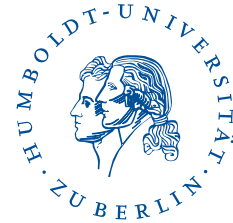


HUMBOLDT-UNIVERSITÄT ZU BERLIN



**Faculty of Life Sciences
Institute of Psychology**

Master Thesis

for the attainment of the academic degree Master of Science

Motivated Responses to a Masculinity Threat in a German Cultural Context

2025-12-18

submitted by

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Abstract

Anxiety, and aggression are common strains experienced by men when failing to conform to rigid masculinity norms (O'Neil, 2008). The precarious manhood thesis attributes this strain partially to the tenuous and elusive nature of manhood (Vandello et al., 2008; Vandello & Bosson, 2013). . A novel identity-based model of masculinity aims to explain the adverse effects associated with the precariousness of manhood (Stanaland et al., 2023). This model suggests that when a man's masculinity status is threatened, his compensatory response is influenced by differences in experienced self-discrepancy. The current thesis aims to operationalize and test this model within a German cultural context. Masculinity threat is induced through negative intra-group feedback on gender knowledge. Internalized and externalized threat responses are measured using a word fragment completion task. To assess different discrepancies in the masculine self, participants report both internal and external pressures to conform to masculinity norms. In line with Stanaland et al. (2023), it is hypothesized that external pressure to be masculine predicts externalized threat responses (aggression), while internal pressure predicts internalized threat responses (anxiousness).

Keywords: Fragile Masculinity, Identity Threat, Motivation

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Motivated Responses to a Masculinity Threat in a German Cultural Context

At the core of our being lies our identity — a dynamic, multifaceted self-concept shaped by our personal journeys and the social groups we inhabit. Whether grounded in gender, ethnicity, class, or shared passions, these affiliations influence how we see ourselves, how others perceive us, and the expectations placed upon us. They provide a sense of belonging and purpose, and their norms often serve as guardrails — offering stability amid the chaos and unpredictability of life. Yet, when these guardrails become too narrow, too rigid, they risk becoming barriers. Meant to keep us safe, they can instead steer us toward collision, limiting growth and distorting our path.

Masculinity Norms and Their Psychological Cost

One particularly rigid and influential set of social norms are those associated with masculinity. From an early age, boys internalize anti-femininity norms, such as the belief that “boys shouldn’t look like girls” (Blakemore, 2003). This early form of gender policing continues into adolescence, where young men report feeling pressured to engage in heterosexual activity (Duckworth & Trautner, 2019). Further masculinity norms include emotional restriction, self-reliance, the pursuit of achievement and status, aggression, and rejection of homosexuality (Levant et al., 1992). While the content of masculinity norms varies with its cultural background, they all shape male behavior and experience (Lease et al., 2013).

Conforming to rigid masculinity norms carries significant psychological and social costs. Attempting — and potentially failing — to meet these expectations is associated with elevated stress (Pleck, 1995) and linked to a range of negative mental health outcomes such as depression and anxiety (Blazina & Watkins Jr, 1996). Moreover, status-seeking and dominance-related pressures contribute to aggressive behaviors like sexual violence (Rando et al., 1998).

The psychological strain that occurs when a man’s personal needs, values, or emotions conflict with the narrow range of behaviors deemed socially acceptable for men is referred to

as men's gender role conflict (O'Neil et al., 1986). Although the negative consequences of this conflict are well documented (O'Neil, 2008), the processes through which this strain develops remain poorly understood. To understand why the costs of masculinity norms are so persistent, it is crucial to consider how masculinity is not just a set of traits, but a social status that must be earned and maintained.

Masculinity as a Precarious Social Status

“Men are made, not born”: the idea that masculinity functions as a socially conferred status rather than a fixed set of traits has been documented across diverse cultures (Gilmore, 1990). In contrast to womanhood — which is often perceived as a natural and biological outcome — manhood is viewed as a status that must be earned, actively maintained, and socially validated (precarious manhood thesis; Vandello & Bosson, 2013). This structural fragility becomes especially apparent when men face threats to their masculinity, often eliciting *internalized* responses such as shame and anxiety (Vandello et al., 2008), or *externalized* responses such as aggression and dominance (Bosson et al., 2009). Men's aggressive threat response has led to the characterization of masculinity as *fragile* - the notion that a man's social status as a “real man” is so tenuous that it must be constantly defended.

The precarious nature of masculinity bears significant implications not only for individuals but also for broader society. Masculinity threats provoke physical aggression (Bosson et al., 2009), ideological dominance and prejudice toward women (Dahl et al., 2015), denial of social inequities (Weaver & Vescio, 2015), anti-gay prejudice (Brown & Smith, 2023), violence toward gay men (Parrott & Zeichner, 2008), and the tolerance of such violence through inaction (Schermerhorn & Vescio, 2022).

While the precarious manhood thesis offers a compelling account of why masculinity threats provoke defensive behaviors, it also reveals a divergence in the nature of these responses. Both anxious withdrawal and aggressive assertion appear to be plausible outcomes -

consistent with the psychological strain men experience in trying to meet rigid gender expectations and the need to repeatedly prove one's masculinity through dominant behavior. However, the factors that determine whether a threat leads to internalized or externalized reactions remain unclear. To address this gap, it is critical to examine the underlying motivations for conforming to masculine norms, which may help explain why men respond to threats in different ways.

A Motivational Framework for Masculinity Threats

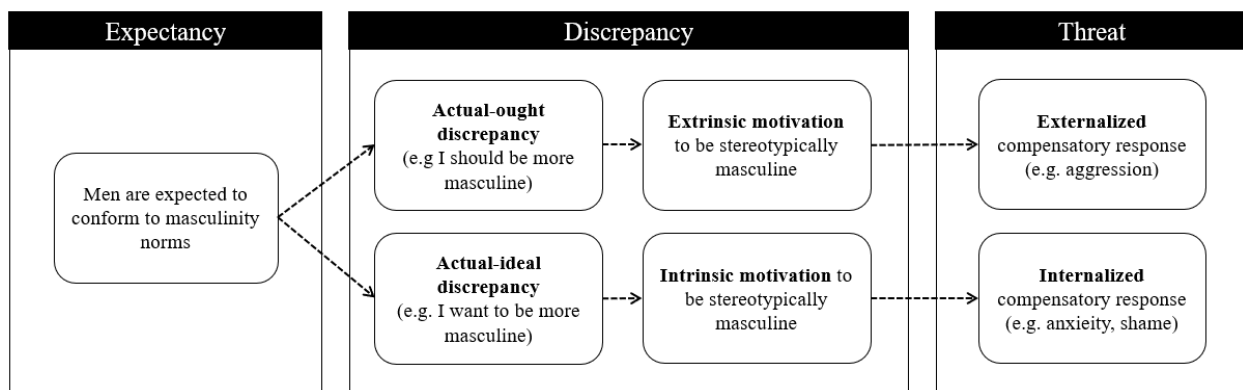
Although stereotypically masculine behaviors may appear uniform on the surface, the motivations behind them can differ significantly. For instance, one man might work out because he genuinely enjoys the activity and finds it personally meaningful, reflecting *autonomous motivation*. Another might exercise primarily because he feels it is expected of him and fears rejection, demonstrating *pressured motivation*. This distinction in motivations for masculine behavior has important implications for how men respond to threats to their masculine identity. Men with higher pressured motivation to conform to masculinity norms respond to such threats with increased aggression (Stanaland & Gaither, 2021). This interaction could not be explained via men's autonomous motivation or their collective self-esteem — that is, the degree to which they derive pride and self-worth from identifying as a man.

