinity, while the general conceptualization of

masculinity may differ. Furthermore, McDermott et al. (2017) indicated that partial metric invariance was achieved for White straight and White gay men who may share a general understanding of masculinity.

The researchers attributed these differences to the fact that TMI was formulated by White, cisgender men, who thus justified their dominant position in society. They argued that TMI is learned through socialization, so different gender and sexuality groups may have distinctive ideas about how a "real man" should behave (Levant & Richmond, 2016).

At the same time, the results obtained in the Russian sample indicated that groups that fit the male norms reflected in TMI (i.e., heterosexual cisgender men), as well as groups that do not reflect those qualities (i.e., cisgender women, bisexual, and homosexual individuals), may have a shared understanding of both the general meaning and specific aspects of TMI. This might be due to the fact that TMI is highly emphasized, especially in the media, both in public and in the personal lives of Russian people (e.g., Levada-Center, 2018, 2020). As a consequence, TMI has become the well-known ideology aimed at men that people either accept or reject.

Nevertheless, it is important to mention that the conclusions by McDermott et al. (2017) were based on a slightly different approach. Not only were differences in CFI considered but also a scaled chi-square test along with the bootstrap confidence intervals. Based on the latter, McDermott et al. found that several items relating to the general factor are noninvariant. At the same time, the authors indicated that differences in CFI were acceptable when comparing configural and metric invariances between cisgender White men and women as well as sexual minority and heterosexual men. Moreover, the differences were acceptable when comparing metric and scalar invariances between sexual minority and heterosexual men.

Fourth, general TMI and specific factors were associated with stereotypes about men, ambivalent attitudes toward men, and the

Table 10
Study 2. Pearson Correlations Among Variables in Male Subsamples

Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. AF	—	.478***	.417***	.571***	.545***	.579***	.550***	.758***	.543***	.251***	-.299***	.374***	.354***	.430***
2. NT	.720***	—	.286***	.355***	.327***	.307***	.384***	.509***	.314***	.052	-.296***	.123	.213**	.522***
3. SR	.525***	.418***	—	.635***	.569***	.479***	.575***	.782***	.521***	.308***	-.338***	.413***	.424***	.256***
4. TO	.705***	.579***	.629***	—	.672***	.521***	.635***	.848***	.612***	.296	-.406***	.451***	.467***	.265***
5. DO	.773***	.720***	.545***	.688***	—	.612***	.584***	.820***	.689***	.304***	-.348***	.545***	.424***	.355***
6. IS	.524***	.368***	.401***	.521***	.429***	—	.578***	.764***	.474***	.290***	-.185*	.428***	.310***	.156*
7. RE	.566***	.416***	.540***	.616***	.481***	.564***	—	.809***	.569***	.226**	-.341***	.321***	.353***	.258***
8. TMI	.880***	.787***	.732***	.857***	.857***	.658***	.739***	—	.706***	.340***	-.415***	.516***	.491***	.390***
9. BM	.666***	.658***	.502***	.605***	.765***	.363***	.390***	.731***	—	.441***	-.363***	.460***	.294***	.406***
10. HM	.288***	.285***	.233***	.281***	.307***	.217***	.199**	.333***	.382***	—	-.126	.086	.204**	.065
11. Weakness-related traits	-.359***	-.308***	-.308***	-.417***	-.373***	-.218***	-.315***	-.419***	-.275***	-.138*	—	-.127	-.206**	-.206**
12. Domination-related traits	.630***	.543***	.452***	.629***	.670***	.336***	.409***	.675***	.622***	.269***	-.180**	—	.458***	.163*
13. Leadership-related traits	.481***	.411***	.425***	.565***	.496***	.368***	.342***	.562***	.441***	.342***	-.327***	.600***	—	.176*
14. Attitudes to homosexuals	.722***	.878***	.478***	.580***	.728***	.396***	.443***	.783***	.696***	.277***	-.270***	.599***	.418***	—

