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# The Aging Men's Masculinity Ideologies Inventory (AMMII): Dimensionality, Variance Composition, Measurement Invariance by Gender, and Validity[1]

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# The Aging Men's Masculinity Ideologies Inventory (AMMII): Dimensionality, Variance Composition, Measurement Invariance by Gender, and Validity

**Abstract**

Extant measures of masculinity ideologies assumed masculinities are ageless, were developed with only younger men in mind, and were validated primarily using college-aged adults. The present study reports the development and evaluation of a measure of the masculinity ideologies relevant to the lives of aging men, using a sample ($N$ = 1184) of adult men and women (ages 31-95), the Aging Men's Masculinity Ideologies Inventory (AMMII). An exploratory factor analysis on a randomly selected part of the data revealed a 15-item 5-factor scale, which was supported with confirmatory factor analysis (CFA) using the balance of the data. An analysis of variance composition through a series of CFA's found that the common (correlated) factors model fit the data best, which suggests that the subscale scores of distinct masculinity ideologies can be used in research, but it would not be advisable to calculate a total scale score to represent a general later-life masculinity ideology. The AMMII demonstrated configural and metric invariance between men and women for the five later life masculinity standards, which indicates that mature and aging women and men share similar beliefs about what is expected of men's later life gender practices. Finding convergent construct evidence for the validity four of the AMMII factors encourages use of this short multidimensional scale. The results are discussed in terms of limitations and implications for research and practice.

*Keywords*: Aging men, masculinity ideologies, confirmatory factor analysis, measurement invariance, validity

# The Aging Men's Masculinity Ideologies Inventory (AMMII): Dimensionality, Variance Composition, Measurement Invariance by Gender, and Validity

A man cannot find the energy to exercise to maintain his strength and physical fitness and now struggles to carry groceries in from the car. In this scenario, will the man feel like a failure that he is not able to meet the hegemonic masculine ideals embodied in a strong, healthy young man (Connell & Messerschmidt, 2005)? What if he is 55 years old? What if he is 75 years old? For a man in his 20s, he is likely to experience the dissonance between what he is able to do and his beliefs about what he should be able to do, but we do not know if aging men hold themselves or are held by others, including women, to the same masculinities.

It is not entirely surprising that aging masculinities have remained relatively invisible despite the increasing size of the population of aging men. One reason for their invisibility is, as Spector-Mersel (2006) astutely argued, the generally accepted premise that there are "never-aging" masculinity ideologies applicable for men's entire adulthood, including later life. [1] This "ageless" emphasis has left the field of masculinities research seriously incomplete. As an example, with few exceptions (e.g., Oransky & Fisher, 2009) most extant measures of masculinity ideologies operationalized a number of the masculinity performance ideals embodied in a virile young man such as successful achievement, toughness and self-reliance, taking risks, and avoidance of all things feminine (Brannon & Juni, 1984; Levant et al., 1992). These measures were developed with younger men in mind and validated primarily using young, college-aged adults (Whorley & Addis, 2006; Wong, Steinfeldt, Speight, & Hickman, 2010). The

[1] In the late 1990s and by the early 2000s Connell argued one configuration of practice—hegemonic masculinity—is "the *currently* most honored way of being a man; it required all other men to position themselves in relation to it, and it *ideologically* legitimated the global subordination of women to men" (Connell & Messerschmidt, 2005, p. 832, our italics).

same measures ignored the social meaning of men's corporeal aging as much as the social worlds of men being grandfathers, retirees, widowers, and, for some, care-givers—doing the hands-on care work needed by their partners (Thompson & Bennett, 2015). To help repair this gap in masculinities scholarship, the present article reports on the development of a new scale – the Aging Men's Masculinity Ideologies Inventory (AMMII) – designed to measure the masculinity performance norms for aging men.[2]

Our starting point is rooted in theory that posits that men's identities are relational and endlessly revised as they navigate time and exit and enter relationships (Bourdieu, 1984; Gergen, 1985). Given contemporary age relations (Calasanti, 2004), old men are not expected to try to define themselves by either the workplace or physical strength and sexual virility. To garner masculine capital (de Visser & McDonnell, 2013), aging and old men may use their accumulated knowledge (i.e., wisdom) to advise and mentor; they can become active in fields of masculinities outside the mainstream that preserve their identities as men, such as grandfathering, slow pitch softball in an over-55 league, or volunteering as a fictive-granddad at a childcare center (Coles & Vassarotti, 2012; King & Calasanti, 2013).

Second, the gender practices that men (and women) witness and adopt as their own reflect their generation as well as class, ethnicity, and cultural geography. In their meta-thematic analysis of the narrative and interview data within 98 qualitative studies of aging men published since 2000, Thompson and Langendoerfer (2016) argued that some aspects of the idealized

[2] We recognize there are multiple approaches to understanding masculinities in older men, and do not want to make a claim that one approach (measurement scales) is better than any other. In an ideal research environment we would be able to triangulate across many disciplines and methodologies to produce a fully rounded perspective. We have included contextual information from qualitative studies throughout the introduction and discussion to better situate this measurement scale within the larger problem – the invisibility of aging masculinities.

masculinity ideologies that the men grew up with and embodied during the 1950s-1970s will persist into their later life. Restated, some, perhaps many masculine norms within a generation's cultural blueprint for "being a man" likely remain pertinent into later life. A case in point: the expectation that men should strive to be successful and respected is not likely to fade as men age. What men actually do to become successful may need to be modified over the life course. They can shift their participation to 'senior' arenas for competitive running, bowling, golf, or cycling (Alex, Hammarstrom, Norbert, & Lundman, 2008; Coles, 2008; Eman, 2011; Jolanski, 2009; Phoenix & Sparkes, 2009); others may take up cooking and read cookbooks with their "cheater" magnifying glasses to prepare two new adventurous entrees a week.

Our perspective on how life stages can normalize different masculinity practices takes for granted that masculinities are not ageless, static categories and that multiple masculinity ideologies are reproduced in day-to-day gender relations. The construct "masculinity ideologies" names the dimensions of culture which script men's lives (Thompson, Pleck, & Ferrera 1992). They encompass people's attitudes and beliefs about a set of prescriptive (i.e., suggestions for how men *should* act) and proscriptive (i.e., how men *should not* act) social norms for gender performances across most contexts. A variety of competing masculinity ideologies co-exist. They are comprised of both broad-gauge and context-specific norms and the hierarchies of systems of inequality associated with class, race/ethnicity, sexual orientation, and age (Connell & Messerschmidt, 2005).

Masculinity expectations such as being successful and respected, which are applicable to young and older men alike, have been repeatedly referred to as core dimensions of a 'traditional' masculinity ideology (Levant & Richmond, 2016). Within existing measures of masculinity

ideologies, 'traditional' seems specific to the dominant norms of a time (1900s-1960s), race (White), class (working/middle), sexuality (heterosexuality), and place (Global North countries). Despite the shortcomings of codifying 'traditional' masculinities, we sought to create a new measure relevant to the lives of most men approaching or already in later life. As detailed more thoroughly below, we constructed the AMMII with some age-invariant standards and with some age-specific standards. To be specific, the AMMII was designed to assess people's opinions about aging masculinities, making sure to capture aspects of 'traditional' and likely age-invariant (and ageist[3]) masculinity standards as well as the norms applicable to the social worlds of being grandfathers, retirees, and perhaps widowers.