Building on this evidence, Stanaland et al. (2023) introduced the expectancy-discrepancy-threat (EDT) model of masculine identity (Figure 1). According to this model, boys and men are socialized into rigid masculinity norms and expectations. Drawing from self-discrepancy theory (Higgins, 1987) the EDT model posits that in response to this socialization process men develop three domains of the self: The actual self (who they believe they are), the ideal self (who they aspire to be), and the ought self (who they feel they should be, based on societal expectations). In the case that men's actual-selves do not align with their ideal or ought selves — as in the context of a masculinity threat — they may experience two types of

identity discrepancies: one between who they are and who they believe they should be (actual-ought), and another between who they are and who they aspire to be (actual-ideal). Drawing from self-determination theory (Deci & Ryan, 1987) the EDT model suggests that an actual-ought discrepancy generates extrinsic motivation to reduce the tension which is associated with externalized responses to threat, such as aggression. On the other hand, an actual-ideal discrepancy produces intrinsic motivation that tends to result in internalized reactions, such as shame or anxiety. Importantly, men are unlikely to experience only one type of discrepancy; rather, they often experience both forms to different extents, depending on their underlying motivations to conform to masculinity norms.

Figure 1

The Expectancy-Discrepancy-Threat Model of Masculine Identity



Note. Men are socialized to conform to societal norms of masculinity. Different types of self-discrepancies—between the actual self (how one perceives oneself), the ideal self (who one wishes to be), and the ought self (who one believes they should be)—can give rise to distinct motivational processes. When masculinity is threatened, an actual-ought discrepancy is thought to elicit extrinsic motivation, often resulting in externalized compensatory behaviors (e.g. aggression). In contrast, an actual-ideal discrepancy is believed to foster intrinsic motivation, leading to an internalized compensatory response (e.g. anxiousness).

The EDT model of masculine identity offers a compelling framework for understanding the diverse emotional and behavioral responses men exhibit when their masculinity is challenged. However, despite its theoretical richness, empirical research testing the model remains limited, particularly in diverse cultural contexts. To address these gaps, the present study seeks to provide further empirical support for the EDT model by examining how men respond to masculinity threats and how these responses are shaped by underlying motivational factors.

The Present Research

By investigating masculinity threat responses in a novel cultural context using a theoretically grounded motivational framework, the present research makes several key contributions. First, it extends the EDT model by assessing its cross-cultural generalizability. Second, it addresses limited empirical evidence for the pathways proposed by the EDT model. Third, it directly tests the model's core predictions using implicit cognitive measures that capture both internalized and externalized threat responses. Through this multifaceted approach, the study aims to clarify the psychological processes that underlie fragile masculinity and deepen our understanding of how and why men respond differently when their gender identity is challenged.

Cross-Cultural Generalizability of Masculinity Threat Effects

Most research on fragile masculinity and the precariousness of manhood has been conducted in the United States. This raises concerns about the generalizability of these findings to other cultural contexts with differing gender norms and expectations. For example, the United States — particularly rural, Southern regions — is often described as an individualistic and “honor”-based culture that simultaneously emphasizes and challenges men's masculinity (Cohen et al., 1996). In such contexts, aggressive behavior may serve as a norm-consistent response among men whose masculinity is closely tied to external validation (Stanaland, 2022).

In support of the idea that masculine identity fragility also manifests outside the United States are widespread beliefs about the precariousness of manhood (i.e. the belief that manhood has to be earned and publicly demonstrated) including Germany and other European nations (Bosson et al., 2021). This is further supported by Polish and Norwegian men, who responded to masculinity threats with increased aggressive cognition (Valved et al., 2021) and reduced support for gender equality (Kosakowska-Berezecka et al., 2016). Notably, cross-cultural differences in threat responses appear to correspond with broader societal patterns: countries with higher gender inequality and lower human development scores tend to show stronger beliefs in the precariousness of manhood (Bosson et al., 2021). This is consistent with the stronger threat response observed in Polish men compared to Norwegian men (Valved et al., 2021).

Taken together, the prevalence of precarious manhood beliefs and empirical support from European populations make it plausible to expect compensatory responses to a masculinity threat in the present study. Although the present research is conducted in Germany – a country with relatively high gender equality (Rank 7/146; World Economic Forum, 2024) - it is expected that threat effects still emerge, albeit potentially with smaller effect sizes. This expectation is supported by prior findings showing that in Norway, a country with even higher levels of gender equality (Rank 3/146; World Economic Forum, 2024), men still exhibited increased aggressive cognition following a masculinity threat (Valved et al., 2021). Accordingly, it is hypothesized:

Hypothesis 1a. Men exposed to a masculinity threat will exhibit higher levels of aggressive cognition than men receiving neutral feedback.

Hypothesis 1b. Men exposed to a masculinity threat will exhibit higher levels of anxious cognition than men receiving neutral feedback

Testing Motivational Predictors of Threat Response

To explain inter-individual differences in men's responses to masculinity threats, the present research aims to test the EDT model of masculine identity by applying its predictions in a novel cultural context. Although theoretically compelling, empirical support for the EDT model remains limited. Moreover, the model faces conceptual challenges from alternative frameworks that propose a sequential relationship between internalized and externalized threat responses - suggesting, that men may initially experience internal distress (e.g., shame or anxiety), which then escalates into outward aggression (Vescio et al., 2025). Here, externalized responses serve as a compensation to internal distress and is rooted in research that the expression of anger relieves feelings of discomfort (Jakupcak et al., 2005). These competing perspectives highlight the need for rigorous empirical testing of the EDT model's predictions.

According to the EDT model, pressured motivation - the external pressure to conform to masculine norms - is associated with externalized responses to masculinity threats, such as increased aggressive cognition. This pattern has been observed in both adult (Stanaland & Gaither, 2021) and adolescent (Stanaland et al., 2024) samples. Thus it is hypothesized

Hypothesis 2a. External pressure to conform to masculinity norms increases the positive effect of a masculinity threat (compared to a neutral feedback) on aggressive cognition.