Note. Correlations for the subsample of heterosexual men are presented below the diagonal, and correlations for the subsample of sexual minority men are presented above the diagonal. AF = Avoidance of femininity; NT = negativity toward sexual minorities; SR = self-reliance through mechanical skills; TO = toughness; Do = dominance; IS = importance of sex; RE = restrictive emotionality; TMI = total traditional masculinity ideology scale; BM = benevolence toward men; HM = hostility toward men.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 11
Study 2. Pearson Correlations Among Variables in Female Subsamples

Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. AF	—	.830***	.444***	.462***	.793***	.815***	.692***	.855***	.168**	.080	-.087	.113	.071	.152**
2. NT	.653***	—	.386***	.369***	.780***	.846***	.751***	.826***	.080	.087	-.025	.025	-.056	.295***
3. SR	.505***	.405***	—	.589***	.427***	.445***	.436***	.738***	.291***	.246***	-.199***	.145*	.313***	.212***
4. TO	.545***	.389***	.612***	—	.495***	.409***	.426***	.724***	.415***	.149*	-.277***	.212***	.326***	.171**
5. DO	.730***	.609***	.527***	.591***	—	.744***	.614***	.825***	.235***	.079	-.083	.152*	.072	.082
6. IS	.559***	.545***	.502***	.522***	.625***	—	.680***	.835***	.133*	.119*	-.081	.059	.079	.209***
7. RE	.675***	.470***	.457***	.550***	.514***	.447***	—	.792***	.169**	.148*	-.064	.043	-.025	.392***
8. TMI	.834***	.723***	.775***	.799***	.837***	.749***	.728***	—	.299***	.177**	-.167***	.151*	.185**	.271***
9. BM	.657***	.611***	.495***	.576***	.715***	.495***	.517***	.744***	—	.042	-.095	.273***	.247***	.244***
10. HM	.225***	.147**	.309***	.245***	.177**	.246***	.231***	.295***	.231***	—	-.040	-.120*	.241***	.077
11. Weakness-related traits	-.276***	-.138*	-.260***	-.335***	-.230***	-.219***	-.347***	-.336***	-.237***	-.160**	—	.090	-.012	-.100
12. Domination-related traits	.414***	.370***	.403***	.502***	.525***	.351***	.338***	.541***	.519***	.066	-.067	—	.297***	-.020
13. Leadership-related traits	.295***	.188***	.419***	.428***	.331***	.263***	.272***	.421***	.304***	.204***	-.303***	.351***	—	-.138*
14. Attitudes to homosexuals	.605***	.732***	.409***	.417***	.544***	.429***	.503***	.654***	.617***	.156**	-.211***	.415***	.211***	—

Note. Correlations for the subsample of heterosexual women are presented below the diagonal, and correlations for the subsample of sexual minority women are presented above the diagonal. AF = Avoidance of femininity; NT = negativity toward sexual minorities; SR = self-reliance through mechanical skills; TO = toughness; DO = dominance; IS = importance of sex; RE = restrictive emotionality; TMI = total traditional masculinity ideology scale; BM = benevolence toward men; HM = hostility toward men.

* $p < .05$. ** $p < .01$. *** $p < .001$.

perception of male homosexuality as abnormal. The more participants endorsed stereotypes about men (higher in dominance- and leadership-related traits and lower in weakness-related traits) and ambivalent attitudes toward men, the more they supported TMI. Thus, on the one hand, TMI is conceptually different from stereotypes about men and ambivalent attitudes toward them, while on the other hand, it is part of the general system of beliefs that justify the social status of cisgender heterosexual men.

Nevertheless, the strength of associations among the study variables varied across sexual orientation within each gender. This difference was especially pronounced in the extent to which specific factors and the overall TMI factor were associated with the general perception of male homosexuality as abnormal. In general, compared with sexual minority individuals, heterosexual men and women had stronger associations between these variables. At the same time, it should be said that correlations between specific factors and other scales are contaminated to some degree by the general TMI factor. Therefore, the association should be understood as a relation between a variable of interest and both subdomain and general TMI.