The present exploratory study assesses the dimensionality, variance composition, measurement invariance by gender, and evidence for the validity of the AMMII. Rather than developing formal hypotheses, five basic questions were examined. First, aging masculinities and therefore the AMMII are conceived as a multidimensional; as such, what are the reliable dimensions assessed by the AMMII? Second, is there empirical support for using a total scale score in addition to the subscale scores? Third, do men and women understand the masculinity norms within the AMMII in the same way, even though men and women are not likely to similarly endorse them? A difference in endorsement should be particularly the case for any ideology that privileges men at the expense of women. Fourth, because the AMMII was designed to include some 'traditional' age-invariant masculinity norms, what is the strength of the relationship between the AMMII and an instrument known to reliably assess 'traditional' masculinity ideologies among younger men, the Male Role Norms Inventory-Short Form

[3] It should be noted that less ageist measures (e.g., Springer & Mouzan, 2011) and less ethnocentric measures (see Thompson & Bennett's review, 2015) represent refinements of previous measures.

(MRNI-SF; Levant, Hall & Rankin, 2013)? Fifth, theorists and researchers have often proposed that endorsing 'traditional' masculinity practices results in engaging in riskier behaviors (e.g., excessive drinking, poor nutrition), avoiding health promoting behaviors (e.g., prostate screening, regular exercise), and delaying seeking help from health professionals even when ill (*cf*., Courtenay, 2000; Garfield, Isacco, & Rogers, 2008; Griffith, 2015; Levant, Wimer, & Williams, 2011). The basic argument has been that the masculinity practices that men employ to demonstrate "manliness" and gain/maintain masculine capital are the same masculinity practices that can undermine their health. We were interested in whether men's (and perhaps also women's) agreement with the masculinity norms mapped by the AMMII negatively predicted their self-assessed physical health, emotional/mental health, cognitive ability, and social functioning. The relationships we investigated between the AMMII subscales and the validity measures are shown in Figure 1.

## Method

### Sample Considerations

A total of 1184 participants were included in the data analysis. There were 601 (50.8%) women and 577 (48.7%) men and less than 1% transgender and other. Ages ranged from 31 to 95 years, with a mean of 54.39 (*SD* = 13.46). Table 1 summarizes the participants' sociodemographic characteristics. It can be seen that the sample is predominantly White, heterosexual, married, and middle class[4].

For the exploratory factor analysis 138 cases were randomly selected from the full data set of 1184, allowing for 5 participants per item, which is within the range of current practice

[4] The ethnic diversity of the sample reflects US population composition, not that of global North or advanced industrial societies more generally.

(Costello & Osborne, 2005). For the CFA's and structural regression analyses, we used the remaining 1046 cases. Kline (2016) recommended a minimum of 10 participants for every freely estimated parameter when doing structural equation modeling (SEM). The configural invariance analysis had the largest number of free parameters, at 116, requiring 1160 participants. The *n* of 1046 is fairly close to the criterion number and probably adequate.

**Recruitment and Survey Procedures**

The study was approved by the *institution masked* IRB. Community-dwelling adults were recruited through colleague referrals and using ads on Craigslist, a classified advertisement website, which is good for recruiting diverse samples (Antoun, Zhang, Conrad & Schober, 2015). Almost all of the participants completed the survey online using Qualtrics, whereas a small number ($n$ = 47) who took part in a humor class run by *identity masked* filled out a paper and pencil version of the questionnaire. All participants completed an informed consent before beginning the questionnaire.

**Measures**

**Demographic Questions.** The initial part of the questionnaire inquired about gender, race/ethnicity, age, relationship status, sexual orientation, highest degree completed, family/household income, socioeconomic status, and religion.

**Aging Men's Masculinity Ideologies Inventory (AMMII).** An inventory of 28 items was constructed to map seven theorized dimensions of aging men's lives—the significance of fatherhood, their work- and family-based lives, marital negotiation, retirement, care and care work, widowerhood, and managing the loss of vitality. A few items were drawn from existing masculinity ideologies measures but modified to be applicable to aging men. Most were original items written to

address domains of masculinity practices not previously codified such as retirement and widowerhood. Participants reported the degree to which they agree or disagree with each item on a 7-point Likert-type scale (1 = *strongly disagree*; 7 = *strongly agree*), with higher scores indicating higher levels of the endorsement. A decision was made to recode all items so that "7" indicates stronger adherence to 'traditional' hegemonic masculinity, even though this standard is ageist in terms of old men's absence from this space (Davidson & Meadows, 2006; Spector-Mersel, 2006). Items within each scale were averaged to produce scale values ranging from 1 to 7.

**Validating Variables.** The Male Role Norms Inventory-Short Form (MRNI-SF; Levant, et al., 2013) is a 21-item measure which was selected as a comparison measure to the AMMII because it is a widely used measure of 'traditional' masculinity ideologies, but was developed on and about young adult men (Levant, Rankin, Williams, Hasan, & Smalley, 2010). Full configural and partial metric invariance of the specific factors across men and women has been shown (Levant et al., 2013). Although the MRNI-SF has seven specific factors, only the overall score, which represents 'traditional' masculinity ideologies (TMI), was used in the present study. Evidence supporting the use of the total scale score was reported by Levant et al. (2013). Coefficient α for the total score is .92. Responses are made on a 7-point Likert-type scale (1 = *strongly disagree*; 7 = *strongly agree*), with higher scores indicating higher levels of the endorsement of TMI. No items are reverse-scored.

The subjective health status scale required participants to self-report on four aspects of their current health with respect to others their age: physical health, emotional/mental health, cognitive ability, and social functioning on a 5-point Likert-type scale (1 = *very poor*, 5 = *very good*). The scale averages the response for the four dimensions, with higher scores indicating

"very good" health. Coefficient α is .77.

**Data Analytic Procedures**

**Overview**. We began with an exploratory factor analysis of the 28 items using principle axis factoring and oblimin rotation to assess the dimensionality. This oblique rotation criterion follows Preacher's and MacCallum's (2003) recommendations, who emphasized orthogonal criteria "are rarely defensible because factors are rarely if ever uncorrelated in empirical studies" (p. 40). Following the recommendations of Reise (2012), we next tested the measurement model of the AMMII in a separate sample using confirmatory factor analysis (CFA). We first assessed the common (or correlated) factors model, in which individual items load only on the subscale of which they are an indicator. Next, we compared the common factors model to alternative measurement structures that allow the use of a total score (bifactor, hierarchical, and unidimensional models) to find which model best fit the data. The preferred model was then used as a basis for specifying multi-group models testing measurement invariance. Testing for configural, metric and scalar invariance was performed using the new M*plus* Invariance Shortcut Code (Muthén & Muthén, 1998-2015). For the validity analyses we followed the recommendations of Russell, Kahn, Spoth, and Altmaier (1998) and Kline (2016) to create three to four item parcels from the observed variables for any variable with more than 6 observed items, which in this study was only the MRNI-SF total score for the MRNI-SF. Hence, for the five subscales of the AMMII, and the four items that comprised the health scale, the observed items were used to assess the latent factors. Item parcels were created by performing principle axis exploratory factor analyses with one-factor solutions for the items comprising each scale. Iterative assignment of items into each one of the parcels was done to ensure that parcel loadings

were balanced (Russell et al., 1998).