Conversely, the EDT model posits that autonomous motivation is linked to internalized responses to masculinity threats, such as anxiety or shame. However, this prediction has not yet been empirically tested. Prior research has focused mainly on externalized responses, particularly aggression, leaving a gap in our understanding of how masculinity threats may also elicit internal distress. The present study addresses this gap by examining whether autonomous motivation predicts anxious cognition in response to a masculinity threat. Specifically it is hypothesized:

Hypothesis 2b. Internal pressure to conform to masculinity norms increases the positive effect of a masculinity threat (compared to a neutral feedback) on anxious cognition.

Addressing Methodological Limitations

Finally, methodological challenges persist in studying masculinity threat and the EDT model. While prior research has often operationalized masculinity threat responses through observable behaviors (e.g., aggression, dominance, social withdrawal), this study focuses on cognitive activation-specifically, aggressive and anxious cognition. This approach offers two key advantages. First, internalized emotional responses such as shame or anxiety are often incongruent with dominant masculinity norms and may be consciously downplayed or denied in self-report or behavioral tasks. Second, aggressive actions may sometimes reflect socially learned scripts rather than genuine emotional reactivity. Implicit cognitive tasks, such as the Word Fragment Completion Task (WFCT), are less susceptible to social desirability bias and provide a more direct measure of underlying threat-relevant mental processes. Thus, assessing cognitive activation allows for a more sensitive and nuanced examination of how masculinity threats are internally processed.

Methods

Participants

A priori power analysis indicated a required sample size of 229 participants (see Power Analysis section). Eligibility criteria included self-identification as male, native-level proficiency in German, and a minimum age of 18 years.

Participants will be excluded based on the following predefined criteria: (a) producing fewer than 50% real words on the WFCT, indicating insufficient engagement or misunderstanding of the task; (b) expressing strong suspicion regarding the study's true purpose, particularly if they identify the feedback manipulation as fabricated; and (c) failing

the manipulation check by incorrectly recalling the feedback received on the Gender Knowledge Test (i.e., below average, average, or above average).

Participants will be recruited through the university, the author's social environment, and social media platforms. In exchange for participation, individuals may choose between receiving course credit or entering a prize lottery.

Ethical approval for this study will be sought from the Ethics Committee of the Department of Psychology at Humboldt University of Berlin.

Procedure

The procedure was adapted from Stanaland & Gaither (2021) and translated into German. After providing informed consent, participants were informed that the study concerned personality, motivation and common knowledge ("Persönlichkeit, Motivation & Allgemeinwissen") in men. They were also reminded that eligibility required identifying as male, native-level proficiency in German, and a minimum age of 18 years.

In the first section, participants completed the Motivation for Masculine Behavior scale. Next, they were informed they would complete a Gender-Identity-Self Inventory ("Geschlechtsidentität-Fragebogen") presumably measuring knowledge in areas that are typically associated with men or women in society-. In reality they completed the Gender Knowledge Test. Upon completion, participants received either (a) threatening feedback indicating a worse performance than the average person from their gender (b) non-threatening feedback indicating that they scored like the average person from their gender. This feedback was not based on participants' actual responses but was determined by experimental condition.

Following the feedback, participants completed the WFCT. For each item, they were instructed to complete a partial word by typing the missing letters. Items were presented in randomized order, with a five-second time limit per item to encourage spontaneous, intuitive responses.

Participants then completed a demographic questionnaire. Afterward, they were asked whether they had any suspicions about the study's true purpose and, if so, were invited to describe them. All participants were also asked to recall the type of feedback they had received on the Gender Knowledge Test, which served as a manipulation check.

Upon completing all study components, participants received a full debriefing. This included an explanation of the study's true purpose and a clarification that the feedback provided during the Gender Knowledge Test was fabricated and randomly assigned. The rationale for the deception was explained, and participants were offered the option to withdraw their data, in accordance with APA ethical standards (APA, 2017, Section 8.07c).

Finally, participants selected their preferred form of compensation.

Materials

All scales will be translated from English to German. The translation process will follow the Translation, Review, Adjudication, Pretesting, and Documentation (TRAPD) protocol (Harkness et al., 2010). For a preliminary version of the materials see Appendix A.

Motivation for Masculine Behavior

Nine items from the Gender Motivation Scale (Good & Sanchez, 2010) will be used to measure participants' motivation for enacting masculine behavior. Responses will be recorded on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Example items include: "Im Allgemeinen verhalte ich mich männlich, weil ich die Akzeptanz und Anerkennung anderer möchte." and "Ich bin gerne männlich".

Gender Knowledge Test

A culturally adapted version of the Gender Knowledge Test (Rudman & Fairchild, 2004) will be used. Thirty items, covering stereotypically masculine (e.g., sports, combat, home repair) and feminine (e.g., cooking, childcare, fashion) domains, were selected for cultural relevance to European participants (Valved et al., 2021). Items have moderate to high difficulty

to support the credibility of subsequent bogus feedback. Each item has one correct and one incorrect response option. Example items include: “Die Paste, die man zum Löten verwendet, heißt (Gel vs. Flussmittel)” and “Die erste Firma, die Haarfärbemittel entwickelte, war (Clairol vs. L’Oréal)”.

Masculinity Threatening and Non-Threatening Feedback

To administer a masculinity threat, participants were shown a diagram depicting a fictitious distribution of scores on the Gender Knowledge Test. In the non-threat condition, the participant’s score is close to the male average. In the threat condition, the participant is shown to have scored much lower than the average man.

Word Fragment Completion Task

The WFCT was used to assess aggressive and anxious cognition. Word fragments were developed by querying an online thesaurus using German terms related to aggression (“Wut,” “Ärger”) and anxiety (“Angst,” “Furcht”). Sixteen word fragments (eight aggressive, eight anxious) were presented in random order. Each could be completed in either an aggressive/anxious or neutral way (e.g., “_UT” could become “HUT” [neutral] or “WUT” [aggressive]; “_ANGEN” could become “WANGEN” [neutral] or “BANGEN” [anxious]).

Control of Experimental Manipulation

Participants were asked whether they had any suspicions about the study’s true purpose. If they answered affirmatively, they were prompted to describe their suspicions. All participants were then asked to recall the type of feedback they received on the Gender Knowledge Test (*below average, about average, or above average*). This served as a manipulation check.

Demographic Section

Participants reported their gender, age, level of education, and fluency in German.

Design

The study employed a between-subjects experimental design. Participants were randomly assigned to one of two conditions of the independent variable: threat condition (*threatening feedback* or *non-threatening feedback*). The primary dependent variable was performance on the WFCT to measure aggressive/anxious cognition. Additionally, motivation for masculine behavior was measured and examined as a moderator variable to assess whether it influenced the relationship between threat condition aggressive/anxious cognition, as measured by WFCT performance.

