

Original research

Validity and Reliability of a Proxy-Rated Measure of Traditional Masculinity: A Tool For Case-Control and Psychological Autopsy Studies

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Abstract: Prior research demonstrates that traditional masculinity (TM) is related to suicidal ideation and attempts, but the relationship of TM to suicide death is untested. The current study validates a proxy rated measure of TM to use in case-control research of suicide death in a sample of 110 older adults. The Male Role Norms Inventory-Proxy (MRNI-P) items produced a strong single-factor solution and good reliability ($\alpha = 0.75$). As predicted, mean MRNI-P did not differ from self-rated MRNI. Convergent validity tests found moderate correlations for MRNI-P to self-rated MRNI ($r = .41, p < .05$) and to femininity ideology ($r = .29, p < .05$). A non-significant trend level association was observed with masculine occupation ($r = .20, p < .10$), and no association with substance abuse. Amongst males, self-rated MRNI had a non-significant trend level association with suicidal ideation ($r = .41, p < .10$). Compared to self-rated MRNI, correlations of MRNI-P to the convergent validity variables were modestly attenuated. This attenuation of correlations for a complex proxy-rated construct should be taken into account in planning sample size in studies using the MRNI-P. Other limitations include sampling only older adults and from one city in the US. The MRNI-P is a key methodological tool for testing the relationship of TM to suicide death.

Keywords: Measurement, Masculinity, Suicide, Case-Control.

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There is an intrinsic methodological challenge of suicide research: those who have ended their life by suicide cannot report about themselves and their experience before death. Researchers can follow large numbers of people over time or match participants in large surveys to death records years later. Another solution is the case-control design where decedents (cases) are retrospectively combined with control participants. Often archival data such as medical records are supplemented by information from friends or family members (proxy reporters) of the decedent (Armenian, 2009). One issue in case-control studies is assessing the quality

of friend or family reports. Frequently validity is tested in a sample of living participants through examining the association of self-ratings with proxy ratings (An, Phillips, & Conner, 2010; Conner, Conwell, & Duberstein, 2001). This study reports on the development, reliability and validity of a proxy measure of traditional masculinity for use in case-control research of suicide.

Globally, men end their life at 3.3 times the rate of women (WHO, 2016). One potential contributor to the elevated male suicide rate is traditional masculinity (TM), a set of social norms that includes an emphasis on competition, strength, emotion avoidance, and the acceptability of anger and violence (Coleman, Kaplan, & Casey, 2011). Previous research found high TM men over 4.5 times more likely to make a suicide attempt in a large sample of young adults (Coleman, 2015a) and

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that TM was a risk factor for suicidal behavior in a large mixed gender sample of young adults (Coleman, 2015b). Pirkis and colleagues (2016) found in a representative sample of Australian men that those higher on masculinity-related self-reliance had higher risk of suicidal ideation. The relationship of TM to suicide death has not been tested. A proxy-rated measure of TM is needed to conduct case-control or psychological autopsy studies of the relationship of TM to suicide death. The traditional masculinity construct is represented in several types of measures, including trait masculinity (Helmreich, Spence, & Wilhelm, 1981) and more recently masculinity ideology scales (Levant, Rankin, Williams, Hasan, & Smalley, 2010; Mahalik et al., 2003; Pleck, Sonenstein, & Ku, 1993). A masculinity ideology measure, the Male Role Norm Inventory – Revised (MRNI-R) was selected as the basis for development of a proxy measure as it is theoretically distinct from personality traits, has a strong single factor structure, and is widely used in recent research (Levant, 2011; Levant & Richmond, 2007).

Construct validity of the proxy rated items is tested by factor analysis. Reliability of the proxy rated scale is also assessed. The means of the proxy and self-rated MRNI scales are examined, with no difference predicted. The cross-informant correlation of proxy and self-rated MRNI is tested, with minimum acceptable a priori set at $r = .30$, based on expectable cross-rating perspective attenuation (Achenbach, Krukowski, Dumenci, & Ivanova, 2005; Heppner, Kivlighan Jr, & Wampold, 1999). Convergent validity is tested by correlating TM scales with a measure of femininity ideology, rating of masculinity of occupation, and of alcohol use. The relationship of TM to suicidal ideation and behavior is tested. Given that a proxy measure of TM might be used in mixed gender studies, females were included in the sample.