**Statistical analyses.** The exploratory factor analysis and descriptive statistics were calculated using SPSS 24. For all the CFA's and validity analyses we used M*plus* v.7.4 (Muthén & Muthén, 1998-2015) SEM software. The overall fit of all single and multi-group CFA models was assessed with the scaled chi-square goodness-of-fit test. However, because this statistic is highly dependent on sample size, it is overly sensitive to trivial sources of model misfit when sample sizes are large, as in the current study (Cheung & Rensvold, 2002). Thus, we used a set of alternative fit indices, which are typically consulted to determine whether a model demonstrates adequate fit (Kahn, 2006). These indices and the criteria used to assess their values (see Kline, 2016) were the: (a) Comparative Fit Index (CFI) and (b) Tucker-Lewis Index (TLI), which for both indices values of $\geq$ .90 indicate reasonable fit, and values of $\geq$ .95 indicate good fit; (c) Root Mean Square Error of Approximation (RMSEA), where values between .05 and .08 suggest reasonable fit and good model fit is suggested by values of .05 or lower; and (d) Standardized Root Mean Square Residual (SRMR), for which values of less than .10 are considered acceptable and values of .05 or lower indicate good model fit.

Relative fits of relevant single- or multi-group CFA models were compared with each other using a scaled chi-square difference tests[5]. The chi-square difference test allows an evaluation of whether any decrement in fit associated with a more constrained model is statistically significant. However, the chi-square difference test, like the chi-square goodness-of-fit test, is also very dependent on sample size (Cheung & Lau, 2012). According to Kline (2016), the $\Delta\chi 2$ is expected to be statistically significant in samples larger than 300. Thus, we used the

[5] They were adjusted to take into consideration the use of the MLR estimator, see Satorra & Bentler, 1999 and instructions at the M*plus* web site by accessing http://www.statmodel.com/chidiff.shtml

ΔCFI (Chen, 2007; Cheung & Lau, 2012; Cheung & Rensvold, 2002). A ΔCFI of less than .01 would provide support for a more parsimonious equality-constrained model. If the fit of a model is not made worse by imposing equality constraints on a parameter such as the factor loadings, then the more constrained model is preferred over the less constrained model because it is more parsimonious. For example, a more parsimonious model would be one in which a single set of factor loadings suffices for both groups, rather than a separate set of loadings for each group.

## Results

### Preliminary Analyses

For parsimony, the details on participants who were excluded from the analysis and information on outliers and non-normality are provided in the on-line supplement.

### Exploratory Factor Analysis of Responses to the AMMII

Prior to the exploratory factor analysis (EFA), the suitability of the data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was .81, which exceeds the suggested value of .60 (Kaiser, 1974). Bartlett's Test of Sphericity (Bartlett, 1954) was statistically significant, again further supporting the factorability of the correlation matrix. To determine the number of factors to extract, we followed Kahn's (2006) recommendation to use parallel analysis (cf. Hayton, Allen, & Scarpello, 2004). The results were uninterpretable, with all items on each factor drawing from a different theorized subscale, so, following Worthington's and Whitakers' (2006, p. 822) statement that "conceptual interpretability is the definitive factor-retention criterion," that solution was dropped.[6] Thus we turned to an older criterion for determining the number of factors to extract, namely the Kaiser rule, which recommends retaining those factors

[6] Details on the parallel analysis are provided in the on-line supplement.

whose Eigen values were > 1.0, of which there were eight.

The minimum allowable loading was set at .35 (Tabachnick & Fidell, 2007) to determine which items loaded on the factors. Ten items did not meet this criterion, which resulted in the removal of item #'s 1, 6, 8, 9, 10, 11, 12, 16, 25 and 27. We followed two criteria on cross-loading: Tabachnick's and Fidell's (2007), that items that load .32 or greater on a second factor should be removed, and Worthington's and Whittaker's (2006), that loadings on the primary factor should be at least .15 stronger than loadings on secondary factors. Based on these criteria no items were removed because of cross-loading problems. Finally three scales had only one item loading on them; hence those scales and the corresponding items (#'s 4, 5, and 14) were deleted. The resulting 15 item 5-factor scale with factor loadings is shown in Table 2 and the omitted items are presented in the on-line supplement.

**Confirmatory Factor Analysis of Responses to the AMMII**

The first CFA models tested were *single-group* models fit to the second part of the data set of 1046 participants. We first tested a common (or correlated) factors model, SGM1, in which participant responses to the 15-item AMMII were used as indicators of five hypothesized factors. The common factors model supports the use of the subscales but not a total score. Each item-level indicator loaded on only one factor, for a range of two to four indicators per factor. The purpose of this model was to confirm the factor structure found in the EFA. The fit statistics for this model and all subsequently tested single-group models are displayed in Table 3. The resulting chi-square goodness of fit statistic for the common factors model was statistically significant, indicating that the null hypothesis of perfect fit should be rejected. However, the remaining indices were all within the guidelines described earlier. Those for CFI and TLI

indicated reasonable model fit, while those for RMSEA and SRMR indicated good fit. Considering these criteria, the common factors model for the AMMII seems quite plausible.

Next, we tested three models that would allow for total score to be used, none of which panned out. This testing will be summarized here, with the details discussed in the online appendix. The first was a bifactor model (SGM2), in which each of the item-level indicators was specified as being caused by (i.e., had factor loadings on) both a general TMI latent factor and one of the specific latent factors. Not all of the fit indices were within the guidelines described earlier, and when tested model SGM2 fit worse than the common factors model. A hierarchical factor model was next estimated, in which the higher-order factor is caused by (has factor loadings on) the five lower order factors, which in turn are cause by the indicators. Unfortunately, this model would not converge. Finally, a unidimensional model (SGM3) was assessed, where all indicators load only on the general factor. None of the indices were within the guidelines described earlier, suggesting poor model fit.

Therefore, of the set of single-group models tested and summarized in Table 3, the common factors model provided the best fit to the data. Hence we used it in the remaining analyses. The standardized factor loadings were all significant and ranged from .45 to .89. These results are reported in detail in Table 4.

**Assessment of Measurement Invariance of the AMMII**

The next objective of this study was to use *multi-group* CFA of AMMII responses to assess configural, metric, and scalar invariance across gender. To meet these objectives, a series of nested models was estimated, treating the men and women respondents as separate subsamples in simultaneous estimations. All of these models used the common factors model as

their fundamental structure. Fit statistics are presented in Table 5. Although the $\chi 2$ was statistically significant for all models, CFI, TLI, RMSEA, and SRMR, were often at acceptable levels. Following traditional practices for testing invariance (Kline, 2016), models with increasingly stringent cross-group equality constraints were examined for differences in the scaled chi-square and CFI. A non-significant difference in chi-square values or a change in CFI $\leq$ .01 between models with and without cross-group equality constraints indicated that the model with cross-group equality constraints was not a significantly worse fit to the data (i.e., invariance between groups was supported).

Model MGM1 tested *configural* invariance (i.e., the same pattern of factor loadings holds across groups) and imposed no equality constraints across gender. Fit statistics were reasonable, allowing us to conclude the AMMII has configural invariance across gender. Model MGM2 constrained factor loadings to be equal across gender to test of full *metric* invariance. Overall the fit of Model MGM2 was reasonable. When the more parsimonious metric invariance Model MGM2 was compared with the configural invariance Model MGM1, we found that the chi-square difference test was not statistically significant, indicating that the more constrained Model MGM2 did not degrade fit. Furthermore, the ΔCFI was actually larger, suggesting that the more constrained Model MGM2 enhanced fit. Hence, the evidence supports full metric invariance.

Model MGM3 specified full *scalar* invariance (i.e., invariance of the item intercepts for the latent factors) across gender. This model did not fit well. Furthermore, Model MGM3 significantly degraded fit when compared with Model MGM2 based on $\Delta\chi^2$ and ΔCFI, indicating that scalar invariance failed. Men's intercepts for all but one item (#20, which loads on factor 1, Fatherhood and Family Not Prioritized) were higher than those for women. In sum, the results

support configural and metric invariance of factor loadings for men and women for the five latent factors.