Power Analysis

To determine the appropriate sample size, four a priori power analyses were conducted using G*Power 3.1 (Faul et al., 2007). Additionally, the statistical complexity of the measurement model for the Motivation for Masculine Behavior was explored. Effect sizes and G*Power analyses can be found in Appendix B.

Masculinity threat effects

Previous studies have reported medium-sized effects of masculinity threat on aggressive cognition ($d = 0.56$) and anxious cognition ($d = 0.55$), both measured via the WFCT. Based on these estimates, a priori power analyses were conducted using one-tailed independent samples t-tests ($\alpha = .05$, power = .80). The analyses indicated required sample sizes of 82 participants for detecting effects on aggressive cognition and 84 participants for anxious cognition.

Moderation by motivation

For the moderation of pressured motivation on aggressive cognition, a small effect size was assumed ($f = 0.17$), consistent with prior findings on motivational moderators. Due to the absence of previous studies on the moderation of autonomous motivation on anxious cognition, the same conservative small effect size ($f = 0.17$) was used. Based on a linear multiple regression model including three predictors (threat condition, autonomous or

pressured motivation, and their two-way interaction), G*Power indicated a required sample size of 208 participants ($\alpha = .05$, power = .80).

Factorial Structure of Motivation for Masculine Behavior

To evaluate the hypothesized two-factor structure of the Motivation for Masculine Behavior scale via Confirmatory Factor Analysis (CFA), sample size requirements were determined based on common recommendations for CFA model stability. Following conservative guidelines, a minimum of 200 participants to ensure stable estimation and generalizability of the factor structure, particularly when factors are correlated and loadings are moderate (Hoogland & Boomsma, 1998).

Final Target Sample Size

Based on the largest required sample size (moderation analysis; 208 participants) and accounting for an estimated 10% exclusion rate, the final target sample size was set at 229 participants.

Data Analytic Plan

All analyses will be conducted using RStudio 4.2.3 (R Core Team, 2023).

Exclusion Criteria

Participants who did not meet the eligibility criteria (i.e., self-identification as male, native-level proficiency in German, and minimum age of 18 years) will be excluded from all analyses. Additionally, participants who produce fewer than 50% valid word completions in the WFCT, indicate strong suspicion about the study's purpose, or fail the manipulation check (i.e., incorrect recall of the feedback received) will also be excluded.

Factor Structure of Motivation for Masculine Behavior

A CFA will be conducted to evaluate the hypothesized two-factor structure of the Motivation for Masculine Behavior scale. The model specifies two latent constructs: (a) autonomous motivation and (b) pressured motivation. Model fit will be assessed using the

Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Additionally, factor loadings and inter-factor correlations will be examined to assess construct validity.

Scoring of Aggressive and Anxious Cognition

Responses on the WFCT will be coded based on a predefined list of target words corresponding to aggressive, anxious, or neutral word completions. Responses that do not match any predefined completion will be categorized as invalid or false completions and excluded from scoring. The proportion of valid completions categorized as aggressive or anxious will be computed for each participant. These proportions will serve as the operationalization of aggressive and anxious cognition, respectively. Given that these are proportion-based variables bounded between 0 and 1, an arcsine square root transformation will be used ensure the independency of value and variance (Winer et al., 1971).

Hypothesis Testing

Prior to hypothesis testing, assumptions of normality, homogeneity of variance, and linearity will be examined.

Hypotheses 1a and 1b. To test whether exposure to threatening feedback (vs. non-threatening feedback) leads to increased aggressive (H1a) or anxious (H1b) cognition, one-tailed independent samples t-tests will be conducted comparing the two feedback conditions on the respective dependent variables (aggressive and anxious word completions).

Hypotheses 2a and 2b. To examine whether motivation for masculine behavior moderates the effect of feedback type on aggressive (H2a) and anxious (H2b) cognition, moderation analyses will be conducted. Specifically, multiple linear regression models will be estimated with feedback condition (coded as a dummy variable), autonomous and pressured motivation (mean-centered), and their respective interaction terms as predictors. Separate

models will be run for aggressive and anxious cognition as outcomes. Significant interaction effects will be probed using simple slopes analysis and visualized using interaction plots.

Results

All statistical analyses were conducted on the proportion of aggressive (or anxious) word fragment completions for each participant.

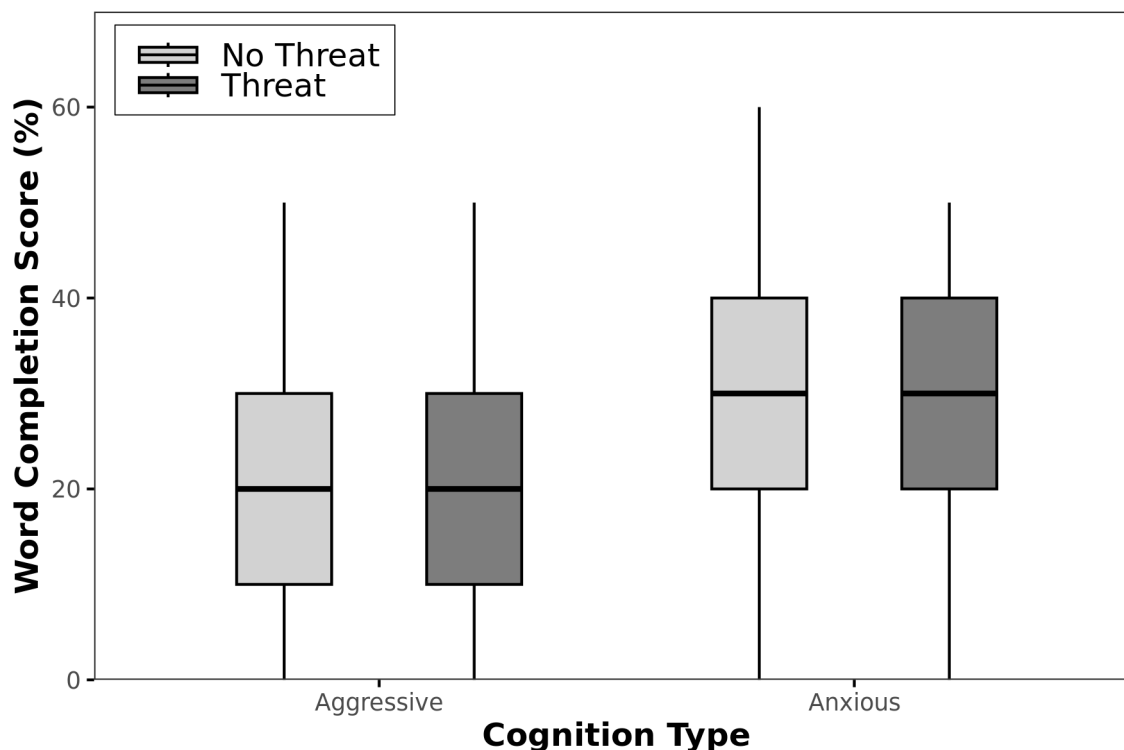
The word fragment completion task yields a count outcome bounded by the total number of trials, and therefore the dependent variable follows a binomial distribution. Accordingly, a Generalized Linear Model (GLM) with a binomial family and logit link function was used for all inferential tests.