Method

Design and Sample

A cross-sectional survey design sampled participants from two senior centers in New York City. Inclusion criteria were age 60 or older. To make participation accessible, the survey was printed in large type and the authors were available to answer questions. In the consent process, some initially interested potential participants self-selected out of the study due to cognitive limitations or English language proficiency. Participants were family members or friends whom had known each for six months or longer. Participants rated themselves,

and were rated by their friend or family member study partner (the proxy rater), on selected MRNI-R items. The Institutional Review Board at Fordham University approved the study.

The sample included 110 older adults with a mean age of 72.2 (SD = 7.1). The majority of the sample was women (64.5%). Almost half of the sample consisted of persons of color (Latino = 29.3%; African-American/Black = 8.5%; Asian/Pacific Islander = 4.5%; other = 2.7%) and 39.1% of the sample was white.

Measures

Masculine ideology was measured using the Male Role Norms Inventory-Revised (MRNI-R) (Levant et al., 2010). To create the proxy-rated scale, items from the MRNI-R were selected based on published factor loadings (Levant et al., 2010) and on the ease with which they could be used to rate someone else.

Femininity ideology was measured using a 14-item version of the Femininity Ideology Scale (FIS) (Levant, Richmond, Cook, House, & Aupont, 2007). Alcohol abuse was measured with the Short Michigan Alcohol Screening Test-Geriatric (MAST-G) (Conigliaro, Kraemer, & McNeil, 2000). Participant depression was measured with the Geriatric Depression Scale - 15 (GDS-15) (Yesavage & Sheikh, 1986). Suicidal ideation and behavior was assessed with the Suicidal Behaviors Questionnaire – Revised (SBQ-R) (Osman et al., 2001).

Construction of an indicator of stereotypically masculine occupation was guided by research that codes masculinity from occupation and interests (Lippa, 2005, 2010; Mansdotter, Lundin, Falkstedt, & Hemmingsson, 2009). Two independent judges, blind to participant gender, rated participants' brief occupational descriptions for stereotypically masculine occupations.

Achenbach and co-authors suggest that a cross-informant rating perspective that examines correlations of ratings is the optimal evaluation mode when informants are rating distinct dimensions of related behaviors (Achenbach et al., 2005). The Achenbach and colleagues (2005) meta-analysis of 108 studies found a correlation of around $r = .40$ of cross-informant ratings of internalizing symptoms. Since internalizing mental health symptoms and TM are both complex constructs, we set a working benchmark cross-informant correlation of $r = .40$ for self and proxy rated TM. A small number of studies demonstrated the validity in suicide attempters of proxy ratings of similar complex constructs such as social support (An et al., 2010; Conner et al., 2001; Zhang et al., 2003).

Results

The proxy rated items were factor analyzed using principal factors extraction and single and two factor solutions were generated using STATA 12

(StataCorp, 2011). A two-factor solution yielded difficult to interpret factors. The single factor solution was selected as optimal (Table 1).

Table 1. Factor loadings and reliability Male Role Norms Inventory-Proxy (MRNI-P)

Items	Factor Loading
I think a young man should try to be physically tough, even if he's not big.	0.70
When the going gets tough, men should get tough.	0.65
A man should never admit when others hurt his feelings.	0.56
Men should be detached in emotionally charged situations.	0.56
Men should have home improvement skills.	0.55
Men should watch football games instead of soap operas.	0.48

Reliability of MRNI-P: $\alpha = 0.75$

The single factor solution accounted for 89% of the shared variance. Factor loadings ranged from excellent to good for 5 of the 6 items (Tabachnick & Fidell, 2007). The highest loading items reflected themes of toughness and emotional control. The internal reliability of the computed scale of the MRNI-Proxy (MRNI-P) was good ($\alpha = 0.75$).

The mean of the proxy rated MRNI-P was compared with the mean of the same self-rated six items (MRNI-6) using a paired t-test (selected as the ratings are of the same person). The MRNI-P (mean = 2.7, SD = .72) and the MRNI-6 (mean = 2.8, SD = .65) did not statistically differ from each other ($t(84) = .76, p = .45$).