**Descriptive statistics.** Given the support for the common factors structure of the AMMII in the total sample, and for full metric invariance across gender groups, we provide raw-score-based subscale scores for the AMMII using the full sample of 1184, for purposes of comparison with future studies that use this instrument. Because we failed to find scalar invariance, we report means, standard deviations, and alpha coefficients for the AMMII subscales (as well as the other study variables) for the total sample, rather than separately by gender (see Table 6), because the failure to find scalar invariance means that any comparison of means across gender must be interpreted very cautiously (Kline, 2016). Four of the AMMII factors have low alpha coefficients (ranging from .52 to .64). Table 7 shows the zero-order correlations of study variables for men above the diagonal and for women below the diagonal. It is interesting that for both men and women only 8 of the 11 possible correlations between the AMMII subscales are statistically significant, and those are small, ranging from .10 to .30 for both men and women. This reflects the fact that the subscales share little common variance, which is why none of the models that would have supported the use of a total AMMII score tested as viable in the single group CFA's.

**Convergent and Concurrent Validity of the AMMII**

Based on the Chen, West, and Sousa (2006) guidelines, we tested for the convergent and concurrent evidence for the validity of the latent factors of the AMMII by constructing a structural regression model. In this model, the five latent AMMII factors were regressed on the validity measures of the MRNI-SF (general TMI factor) and the health status measure, using either parcels or observed indicators as discussed above. The latent variable approach has the

advantages of controlling for some sources of measurement error. Because metric invariance for the AMMII was demonstrated, each model was estimated constraining the factor loadings to be equal for men and women (i.e., a metric invariance model). The CFA of the multi-group measurement model produced reasonable fit to the data, $\chi 2$ (508) = 1062.48, $p < .001$, CFI = .931, TLI = .918, RMSEA = .046 (90% CI = .042, .050), SRMR = .050. All of the parcels had significant loadings on their respective factors; the standardized loadings ranged from .62 to .93. In addition, where indicators were used, all indicators had significant loadings on their respective factors and ranged from .30 to .79. Next, regression paths were added from each of the AMMII latent factors to each of the validity factors. The fit statistics for this model were identical to those of the measurement model.

Table 8 displays the regression coefficients of each of the AMMII latent factors on the two validity latent factors. For both men and women, four AMMII factors – Reject Marital Negotiation, Recouple After Widowerhood, Maintain Sex and Vitality, and Retain Patriarchal Authority – had significant, positive associations with the TMI measure, providing convergent construct evidence for validity. However for both men and women one other latent factor – Fatherhood and Family Not Prioritized – was negatively associated with TMI. No concurrent evidence for validity was found, because none of the AMMII factors had significant regression coefficients with the health index for men. However, Recouple After Widowerhood and Retain Patriarchal Authority had significant, negative, and small regression coefficients for women with the health index, whereas Maintain Sex and Vitality had a positive association for women with the health index.

## Discussion

The purpose of this study was to create a measure of the masculinity ideologies relevant

to the lives of aging men who are approaching or already in later life, and to assess the measure's psychometric proprieties using a large sample of mature and aging adults. The opinions of these age groups also have been largely missing from the development of prior masculinity ideology measures.

Connell (1995; Connell & Messerschmidt, 2005) and others (e.g., Hearn, 2004) have argued that in most times and places one group of men and standard of masculinities is hegemonic, thereby creating a hierarchy of masculinities. Before modernity, old men were the venerated group (Cole, Mailath, & Postlewaite, 1992; Fischer, 1978) and growing old earned status. But the hegemony of the 18th and 19th century venerated "elder" with his sagacious mind, white hair and wrinkles, use of a cane, and spirited disposition was toppled by modernity's idealization of youth. Thompson and Langendoerfer (2016, p. 120) commented that this ideological shift both promoted gerontophobic masculinity ideals that privileged the practices of younger men and, as Connell (1995) addressed, produced new forms of domination. The underlying core values extolled youth (not seasoned maturity), virile, strong, healthy bodies (not lessening physical capital), and an overall anti-aging proclivity that cast aging as decline, loss, and demasculating (Cole, 1992; Gullette, 2004; Öberg, 2003).

We subjected our measure of the masculinity ideologies relevant to the lives of aging men to an exploratory factor analysis, which revealed a 15-item 5-factor scale, and this was corroborated with confirmatory factor analysis. The dimensions of aging masculinities operationalized within the AMMII assess men's privilege (Connell, 1995). The five subscales reassure aging men to not prioritize family and fatherhood over employment, retain their patriarchal authority, reject marital negotiation, strive to remain sexually vital and, if need be,

employed, and if widowed to recouple. Each subscale can be used in research, but as the assessment of variance composition found, it would not be appropriate to calculate a total scale score. This is not problematic, given the broader discussions of the rise of hybrid masculinity ideologies (Bridges & Pascoe, 2014) that shield men from the lack of coherent demands of 'traditional' masculinity. Men who live with the intersectionality of two (or more) valued cultures end up "widening" (StGeorge & Fletcher, 2014) what was 'traditional' and produce an array of masculinities which can be more inclusive of corporeal differences, cultural contexts, or sexualities (*cf.*, Anderson, 2009; Coles, 2009). Research finds that aging men's masculinity practices do not reveal an absolute approbation of the 'traditional' cultural standards for being a man (Thompson & Langendoerfer, 2016) any more than their narratives fail to reveal their racial and ethnic heritage, biography within a class position, generation, or stage in the life course.

An analysis of measurement invariance indicated the AMMII demonstrated configural and metric invariance between men and women, in which the observed indicators loaded on same factors with identical factor loadings for both men and women. This means that men and women understand the norms for aging men's masculinity ideologies in the same way. However, scalar invariance was not supported, which means that the intercepts (which estimate the score on an indicator) were not equal across gender. Failure to find full scalar invariance could result from a differential-additive response style (Cheung & Rensvold, 2000), which is when a cultural factor such as gender systematically varies with particular group's response style. Men's intercepts were higher than women's, which suggests that the men did not reject as much as women the cultural emphasis on patriarchal privilege.

The structural regression analyses provided partial convergent construct evidence for

validity, supporting the premise that for both men and women four of the AMMII latent factors – Reject Marital Negotiation, Recouple After Widowerhood, Maintain Sex and Vitality, and Retain Patriarchal Authority – reflect endorsement of TMI. The Fatherhood and Family Not Prioritized factor was inversely related to TMI for both men and women, suggesting that aging men are expected to be more family-centered. This is consistent with research showing men's masculine subjectivities reveal a 'softening' (Mann, Tarrant, & Lesson, 2016) that comes about with aging and aging-related fields of practice such as grandfathering (Coles, 2009). This is also consistent with observed shifts in the father's role to be more involved as parents (Pleck, 2010), and is an important question for future research.

None of the AMMII factors predicted men's self-assessed health. This was surprising in light of other recent research. For example, Springer and Mouzan (2011) used the Wisconsin Longitudinal Study, restricted the analysis to over 1,000 men age 65 and older, and found that the men with strong beliefs in hegemonic masculinity and who kept up a tough-guy persona were almost fifty percent less likely to use preventive health care services.