To ensure robustness, several diagnostic checks were performed. Prior to the main analyses, Levene's tests assessed homogeneity of variance across conditions. Model diagnostics were evaluated using simulated residuals via the DHARMA package (Hartig, 2024). Because influential observations may distort the validity of the results (Aguinis et al., 2013), a sensitivity analysis was conducted by identifying cases exceeding a Cook's distance threshold of $\frac{4}{n-k}$, removing them, and refitting the model to confirm the stability of findings.

A significance level of $\alpha = .05$ was applied throughout. To control the family-wise error rate across analyses within the same outcome domain (aggressive vs. anxious cognition), p -values were adjusted using the Bonferroni-Holm correction (Abdi, 2010). Post-hoc power was calculated using G*Power 3 (Cunningham & McCrum-Gardner, 2007) and was considered sufficient when above the commonly used 80% criterion (Aberson, 2011).

Figure 2

Aggressive and Anxious Word Completion Scores by Threat Condition



Note. Boxplots display the distribution of aggressive and anxious word completion scores (%) by experimental condition. The horizontal line represents the median, boxes represent the interquartile range, and whiskers extend to 1.5 times the interquartile range.

Masculinity Threat Effects

Figure 2 displays the distribution of aggressive and anxious cognition scores by threat condition.

Masculinity Threat on Aggressive Cognition (Hypothesis 1a)

Hypothesis 1a predicted higher aggressive cognition in the threat condition compared to the no-threat condition. Contrary to this prediction, descriptive statistics indicated the opposite pattern: aggressive cognition was lower in the threat condition ($M = 19.5$, $SD = 12.3$) than in the no-threat condition ($M = 22.8$, $SD = 12.3$).

Assumption checks were satisfactory: Levene's test indicated homogeneous variances, and DHARMA residual diagnostics revealed no significant deviations from the expected

distribution. A binomial GLM was conducted to test the effect of threat condition on aggressive cognition. The model revealed no statistically significant difference between conditions ($z = -1.59, p = .111$). Given the directional hypothesis (predicted $\beta > 0$) and the observed effect in the opposite direction, the one-tailed p -value was $p = .944$, leading to a failure to reject the null hypothesis.

A sensitivity analysis was performed by identifying and excluding five influential observations. The GLM refitted on the reduced sample continued to show no significant effect ($z = -1.48, p = .139$ one-tailed $p = .93$).

Masculinity Threat on Anxious Cognition (Hypothesis 1b)

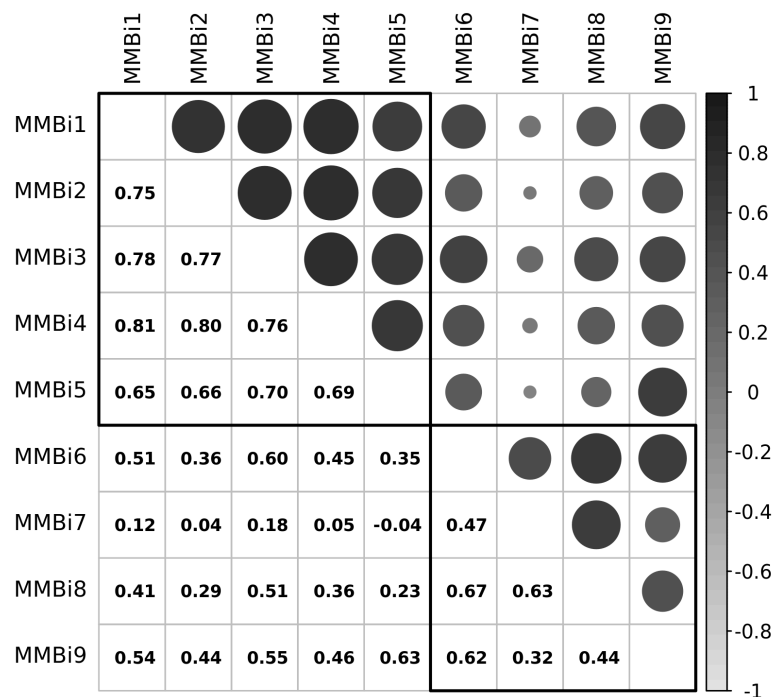
Hypothesis 1b predicted higher anxious cognition in the threat condition compared to the no-threat condition. Descriptive statistics revealed virtually identical means across conditions: the threat condition ($M = 0.3, SD = 0.1$) and the no-threat condition ($M = 0.3, SD = 0.2$) showed no meaningful difference.

Assumption checks were satisfactory: Levene's test indicated homogeneous variances, and DHARMA residual diagnostics revealed no significant deviations from the expected distribution. A binomial GLM was conducted to test the effect of threat condition on anxious cognition. The model revealed no statistically significant difference between conditions ($z = 0.18, p = .859$). Given the directional hypothesis (predicted $\beta > 0$), the one-tailed p -value was $p = .430$, leading to a failure to reject the null hypothesis.

A sensitivity analysis was performed by identifying and excluding five influential observations. The GLM refitted on the reduced sample continued to show no significant effect ($z = 1.04, p = .3$ one-tailed $p = .15$).

Moderation of Masculinity Threat Effects

Factor Structure of Motivation for Masculine Behavior

Figure 3*Polychoric Correlation Matrix for MMB Items*

Note. Items 1–5 = Pressured Motivation subscale; Items 6–9 = Autonomous Motivation subscale. Rectangles indicate the hypothesized factor structure. Darker shading indicates stronger positive correlations.

Prior to the moderation analysis, the validity and reliability of the MMB scale were assessed (see Figure 3 for correlations and Table 6 for item descriptives). The Kaiser-Meyer-Olkin (KMO) criterion yielded an overall Measure of Sampling Adequacy of .85, indicating the data were suitable for factor analysis. The hypothesized two-factor model by Stanaland & Gaither (2021) specified uncorrelated latent factors for Pressured Motivation (Items 1–5) and Autonomous Motivation (Items 6–9). A Confirmatory Factor Analysis (CFA) was conducted to validate this structure; however, the fit indices did not satisfy the predefined criteria (CFI = .85, TLI = .8, RMSEA = .18, SRMR = .25).

To better understand the data structure, an Exploratory Factor Analysis (EFA) with oblimin rotation was conducted. A parallel analysis and scree plot supported a two-factor solution. The resulting factor loadings (Table 1) showed strong coherence for Items 1–5 on the first factor (Pressured Motivation). However, Item 9 (“It is important to me not to be feminine”) displayed a cross-loading on both factors, suggesting poor discriminant validity.