One may argue that sexual minorities are an outgroup for heterosexual individuals, whereas the former are considered as an ingroup (members of the lesbian, gay, bisexual, transgender and queer (LGBTQ+) community) for sexual minorities. Therefore, it is more likely that the idea of the abnormality of male homosexuality would be a part of a more general perception of men among heterosexuals than sexual minority individuals. These results indicated that the Russian version of the MRNI-SF is strongly related to other theoretically meaningful constructs that also capture the White, male, Eurocentric, and heterosexual cultural values in Russia, which is an indicator of convergent validity of the inventory.

Thus, the results of the study demonstrated that the Russian-language version of the MRNI-SF could be used to measure TMI in samples of people with different genders and sexual orientations. From the analysis, it is possible to use the scores of both individual subscales and the general TMI factor. It should be noted that the Russian version of MRNI-SF might be considered as a reliable and valid instrument to measure the overall TMI. However, raw subscale scores should not be interpreted as if they are meaningfully measuring their specific domain. Only the use of the corresponding latent factor score in the context of bifactor structural equation modeling is appropriate (see McDermott et al., 2017 for a detailed discussion).

The study has several limitations. First, the samples used were not representative of the general population, and it is possible that the participants may have self-selected. Second, in response to the questions about ethnicity, the majority of the participants identified as Russian. According to the National Population Census in Russia (2010), about 80% of the population of Russia consider themselves to be Russian. However, representatives of more than 180 ethnic groups live in Russia. As a result, further research could analyze the potential of the MRNI-SF when working with representatives of other ethnic groups.

Third, both the gender and sexual orientation were considered as binary and conclusions were based on specific groups (i.e., cisgender women and men, heterosexuals, and a combined group of bisexual and homosexual participants). However, gender and sexual orientation are more complex concepts. Due to a small number of sexual minority participants, combination of bisexual and homosexual participants into one group did not allow for differentiating

people based on their sexual minority identity. Therefore, it is desirable to further test the bifactor structure and the invariance among people with diverse sexual and gender identities.

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Appendix A

Russian Version of Full MRNI-R

1. Гомосексуалы никогда не должны вступать в брак.
2. Президентом России всегда должен быть мужчина.
3. Мужчины должны быть лидерами в любой группе.
4. Мужчина должен работать, несмотря на своё физическое состояние.
5. Манерный голос у мужчины – признак того, что он – гей.
6. Мужчины не должны пользоваться косметикой или кремами для лица и тела.
7. Мужчины должны смотреть спортивные передачи, а не «мыльные оперы».
8. Все гей-клубы должны быть закрыты.
9. Мужчины не должны смотреть семейные ток-шоу.
10. Мужчины должны заниматься такими видами спорта, как борьба, хоккей или футбол.
11. Мальчики должны играть в солдатиков и трансформеров, а не в куклы.
12. Мужчины не должны занимать деньги у друзей или членов семьи.
13. Мужчины должны быть в состоянии сделать ремонт в доме.
14. Мужчины должны быть в состоянии починить любую вещь в доме.

(Appendix continues)