Interestingly, among the women, their self-assessed health was negatively associated with the Recouple After Widowerhood and Retain Patriarchal Authority factors, and positively associated with Maintain Sex and Vitality. This finding makes sense even though it was not expected, because the items reflect husbands' commitment to the relationship, which would likely be welcomed by women. Finally, consistent with prior research (Levant et al., 2016; Levant, Alto, McKelvey, Richmond, & McDermott, 2017), the advantages of using structural equation modeling and latent variables, and the hazards of relying on raw scores, are dramatically demonstrated in the present study, where more than half of the significant

correlations between AMMII dimensions and the validity scales using raw scores (Table 7) were not significant when using latent variables (Table 8).

We wish to acknowledge some limitations of the current study. First, four of the AMMII factors have low alpha coefficients (ranging from .52 to .64, see Table 5). This is not unexpected given the five AMMII scales have a small number of items (ranging from 2-4) that address unique components of aging masculinities. Further, the sample is diverse in terms of age and gender, which creates some 'noise,' reducing the internal consistency of a measure within the full sample. The low alpha coefficients are similar to the internal consistency ($\alpha = .62$) for the 8-item scale Springer and Mouzon (2011) devised in their study of old men's preventative health care. This suggests that caution should be exercised when using raw scores for these subscales; however they can be used in SEM without such concern. Second, the self-report nature of the surveys introduces the possibility of socially desirable responding (SDR). SDR was not measured in our study; however, a recent article demonstrated that SDR is not always a problem (Tracey, 2016). Because the AMMII measures prescriptive and proscriptive norms, and not identity or self-concept, it is less likely that people would feel the need to respond in a socially desirable way. We encourage future investigations with the AMMII which continue to address these issues. In addition, we did not assess discriminant, predictive and incremental evidence for validity, nor test-retest reliability, which would be important tasks for future research.

Future research should further investigate the construct evidence for the validity of each of the latent factors. First, this would require the development of nomological networks specific to each of the latent factors. Second, it should investigate predictive evidence for validity by assessing the extent to which endorsing the different latent factors within the AMMII predict

middle-aged and/or older men's gender practices, comfort with corporeal aging, and enjoyment with later life priorities. Discriminant evidence for validity might be addressed by looking at the AMMII factors' associations with measures of gender (in)equality, such as the questions used in the National Opinion Research Center General Social Survey. In addition, future research should also assess the AMMII for measurement invariance across age, race/ethnicity and sexual orientation. Finally, it would be valuable for future researchers to assess how much middle-aged and older men's endorsement of these scaled dimensions of masculinity ideology impacts, for example, aging men's decisions, health behaviors and status, and gender relations (Courtenay, 2000; Levant et al., 2009).

There are also implications of the measurement development undertaken in this study for psychologists in practice. The AMMII may be of use to psychologists who wish to quickly assess their older clients' endorsement of aging masculinity ideologies to see if what may be largely implicit assumptions are, in fact, a source of conflict or stress. There may be cases where discussing a client's scores and/or responses to specific items may be of value in the counseling process.

Lastly, in the U.K. and U.S., recent estimates project the life span gender gap to be five years, with women living on average to age 81 and men to age 76 (West, Cole, Goodkind, & He, 2014). Comparing people already age 65 or older in the U.K. and U.S., the gap narrows to a two-and-a-half year difference between men's and women's life expectance, with 65 year-old men expected to celebrate their eighty-third birthday (Office of National Statistics, 2015; West et al., 2014). The projections are 'on average' statistics. This means a growing number of 65 year-old men will eventually celebrate their ninetieth birthday, and some other men will not survive to

marry or be with their daughters when they marry. That being said, future research should examine masculinity ideologies longitudinally to determine if people's points of view are changing as they age or if our data are the product of a cohort effect. Not presented, we observed that when the younger respondents (age 31-59) were compared to the older respondents (age 60+), the older cohort more significantly endorsed the ideologies to retain their patriarchal authority, strive to remain sexually and physically vital, not prioritize family and fatherhood, and if widowed to recouple.

Three main conclusions can be drawn from this study. First, there is evidence supporting the five-factor dimensionality, common factors structure, configural and metric invariance by gender, and convergent construct evidence for the validity of the AMMII factors. Secondly, the lack of evidence to support the use of the AMMII total scale score further highlights the need for multiple masculinities in the assessment of masculinity ideologies. Third, there is now a reliable and valid measure of some of the aspects of the masculinity ideologies applicable to aging men.

## References

Aléx, L., Hammarström, A., Norberg, A., & Lundman, B. (2008). Construction of masculinities among men aged 85 and older in the north of Sweden. *Journal of Clinical Nursing, 17,* 451-459. doi.org/10.1111/j.1365-2702.2007.01961.x

Anderson, E. (2009). *Inclusive masculinity*. New York: Routledge.

Antoun, C., Zhang, C., Conrad, F. G., & Schober, M. F. (2015). Comparisons of online recruitment strategies for convenience samples: Craigslist, Google AdWords, Facebook, and Amazon Mechanical Turk. *Field Methods*, 28, 2wetherall-246.

Bartlett, M. S. (1954). A note on the multiplying factors for various chi square approximations. *Journal of the Royal Statistical Society, Series B, 16,* 296-298.

Brannon, R. & Juni, S. (1984). A scale for measuring attitudes about masculinity. *Psychological Documents*, 14.

Bridges, T., & Pascoe, C. J. (2014). Hybrid masculinities: New directions in the sociology of men and masculinities. *Sociology Compass, 8,* 246-258. doi: 10.1111/soc4.12134

Bourdieu, P. (1984). *Distinction*. Cambridge: Harvard University Press.

Calasanti, T. (2004). Feminist gerontology and old men. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 59, S305-S314. doi.org/10.1093/geronb/59.6.S305

Chen, F. F. (2007). Sensitivity of goodness-of-fit indexes to lack of measurement invariance. *Structural Equation Modeling, 14*, 464-504. doi: 10.1080/10705510701301834

Chen, F. F., West, S. G., & Sousa, K. H. (2006). A comparison of bifactor and second-order models of quality of life. *Multivariate Behavioral Research, 41*, 189-225. doi: 10.1207/s15327906mbr4102_5

Cheung, G. W., & Lau, R. S. (2012). A direct comparison approach for testing measurement invariance. *Organizational Research Methods, 15*, 167-198. doi:

10.1177/1094428111421987

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9*, 233-255. doi: 10.1207/S15328007SEM0902_5

Cole, T. R. (1992). *The journey of life: A cultural history of aging in America*. Cambridge: Cambridge University Press.

Cole, H. L., Mailath, G. J., & Postlewaite, A. (1992). Socail norms, savings behavior, and growth. *Journal of Political Economy*, 100, 1092-1125.

Coles, T. (2008). Finding space in the field of masculinity: Lived experiences of men's masculinities. *Journal of Sociology*, *44*, 233-248. doi.org/10.1177/1440783308092882

Coles, T., & Vassarotti, T. (2012). Ageing and identity dilemmas for men. *Journal of Religion, Spirituality & Aging, 24*, 30-41. doi.org/10.1080/15528030.2012.633425

Connell, R. W. (1995). *Masculinities*. Berkeley: University of California Press.