Table 1

EFA Factor Loadings for Motivation for Masculine Behavior Scale

Item	Description	Factor 1	Factor 2
1	In general, I’m masculine because I want others’ acceptance and approval.	.83	
2	In general, I’m masculine because that is what people expect from me.	.90	
3	I’m masculine because I want people to like me.	.79	
4	I’m masculine around other people because that is how others think I should be.	.89	
5	I’m not feminine because people wouldn’t like me.	.78	
6	It’s important to me to be masculine.		.69
7	I enjoy being masculine.		.74
8	It makes me happy if I’m masculine.		.80
9	It is important to me not to be feminine.	.39	.39

Note. Factor loadings below .30 are suppressed for clarity. Factor 1 = Pressured Motivation; Factor 2 = Autonomous Motivation. Extraction method: Maximum Likelihood with oblimin rotation.

A subsequent CFA allowing correlation between the two latent factors notably improved model fit (CFI = .9, TLI = .86, RMSEA = .15, SRMR = .1), yet the predefined criteria were still not satisfied.

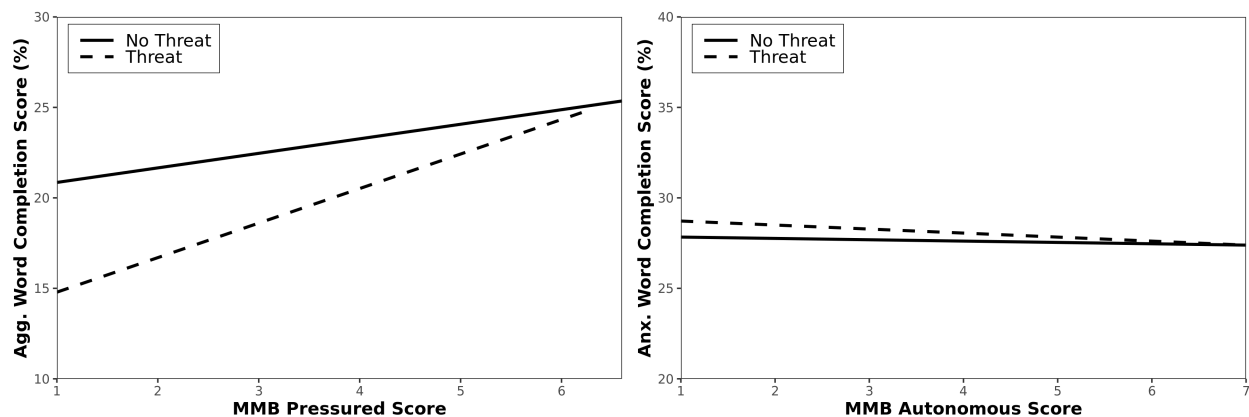
Based on the EFA results, Item 9 was removed due to its cross-loading. Examination of modification indices further suggested a residual covariance between Items 7 and 8, which is

conceptually plausible as both items express positive affect toward masculine identity (“enjoy,” “happy”). A final CFA on the 8-item scale, allowing correlation between the latent factors and between the residuals of Items 7 and 8, yielded acceptable fit (CFI = .97, TLI = .95, RMSEA = .1, SRMR = .07). The CFI and SRMR satisfied the target values of .95 and .08, respectively. While the TLI fell slightly below the .95 threshold and the RMSEA remained elevated, both showed substantial improvement. This pattern may be partially attributable to the limited sample size ($N = 154$).

Finally, reliability was assessed using McDonald’s omega (ω), which does not assume tau-equivalence. The Pressured Motivation subscale showed excellent reliability ($\omega = .93$), while the Autonomous Motivation subscale showed acceptable reliability ($\omega = .70$). For the subsequent moderation analyses, subscale scores were computed as row means, with Item 9 excluded from the Autonomous Motivation scale.

Figure 4

Moderation of word completion scores by motivation for masculine behaviour



Note. TODO

Pressured Motivation on Aggressive Cognition (Hypothesis 2a)

...

Figure 4 illustrates the moderation of

Autonomous Motivation on Anxious Cognition (Hypothesis 2b)

...

Experimental Manipulation Check

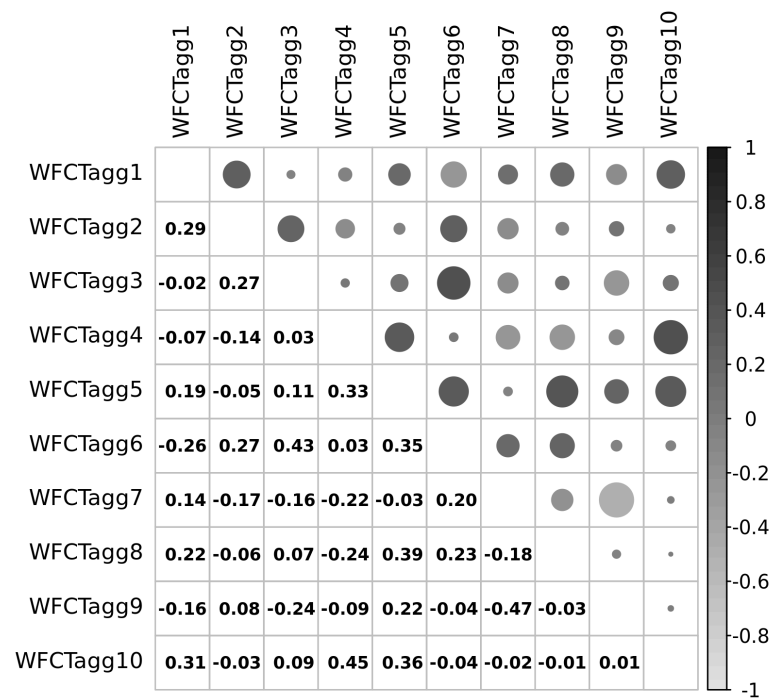
To assess whether the experimental manipulation (threat vs. no-threat feedback on the Gender Knowledge Test) was effective, two measures were examined.

First, participants were asked at the end of the questionnaire to indicate which feedback they had received, on a scale from 1 (stereotypically feminine) to 10 (stereotypically masculine). Descriptive statistics confirmed a clear distinction between conditions: the threat condition ($M = 3.1$, $SD = 0.9$) reported substantially lower scores than the no-threat condition ($M = 6.2$, $SD = 1$). This indicates that participants accurately recalled the feedback they received.

Second, participants were asked to self-evaluate their gender knowledge on the same scale. Descriptive statistics showed lower self-evaluations in the threat condition ($M = 5.7$, $SD = 1.4$) than in the no-threat condition ($M = 6.8$, $SD = 1.4$). A t -test confirmed that participants in the threat condition rated their gender knowledge significantly lower than those in the no-threat condition ($t(154) = 4.74$, $p = < .001$). Together, these results indicate that the manipulation was successful in inducing a perceived threat to masculine identity.