15. Мужчины должны смотреть боевики, а не читать любовные романы.
16. Мужчины должны всегда хотеть секса.
17. Гомосексуалам должно быть запрещено служить в армии.
18. Мужчины никогда не должны делать комплименты другим мужчинам или флиртовать с ними.
19. Мальчики должны играть в машинки, а не в куклы.
20. Мужчина не должен отказываться от секса.
21. Мужчина всегда должен быть «боссом».
22. Мужчина должен устанавливать порядки в семье.
23. Мужчины никогда не должны держаться за руки или проявлять эмоциональную привязанность друг к другу.
24. Мужчина может использовать все средства, чтобы «убедить» женщину заняться сексом.
25. Гомосексуалы никогда не должны целоваться на публике.
26. Мужчина ни в коем случае не должен носить сумочку своей жены.
27. Мужчина должен найти свой путь в жизни.
28. Если дело касается секса, мужчина всегда должен быть инициатором.
29. Мужчина должен делать все сам и рассчитывать только на себя.
30. В спорте мальчики не должны вести себя «как девчонки».
31. Мужчина не должен реагировать на чужие слёзы.
32. Мужчина не должен продолжать дружбу с другим мужчиной, если обнаружится, что другой мужчина – гей.
33. Даже если мужчина расстроен, он не должен это показывать.
34. Если в присутствии мужчины кто-то начинает флиртовать с его девушкой, он должен вести себя агрессивно, считая это провокацией.
35. Следует поощрять мальчиков, которые показывают свою физическую силу.
36. Если у мужчины ломается машина, он должен знать, как её починить.
37. Гомосексуалам следует запретить вести преподавательскую деятельность.
38. Мужчина не должен подавать виду, если кто-то его обидел.
39. Если ночью мужчина слышит в доме странные звуки, он должен пойти и проверить, что происходит.
40. Мужчина не должен заниматься сексом, если он не может достичь оргазма.
41. В ситуациях, вызывающих эмоции, мужчины должны сохранять спокойствие.
42. Мужчина должен идти на риск, даже если в результате он может пострадать.
43. Мужчина должен быть всегда готов заняться сексом.
44. Мужчина должен быть главным «добытчиком» в семье.
45. В напряженных ситуациях мужчины должны быть настойчивыми.
46. Мне будет неловко, если мой друг заплачет из-за грустной любовной истории.
47. Отцы должны научить сыновей скрывать страх.
48. Юноши должны стремиться стать физически сильными, даже если они маленького роста.
49. В команде организация работы и успех зависят от мужчин.
50. По лицу мужчины никогда не должно быть понятно, что он чувствует.
51. В денежных вопросах последнее слово должно быть за мужчиной.
52. Обидно обнаружить, что известный спортсмен – гей.
53. Мужчина не должен сразу рассказывать о том, что его беспокоит.

Subscales

- Avoidance of Femininity:* 6, 7, 9, 11, 15, 19, 26, 30
Fear and Hatred of Homosexuals: 1, 5, 8, 17, 18, 23, 25, 32, 37, 52
Extreme Self-Reliance: 4, 12, 13, 14, 27, 29, 36
Aggression: 10, 34, 35, 39, 42, 45, 48
Dominance: 2, 3, 21, 22, 44, 49, 51
Nonrelational Attitudes Toward Sexuality: 16, 20, 24, 28, 40, 43
Restrictive Emotionality: 31, 33, 38, 41, 46, 47, 50, 53

Appendix B**Russian Version of the MRNI-SF**

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Все гей-клубы должны быть закрыты. 2. Мальчики должны играть в солдатиков и трансформеров, а не в куклы. 3. Мужчины должны быть в состоянии сделать ремонт в доме. 4. Мужчины должны быть в состоянии починить любую вещь в доме. 5. Мужчины должны смотреть боевики, а не читать любовные романы. 6. Мужчины должны всегда хотеть секса. 7. Мальчики должны играть в машинки, а не в куклы. 8. Мужчина не должен отказываться от секса. 9. Мужчина всегда должен быть «боссом». 10. Мужчина должен устанавливать порядки в семье. 11. Даже если мужчина расстроен, он не должен это показывать. 12. Следует поощрять мальчиков, которые показывают свою физическую силу. 13. Если у мужчины ломается машина, он должен знать, как её починить. 14. Гомосексуалам следует запретить вести преподавательскую деятельность. | <ol style="list-style-type: none"> 15. Мужчина не должен подавать виду, если кто-то его обидел. 16. Мужчина должен быть всегда готов заняться сексом. 17. В напряженных ситуациях мужчины должны быть настойчивыми. 18. Юноши должны стремиться стать физически сильными, даже если они маленького роста. 19. По лицу мужчины никогда не должно быть понятно, что он чувствует. 20. В денежных вопросах последнее слово должно быть за мужчиной. 21. Обидно обнаружить, что известный спортсмен – гей. |
|---|---|

Subscales*Avoidance of Femininity:* 2, 5, 7*Negativity Toward Sexual Minorities:* 1, 14, 21*Self-Reliance Through Mechanical Skills:* 3, 4, 13*Toughness:* 12, 17, 18*Dominance:* 9, 10, 20*Importance of Sex:* 6, 8, 16*Restrictive Emotionality:* 11, 15, 19

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