Connell, R. W., & Messerschmidt, J. W. (2005). Hegemonic masculinity: Rethinking the concept. *Gender & Society*, *19*, 829-859. doi.org/10.1177/0891243205278639

Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation, 10* (7), 86-99. doi:10.4135/9781412995627.d8

Courtenay, W. H. (2000). Constructions of masculinity and their influence on men's well-being: a theory of gender and health. *Social Science & Medicine*, *50*(10), 1385-1401. doi.org/10.1016/S0277-9536(99)00390-1

Davidson, K., & Meadows, R. (2010). Older men's health: The role of marital status and masculinities." In B. Gough & S. Robertson (Eds.), *Men, masculinities, and health: Critical perspectives* (109-124). New York: Palgrave Macmillan.

de Visser, R. O., & McDonnell, E. J. (2013). "Man points": Masculine capital and young men's health. *Health Psychology, 32*, 5-14

Eman, J. (2011). Constructing successful old-age masculinities amongst athletes. *NORMA – Nordic Journal for Masculinity Studies, 6*, 45-60.

Fischer, D. H. (1978). *Growing old in America*. New York: Oxford University Press.

Garfield, C. F., Isacco, A., & Rogers, T. E. (2008). A review of men's health and masculinity. *American Journal of Lifestyle Medicine*, *2*(6), 474-487. doi.org/10.1177/1559827608323213

Gergen, K. J. (1985). The social constructionist movement in modern psychology. *American Psychologist*, *40*, 266-275. doi:10.1037/0003-066X.40.3.266

Gilleard, C., & Higgs, P. (2002). The third age: class, cohort or generation?. *Ageing & Society, 22*, 369-382. doi.org/10.1017/S0144686X0200870X

Griffith, D. M. (2015). "I AM a man": Manhood, minority men's health and health equity. *Ethnicity & Disease*, *25*, 287-293. doi: https://dx.doi.org/10.18865/ed.25.3.287

Gullette, M. M. (2004). *Aged by culture*. Chicago: University of Chicago Press.

Hayton, J. C., Allen, D. G., & Scarpello, V. (2004). Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. *Organizational Research Methods*, *7*, 191-205. doi:10.1177/1094428104263675

Hearn, J. (2004). From hegemonic masculinity to the hegemony of men." *Feminist Theory, 5*, 49-72. doi.org/10.1177%2F1464700104040813

Jolanki, O. H. (2009). Agency in talk about old age and health. *Journal of aging studies*, *23*, 215-226. doi.org/10.1016/j.jaging.2007.12.020

Kahn, J. H. (2006). Factor analysis in counseling psychology research, training, and practice: Principles, advances, and applications. *The Counseling Psychologist*, *34*, 684-718. doi:10.1177/0011000006286347

Kaiser, H. H. (1974). An index of factorial simplicity. *Psychometrica, 39,* 31-36. doi:10.1007/BF02291575

King, N., & Calasanti, T. (2013). Men's aging amidst intersecting relations of Retain Patriarchal Authority. *Sociology Compass, 7*, 699-710. doi.org/10.1111/soc4.12064

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). New York: Guilford.

Levant, R. F., Alto, K. M., McKelvey, D. K., Richmond, K. A., & McDermott, R. C. (2017). Variance composition, measurement invariance by gender, and construct validity of the Femininity Ideology Scale-Short Form. *Journal of Counseling Psychology*, 64, 708-723.

Levant, R. F. & Richmond, K. (2016). The gender role strain paradigm and masculinity ideologies (pp. 23-49). In Y. J. Wong & S. R. Wester (Eds.), *APA handbook on men and masculinities*. Washington, DC: American Psychological Association.

Levant, R. F., Hall, R. J., & Rankin. T. J. (2013). Male Role Norms Inventory-Short Form (MRNI-SF): Development, confirmatory factor analytic investigation of structure, and measurement invariance across gender. *Journal of Counseling Psychology, 60*, 228-238. doi:10.1037/a0031545

Levant, R. F., Hirsch, L. S., Celentano, E., & Cozza, T. M. (1992). The male role: An investigation of contemporary norms. *Journal of Mental Health Counseling*.

Levant, R. F., Rankin, T. J., Williams, C., Hasan, N. T., Smalley, K. B. (2010). Evaluation of the factor structure and construct validity of the Male Role Norms Inventory-Revised (MRNI-R). *Psychology of Men and Masculinity, 11,* 25-37. doi: 10.1037/a0017637

Levant, R. F., Wimer, D.J, Williams, C. M. (2011). An evaluation of the psychometric properties of the Health Behavior Inventory-20 (HBI-20) and its relationships to masculinity and attitudes towards seeking psychological help among college men. *Psychology of Men and Masculinity, 11*, 26-41. doi: 10.1037/a0021014

Mann, R., Tarrant, A., & Leeson, G. W. (2016). Grandfatherhood: Shifting masculinities in later life. *Sociology*, *50*, 594-610. doi: 10.1177/0038038515572586

Muthén, L. K., & Muthén, B. O. (1998-2015). *Mplus user's guide (7th ed.)*. Los Angeles: Muthén & Muthén.

Öberg, P. (2003). Images versus experience of the aging body. In C. Faircloth (Ed.), *Aging bodies: Images and everyday experience* (103-139). Walnut Creek: AltaMira Press.

Office of National Statistics. (2017, November 4). *Life Expectancy at Birth and at Age 65 by Local Areas in England and Wales: 2012 to 2014*.

Oransky, M., & Fisher, C. (2009). The development and validation of the meanings of adolescent masculinity scale. *Psychology of Men & Masculinity*, *10*, 57-72. doi.org/10.1037/a0013612

Parent, M. C. (2011). Handling item-level missing data: simpler is just as good. *The Counseling Psychologist, 41,* 568-600. doi: 10.1177/0011000012445176

Phoenix, C., & Sparkes, A. C. (2009). Being Fred: big stories, small stories and the accomplishment of a positive ageing identity." *Qualitative Research*, *9*, 219-236. doi.org/10.1177/1468794108099322

Pleck, J. H. (2010). Fatherhood and masculinity. In M. E. Lamb (Ed.), *The role of the father in child development*, 5th ed. (27-57). New York, NY: Wiley.

Preacher, K. J., & MacCallum, R. C. (2003). Repairing Tom Swift's electric factor analysis machine. *Understanding Statistics*, *2*, 13-43. doi:10.1207/S15328031US0201_02

Reise, S. P. (2012). The rediscovery of bifactor measurement models. *Multivariate Behaviorual Research, 47,* 667-696. doi: 10.1080/00273171.2012.715555

Russell, D. W., Kahn, J. H., Spoth, R., & Altmaier, E. M. (1998). Analyzing data from experimental studies: A latent variable structural equation modeling approach. *Journal of Counseling Psychology*, 45, 18-29.

Satorra, A., & Bentler, P. M. (1999). *A scaled difference chi-square test statistic for moment structure analysis.* #260, UCLA Statistics Series.

Spector-Mersel, G. (2006). Never-aging stories: Western hegemonic masculinity scripts. *Journal of Gender Studies, 15,* 67-82. doi.org/10.1080/09589230500486934

Springer, K. W., & Mouzon, D. W. (2011). "Macho men" and preventive health care: Implications for older men in different social classes. *Journal of Health and Social Behavior, 52,* 212-227. doi.org/10.1177/F0022146510393972

StGeorge, J. M., & Fletcher, R. J. (2014). Men's experiences of grandfatherhood: A welcome surprise. *International Journal of Aging and Human Development, 78,* 351-378. doi.org/10.2190/AG.78.4.c

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. 5th Ed. Boston: Pearson.