Test Quality: Aggressive Cognition**Figure 5**

Tetrachoric Correlation Matrix for Aggressive Word Fragment Items



Note. Darker shading indicates stronger positive correlations. Item descriptives are provided in Table 7.

To assess whether the aggressive word fragment task is a valid and reliable measure of aggressive cognition, internal consistency was examined (see Figure 5 for correlations and Table 7 for item descriptives). The tetrachoric correlation matrix revealed weak and inconsistent correlations among items, including several negative correlations. If items measured the same latent construct, positive intercorrelations would be expected; this pattern suggests that the items do not form a coherent unidimensional construct. Moreover, Item 7 was negatively correlated with the first principal component, indicating it may measure a different construct than the remaining items.

Item-level response rates revealed substantial variability in aggressive completion rates. Several items had very low positive rates, such as Item 5 (3.3%) and Item 1 (4.8%), while others exceeded 50%, such as Item 10 (63.8%) and Item 6 (51.3%). Additionally, some items showed

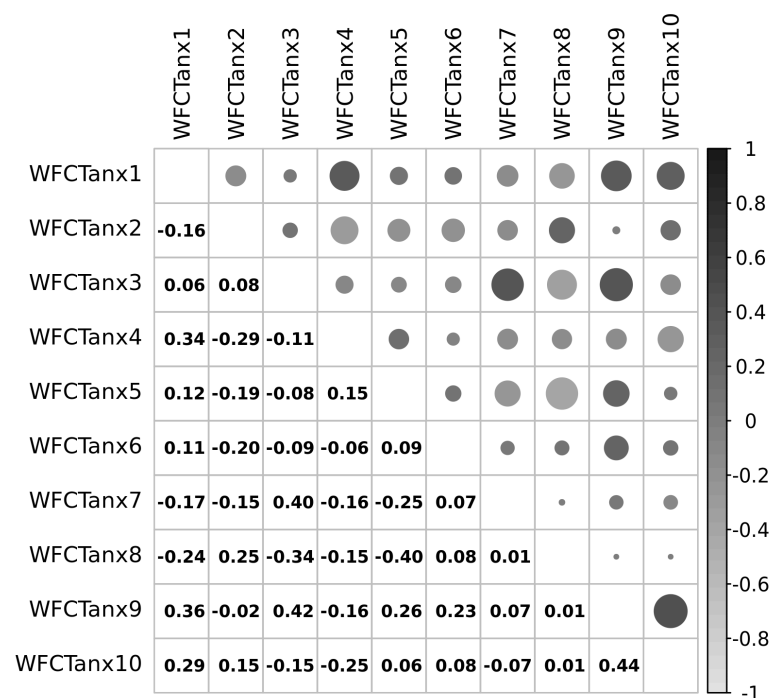
elevated missing responses, with Items 8, 10, 9, and 7 each having more than 10 missing values. This imbalance compromises the scale's ability to discriminate between individuals.

The Kaiser-Meyer-Olkin criterion yielded an overall MSA of .16, well below the acceptable threshold of .60, indicating the data were not suitable for factor analysis. Cronbach's alpha was $\alpha = .36$, indicating poor internal consistency. Given the lack of evidence for unidimensionality and the poor reliability, the aggressive cognition score was computed as the proportion of aggressive completions (row means across items) rather than factor scores.

Test Quality: Anxious Cognition

Figure 6

Tetrachoric Correlation Matrix for Anxious Word Fragment Items



Note. Darker shading indicates stronger positive correlations. Item descriptives are provided in Table 8.

To assess whether the anxious word fragment task is a valid and reliable measure of anxious cognition, internal consistency was examined (see Figure 6 for correlations and Table 8

for item descriptives). Similar to the aggressive cognition items, the tetrachoric correlation matrix revealed weak and inconsistent correlations among items, including several negative correlations. This pattern suggests that the items do not form a coherent unidimensional construct. Furthermore, Items 2, 7, and 8 were negatively correlated with the first principal component, suggesting they may not measure the same construct as the remaining items.

Item-level response rates revealed even greater variability than the aggressive cognition scale. Some items had very low positive rates, such as Item 2 (3.4%) and Item 8 (7.9%), while others were completed with the anxious word by the vast majority of participants, such as Item 9 (85.7%) and Item 3 (85.2%). Notably, Items 3 and 9 also showed substantial missingness, with 46 and 49 missing responses respectively—approximately 30% of the sample. This pattern suggests these items may have been particularly difficult or ambiguous for participants.

The Kaiser-Meyer-Olkin criterion yielded an overall MSA of .30, below the acceptable threshold of .60, indicating the data were not suitable for factor analysis. Cronbach's alpha was $\alpha = .09$, indicating unacceptable internal consistency. As with the aggressive cognition scale, the anxious cognition score was computed as the proportion of anxious completions (row means across items) rather than factor scores.

In summary, neither the aggressive nor the anxious word fragment completion task demonstrated adequate psychometric properties in this sample. The lack of internal consistency and the substantial item-level variability in response rates and missingness cast doubt on the validity of these measures as indicators of latent aggressive or anxious cognition.

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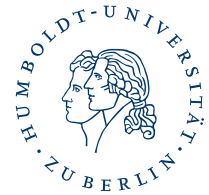
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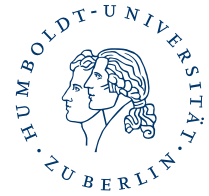
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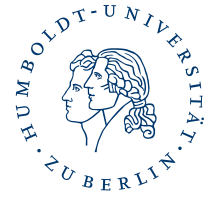
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Ggf. weitere Erklärungen:

Appendix A

Materials Supplement

Motivation For Masculine Behavior

Table1

Motivation for Masculine Behavior Scale Items

Item	Subscale	English (Original)	German (Translation)
1	P	In general, I'm masculine because I want others' acceptance and approval.	Im Allgemeinen verhalte ich mich männlich, weil ich die Akzeptanz und Anerkennung anderer möchte.
2	P	In general, I'm masculine because that is what people expect from me.	Im Allgemeinen bin ich männlich, weil das von mir erwartet wird.
3	P	I'm masculine because I want people to like me.	Ich verhalte mich männlich, weil ich möchte, dass man mich mag.
4	P	I'm masculine around other people because that is how others think I should be.	Ich verhalte mich in Gegenwart anderer männlich, um ihre Erwartungen zu erfüllen.
5	P	I'm not feminine because people wouldn't like me.	Ich bin nicht weiblich, weil ich glaube, dass mich die Leute sonst nicht mögen würden.
6	A	It's important to me to be masculine.	Es ist mir wichtig, männlich zu sein.
7	A	I enjoy being masculine.	Ich bin gerne männlich.
8	A	It makes me happy if I'm masculine.	Es macht mich glücklich, wenn ich männlich bin.
9	A	It is important to me not to be feminine.	Es ist mir wichtig, nicht weiblich zu sein.