Reliability of most of the other scales used in the study was excellent to very good: MRNI-R ($\alpha = 0.94$); FIS ($\alpha = 0.82$); MAST-G ($\alpha = 0.84$); GDS-S ($\alpha = 0.83$). Reliability of the SBQ-R was marginal ($\alpha = 0.68$), perhaps due to restricted range of variability in suicidal ideation and behavior in this sample.

For the coding of masculine occupation, 16% were coded as masculine occupations (for example, police officer, construction worker, taxi driver). Of those coded as having masculine occupations, 80% were men.

The cross-informant correlation of the MRNI-P and the MRNI-6 was moderate ($r = .41, p < .05$). The MRNI-P was moderately correlated with femininity ideology ($r = .29, p < .05$) and a non-significant trend was evident for MRNI-P and masculine occupation ($r = .20, p < .10$). In contrast self-rated MRNI had a slightly stronger correlation with masculine occupation ($r = .23, p < .05$). MRNI-P was not associated with alcohol use, but self-rated MRNI

had a moderate correlation to alcohol use ($r = .34, p < .05$).

Compared to normative data, there was higher than expected depression in this sample with 44% of the sample scoring in the mild depression range and additional 6 percent in the moderate or severe range. Surprisingly, given the prevalence of depression in the sample, there was a low rate of suicidal ideation and behaviors. The majority (70%) said they had never had thoughts of suicide, 24% reported "just a brief passing thought" and only 2 participants reported lifetime suicide attempts. Based on this distribution of SBQ-R scores, it was re-coded into a dichotomous variable of any suicidal ideation. For the whole sample, no relationship to MRNI was found, both for scaled SBQ-R and the dichotomous suicidal ideation variable. Among males, a non-significant trend level moderate size correlation ($r = .41, p = .06$) of self-rated MRNI to any suicidal ideation was found, modestly attenuated for proxy-rated MRNI to any suicidal ideation ($r = .30, p = .19$).

Discussion

The majority of the results demonstrated the validity and reliability of this new brief proxy measure of TM, the MRNI-P. The factor analysis of the MRNI-P items showed evidence of a single underlying factor. Reliability was good, particularly considering TM is a complex construct and the scale is short. The finding of no mean difference in the proxy and self-rated scales is further indicative of the validity of MRNI-P. The cross-informant correlation ($r = .41$) exceeded our a priori minimum

acceptable of $r = .30$ and is comparable to cross-informant correlations found in other studies for similarly complex constructs (Achenbach et al., 2005; Zhang et al., 2003). The tests of convergent validity found the MRNI-P was correlated as expected with femininity ideology and masculine occupation (the latter a non-significant trend relationship).

The trend-level moderate association of self-rated MRNI to suicidal ideation among males is consistent with most prior research (Coleman, 2015b; Pirkis et al., 2016). Coleman (2015a) found that TM was associated with suicidal ideation for both men and women. The consistency of TM as a risk factor for suicidal behavior across gender deserves further study.

A few relationships ran contrary to our predictions. MRNI-P was not significantly associated with masculine occupation or alcohol use, where self-rated MRNI had significant moderate correlations. Similarly, self-rated MRNI had a non-significant trend level moderate association with suicidal ideation, while the strength of the proxy rated MRNI to suicidal ideation was slightly weaker. These null findings for the MRNI-P are likely the result of the attenuation of correlations due to cross-rating perspective, a problem inherent to proxy ratings of more complex constructs. The potentially attenuated power of a proxy rated measure must be taken into account in planning studies. Other limitations include that the sample was limited to older adults and collected from one US city. The sample size was just adequate for factor analysis. The high rate of suicide death among males makes it pressing to understand male suicide and identify modifiable risk factors. As was suggested in the introduction, the evidence is mounting that TM is associated with suicidal ideation and attempt (Coleman, 2015a, 2015b; Pirkis et al., 2016). These results motivate the as yet untested hypothesis that TM accounts for part of the increased risk for men to die by suicide. The MRNI-P provides a key methodological tool for testing this hypothesis. Further evidence for the effects of TM could inform novel suicide prevention and treatment efforts. The MRNI-P may also be of use in other situations where self-report is not possible, such as dementia or Traumatic Brain Injury.

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