Thompson E. H., & Bennett, K. M. (2015). Measurement of masculinity ideologies: A (critical) review. *Psychology of Men & Masculinity, 16,* 115-133. doi: 10.1037/a0038609

Thompson, E. H., & Langendoerfer, K. B. (2016). Older men's blueprint for 'being a man'." *Men and Masculinities, 19,* 119-147. doi.org/10.1177/1097184X15606949

Thompson, E. H., Pleck, J. H., & Ferrera, D. L. (1992). Men and masculinities: Scales for masculinity ideology and masculinity-related constructs. *Sex roles, 27,* 573-607. doi: 10.1007/BF02651094

Tracey, T. J. G. (2106). A note on socially desirable responding. *Journal of Counseling Psychology, 63,* 224-232. doi: 10.1037/cou0000135

West, L. A., Cole, S., Goodkind, D., & He W. (2014, June). *65+ in the United States: 2010,* P23-212. Washington, DC: U.S. Census Bureau.

Whorley, M. R., & Addis, M. E. (2006). Ten years of psychological research on men and masculinity in the United States: Dominant methodological trends. *Sex Roles, 55,* 649-658. doi.org/10.1007/s11199-006-9120-1

Wong, Y. J., Steinfeldt, J. A., Speight, Q. L., & Hickman, S. J. (2010). Content analysis of Psychology of Men & Masculinity (2000–2008). *Psychology of Men & Masculinity*, *11*, 170-181. doi.org/10.1037/a0019133

Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist*, *34*, 806 -838. doi: 10.1177/0011000006288127

Table 1
*Participant Characteristics by Gender*

| | Male | Female | Other |
|---|---|---|---|
| Gender | 601 (50.8 %) | 577(48.3 %) | 6 (0.5%) |
| Age | | | |
| Middle-aged | 340 (46.9 %) | 381(52.6 %) | 4 (0.6 %) |
| Older | 261 (56.9 %) | 196 (42.7 %) | 2 (0.4 %) |
| Race | | | |
| White/Euro. American | 495 (50.9 %) | 474 (48.8 %) | 3 (0.3 %) |
| Black/African American | 34 (45.9 %) | 40 (54.0 %) | 0 (0.0 %) |
| Hispanic/Latin*x* | 45 (57.7 %) | 31 (39.7 %) | 2 (2.6 %) |
| Other | 53 (46.5 %) | 63 (55.3 %) | 1 (0.9 %) |
| Employment | | | |
| Full-time | 265 (53.9 %) | 224 (45.7 %) | 1 (0.2 %) |
| Part-time | 65 (34.2 %) | 122 (64.2 %) | 3 (1.6 %) |
| Unemployed | 67 (45.6 %) | 78 (53.1 %) | 2 (1.4 %) |
| Fully Retired | 204 (57.6 %) | 150 (42.4 %) | 0 (0.0 %) |
| Relationship Status | | | |
| Married | 317 (55.6 %) | 251 (44.0 %) | 2 (0.4 %) |
| Dating | 71 (49.3 %) | 72 (50.0 %) | 1 (0.7 %) |
| Single, never married | 74 (55.6 %) | 59 (44.4 %) | 2 (1.5 %) |
| Divorced | 107 (42.1 %) | 146 (57.5 %) | 1 (0.4 %) |
| Widowed | 31 (38.8 %) | 49 (61.2 %) | 0 (0.0 %) |

Table 2

*Factor Loadings from Exploratory Factor Analysis of the AMMII items.*

| Scale and Item | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 |
|---|---|---|---|---|---|---|---|---|
| *F1: Fatherhood and Family Not Prioritized (FFNP)* | | | | | | | | |
| 20. The measure of a man can best be seen in how well he relates to his children. R | **.66** | | | | | | | |
| 2. Becoming a father should be the most significant event in a man's life. R | **.60** | | | | .24 | | | |
| 19. Retired men should spend more time with family and friends. R | **.39** | | | | | | .25 | |
| *F2: Reject Marital Negotiation (RMN)* | | | | | | | | |
| 23. Men should have the final say about how the children should be raised. | | **.91** | | | | | | |
| 22. Men should take primary responsibility for family decisions. | | **.83** | | | | | | |
| *F3: Recouple After Widowerhood (RAW)* | | | | | | | | |
| 24. After losing a spouse, a man should not be faulted if he starts a new romantic relationship. | | | **.70** | | | | | |
| 17. A widowed man should not be faulted for dating and looking for another spouse. | | | **.69** | | | | | |
| 18. It is okay when an older man is less vital than he was when he was younger. | | | **.49** | | | | | |
| *F4: Maintain Sex and Vitality (MS&V)* | | | | | | | | |
| 15. When his erection becomes unpredictable, a man should use a drug to enhance erectile functioning. | | | | **.56** | | | | |
| 7. Men should be interested in sex regardless of age. | | | | **.52** | | | | |

| | | | | |
|---|---|---|---|---|
| 13. A man should go back to work after retirement, if necessary, to maintain his family's standard of living. | | | **.41** | -.21 |
| *F5: Retain Patriarchal Authority (RPA)* | | | | |
| 21. Men should be willing to take paternity leave to spend more time with young children. R | .24 | .23 | **.48** | |
| 28. Parenting responsibilities should be shared about equally between men and women. R | | | **.47** | |
| 26. Husbands should discuss with their wives how much care he will provide for her in old age. R | | | **.42** | |
| 3. A husband should negotiate with his wife to resolve conflicts. R | | .22 | **.40** | |

*Note*. Item numbers refer to the order of the item within the original 28 items. Standardized factor loadings are reported. Loadings of .20 or lower were suppressed. Factor loadings of retained items are bolded. Reverse-keyed items are denoted by R. Deleted items and their factor loadings are in the on-line supplement.

Table 3

*Model Fit Statistics and Comparisons of Single-Group AMMII Models*

| Single-Group Model | $\chi^2$ (*df*) | *CFI,TLI* | *RMSEA estimate & 90% CI* | *SRMR* |
|---|---|---|---|---|
| SGM1: Common Factors | 240.48 (94) | .931, .912 | .039 [.033, .045] | .041 |
| SGM2: Bifactor | 434.26 (88) | .837, .777 | .061 [.056, .067] | .075 |
| SGM3: Unidimensional | 1355.56 (104) | .410, .319 | .107 [.102, .112] | .118 |

*Note*. CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual.

Table 4

*Standardized Factor Loadings from Single-Group Confirmatory Factor Analysis of the AMMII.*

| Scale and Item | F1 | F2 | F3 | F4 | F5 |
|---|---|---|---|---|---|
| *F1: Fatherhood and Family Not Prioritized (FFNP)* | | | | | |
| 20. The measure of a man can best be seen in how well he relates to his children. R | .68* | | | | |
| 2. Becoming a father should be the most significant event in a man's life. R | .66* | | | | |
| 19. Retired men should spend more time with family and friends. R | .49* | | | | |
| *F2: Reject Marital Negotiation (RMN)* | | | | | |
| 23. Men should have the final say about how the children should be raised. | | .89* | | | |
| 22. Men should take primary responsibility for family decisions. | | .81* | | | |
| *F3: Recouple After Widowerhood (RAW)* | | | | | |
| 24. After losing a spouse, a man should not be faulted if he starts a new romantic relationship. | | | .66* | | |
| 17. A widowed man should not be faulted for dating and looking for another spouse. | | | .71* | | |
| 18. It is okay when an older man is less vital than he was when he was younger. | | | .48* | | |
| *F4:Maintain Sex and Vitality (MS&V)* | | | | | |
| 15. When his erection becomes unpredictable, a man should use a drug to enhance erectile functioning. | | | | .49* | |
| 7. Men should be interested in sex regardless of age. | | | | .60* | |

| Scale and Item | F1 | F2 | F3 | F4 | F5 |
|---|---|---|---|---|---|
| 13. A man should go back to work after retirement, if necessary, to maintain his family's standard of living. | | | | .45* | |
| *F5: Retain Patriarchal Authority (RPA)* | | | | | |
| 21. Men should be willing to take paternity leave to spend more time with young children. R | | | | | .51* |
| 28. Parenting responsibilities should be shared about equally between men and women. R | | | | | .48* |
| 26. Husbands should discuss with their wives how much care he will provide for her in old age. R | | | | | .38* |
| 3. A husband should negotiate with his wife to resolve conflicts. R | | | | | .53* |

Note: Item numbers refer to the order of the item within the original 28 items. Standardized factor loadings are reported. Reverse-keyed items are denoted by R.

**p <.001*.

Table 5

*Model Fit Statistics and Comparisons of Nested Multiple Gender Group Models*

| Invariance Model | $\chi^2$ *(df)* | *CFI, TLI* | *RMSEA estimate & 90% CI* | *SRMR* |
|---|---|---|---|---|
| MGM1: Configural | 340.17 (188) | .924, .903 | .039 [.033, .046] | .045 |
| MGM2: Metric | 338.27 (199) | .930, .916 | .037 [.030, .043] | .046 |
| MGM2: Scalar | 579.89 (215) | .818, .797 | .057 [.052, .063] | .077 |

| *Model Comparison:* | $\Delta\chi^2$ *(df)* | *p* | *ΔCFI* | *Conclusion* |
|---|---|---|---|---|
| MGM2 vs. MGM1 | 4.31 (11) | n.s. | .006 | Prefer Metric |
| MGM3 vs. MGM2 | 303.45 (16) | <.001 | -.112 | Prefer Metric, Scalar Fails |

*Note*. CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual. In the model comparison section, the more parsimonious model is listed first. The conclusion is based on a joint consideration of $\Delta\chi^2$ and *ΔCFI*.

Table 6

*Study Variables' Ranges, Means, Standard Deviations, and Alpha Coefficients*

| | *N* | *Range* | *M* | *SD* | *α* |
|---|---|---|---|---|---|
| Health Status | 1177 | 1-5 | 4.06 | 0.67 | .77 |
| MRNI-SF | 1181 | 1-7 | 3.00 | 1.13 | .93 |
| AMMII –FFNP | 1178 | 1-7 | 4.87 | 1.18 | .62 |
| AMMII – RMN | 1183 | 1-7 | 2.89 | 1.57 | .83 |
| AMMII –RAW | 1179 | 1-7 | 6.07 | 0.89 | .64 |
| AMMII – MS&V | 1181 | 1-7 | 4.37 | 1.18 | .53 |
| AMMII - RPA | 1176 | 1-7 | 5.73 | 0.84 | .52 |

*Note.* $N = 1184$. *N*'s for variables vary because of item-level missing data on individual scales.

Table 7

*Zero-order Correlations of Study Variables for Men and Women*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1. Health Status | --- | -.03 | .12** | -.00 | .12** | .03 | .09* |
| 2. MRNI-SF | -.08* | --- | .22** | .61** | -.17** | .32** | -.18** |
| 3. AMMII-FFNP | .07 | .25** | --- | .22** | .01 | .30** | .27** |
| 4. AMMII-RMN | -.12** | .59** | .18** | --- | .16** | .18** | -.17** |
| 5. AMMII-RAW | .11** | -.24** | -.01 | -.21** | --- | .00 | .28** |
| 6. AMMII-MS&V | .09* | .36** | .20** | .21** | -.05 | --- | .10* |
| 7. AMMII-RPA | .13** | -.10* | .30** | -.10* | .14** | .20** | --- |

*Note*. Men ($N$ = 600) are above the diagonal, and women ($N$ = 577) are below the diagonal.

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

Table 8. *Regression Path Coefficients between the AMMII Factors and Validity Factors*

| *Regression Path* | B (*SE*) | | *β* | |
|---|---|---|---|---|
| | Men | Women | Men | Women |
| F1 (FFNP) on TMI | -.29 (.07) | -.35 (.07) | -.28*** | -.33*** |
| F2 (RMN) on TMI | .93 (.09) | .94 (.10) | .68*** | .68*** |
| F3 (RAW) on TMI | .20 (.06) | .25 (.06) | .19** | .24*** |
| F4 (MS&V) on TMI | .50 (.10) | .80 (.20) | .45*** | .62*** |
| F5 (RPA) on TMI | .27 (.08) | .21 (.08) | .26*** | .20** |
| F1 (FFNP) on Health | -.10 (.06) | -.16 (.07) | -.09 | -.15* |
| F2 (RMN) on Health | .05 (.06) | -.09 (.06) | .03 | -.07 |
| F3 (RAW) on Health | -.15 (.07) | -.18(.08) | -.14* | -.17* |
| F4 (MS&V) on Health | .02 (.08) | .25 (.11) | .02 | .19* |
| F5 (RPA) on Health | -.07 (.07) | -.21 (.08) | -.07 | -.20** |

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

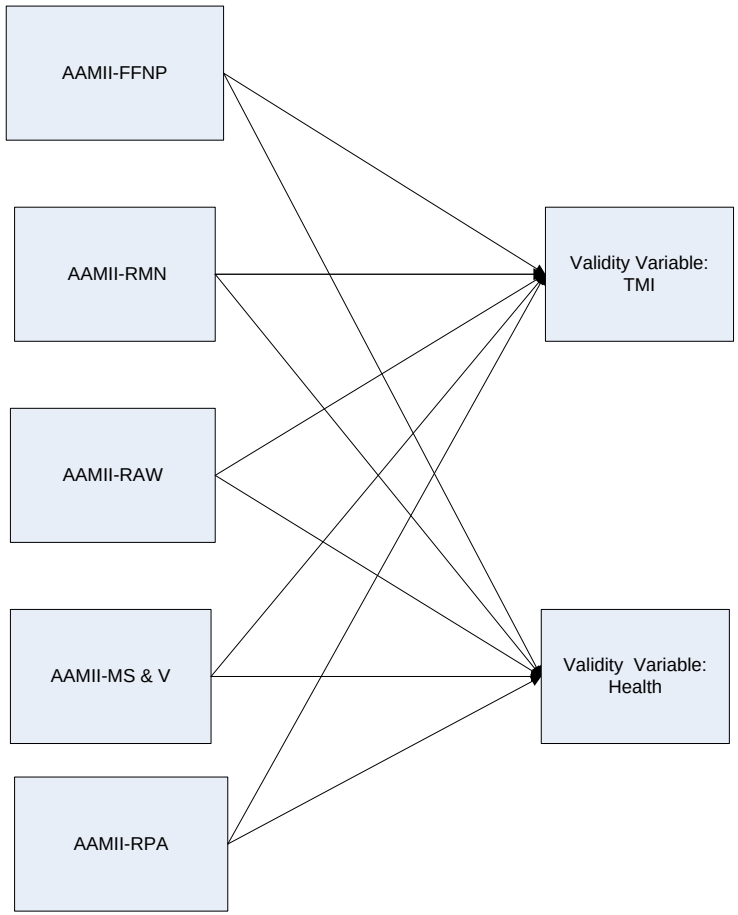


*Figure 1*. Structural Regression of Latent AAMII factors on Validity Factors

Legend: AAMII = Aging Adults Masculinity Ideology Inventory, FFNP = Fatherhood and Family Not Prioritized, RMN = Reject Marital Negotiation, RAW =Recouple After Widowerhood, MSV = Maintain Sex and Vitality, RPA= Retain Patriarchal Authority, TMI= Tradtional Masculinity Ideology.