Note. P = Pressured Motivation subscale; A = Autonomous Motivation subscale. Items rated on a 7-point Likert scale (1 = "Disagree Strongly" to 7 = "Agree Strongly").

Gender Knowledge Test

Table2

Gender Knowledge Test Items

Item	Type	English (Original)	German (Translation)
1	M	A motorcycle engine turning at 8000 rpms generates an exhaust sound at (4000 rpms vs. 8000 rpms)	Ein Motorrad mit 8000 Umdrehungen pro Minute erzeugt ein Auspuffgeräusch bei (4000 U/min vs. 8000 U/min)
2	M	To help an engine produce more power you should (inject the fuel vs. reduce displacement)	Um die Leistung eines Motors zu erhöhen, sollte man (den Kraftstoff einspritzen vs. den Hubraum verringern)
3	M	In nature, the best analogy for a spark plug is (solar fire vs. lightning)	In der Natur entspricht eine Zündkerze am ehesten (Sonnenfeuer vs. Blitz)
4	M	Karate originated in martial arts developed in (Japan vs. China)	Karate entstand aus Kampfkünsten, entwickelt in (Japan vs. China)
5	M	Soldiers in WWII often used what type of guns? (Gatling vs. Tommy)	Welche Art von Gewehren wurde im Zweiten Weltkrieg oft von Soldaten verwendet? (Gatling vs. Tommy)
6	M	The groove inside the barrel of a revolver is (spiraled vs. smooth)	Die Rillen im Lauf eines Revolvers sind (spiralförmig vs. glatt)
7	M	If you need to replace the tank ball in a toilet, ask for a (flapper vs. ball cock)	Wenn man den Schwimmer im Spülkasten austauschen muss, fragt man nach (einer Absperrklappe vs. einem Kugelhahn)
8	M	The paste used for soldering joints is called (gel vs. flux)	Die Paste, die man zum Löten verwendet, heißt (Gel vs. Flussmittel)
9	M	Hugh Hefner first published Playboy magazine in (1963 vs. 1953)	Hugh Hefner veröffentlichte das erste Playboy-Magazin im Jahr (1963 vs. 1953)
10	M	Arnold Schwarzenegger killed more people in which film? (True Lies vs. Total Recall)	In welchem Film tötete Arnold Schwarzenegger mehr Menschen? (True Lies vs. Total Recall)

Item	Type	English (Original)	German (Translation)
11	M	By Olympic rules, boxing gloves for all weight classes weigh (12 ounces vs. 10 ounces)	Laut Olympischen Regeln wiegen Boxhandschuhe in allen Gewichtsklassen (12 Unzen vs. 10 Unzen)
12	M	When punching someone, you should aim your fist (a foot beyond target vs. directly at target)	Beim Zuschlagen sollte die Faust worauf gerichtet sein? (hinter das Ziel vs. direkt auf das Ziel)
13	M	When punching someone, the majority of the force comes from (the speed of your fist vs. your upper arm and shoulder)	Beim Zuschlagen kommt die meiste Kraft von (der Geschwindigkeit der Faust vs. dem Oberarm und der Schulter)
14	M	What's the best way to deflect a punch? (use the forearm vs. use hand)	Was ist der beste Weg, einen Schlag abzuwehren? (mit dem Unterarm zum Block vs. mit der Hand fangen)
15	M	When ramming a car to disable it, you should aim for the (rear passenger's tire vs. front driver's tire)	Wenn man ein Auto rammt, um es außer Gefecht zu setzen, sollte man worauf zielen? (hinteren Beifahrerreifen vs. vorderen Fahrerreifen)
16	F	You wear Manolo Blahniks on your (head vs. feet)	Man trägt Manolo Blahniks am (Kopf vs. Fuß)
17	F	Botox temporarily erases wrinkles by (skin hydration vs. muscle paralysis)	Botox glättet Falten vorübergehend durch (Hautbefeuchtung vs. Muskelentspannung)
18	F	The company first to develop hair coloring was (Clairol vs. L'Oreal)	Die erste Firma, die Haarfärbemittel entwickelte, war (Clairol vs. L'Oréal)
19	F	The TV show "Sex in the City" popularized which drink? (Cosmopolitan vs. Manhattan)	Welches Getränk machte die Sendung "Sex and the City" populär? (Cosmopolitan vs. Manhattan)
20	F	Children typically start to teethe when they are (over vs. under) 1 year old?	In welchem Alter beginnen Kinder typischerweise mit dem Zahnen? (über 1 Jahr vs. unter 1 Jahr)

Item	Type	English (Original)	German (Translation)
21	F	Toilet training should start around the age of (36 months vs. 12 months)	In welchem Alter sollte das Toilettentraining beginnen? (36 Monate vs. 12 Monate)
22	F	Children should not be given which medication? (ibuprofen vs. aspirin)	Welches Medikament sollte Kindern nicht gegeben werden? (Ibuprofen vs. Aspirin)
23	F	How many cups of water does it take to cook 1 cup of rice? (2 vs. 3)	Wie viele Tassen Wasser braucht man, um 1 Tasse Reis zu kochen? (2 Tassen vs. 3 Tassen)
24	F	Leftovers can be safely kept at room temperature for up to (4 hours vs. 2 hours)	Wie lange können Reste bei Zimmertemperatur bedenkenlos aufbewahrt werden? (4 Stunden vs. 2 Stunden)
25	F	If you don't have baking powder, you substitute baking soda plus (salt vs. cream of tartar)	Wenn kein Backpulver vorhanden ist, ersetzt man es durch Natron und (Salz vs. Weinstein)
26	F	A roux is best described as a (sauce vs. cake)	Eine Mehlschwitze ist am besten zu beschreiben als (Soße vs. Kuchen)
27	F	Compared to men, women need more (iron vs. zinc)	Im Vergleich zu Männern benötigen Frauen mehr (Eisen vs. Zink)
28	F	Which of these contains a natural mood enhancer? (chocolate vs. caviar)	Welches dieser Lebensmittel enthält einen natürlichen Stimmungsaufheller? (Schokolade vs. Kaviar)
29	F	During pregnancy, morning sickness usually occurs in which trimester? (second vs. first)	Während der Schwangerschaft tritt morgendliche Übelkeit normalerweise in welchem Trimester auf? (zweites vs. erstes)
30	F	Exercises that improve a woman's sex life are called (Kegel's vs. Pilates)	Übungen, die das Sexualleben einer Frau verbessern, heißen (Kegel-Übungen vs. Pilates)

Note. M = Masculine-stereotyped knowledge; F = Feminine-stereotyped knowledge. Correct answers are shown in bold in the original study materials. Items adapted from Vandello et al. (2008).

Masculinity Threatening and Non-Threatening Feedback

Threat Condition

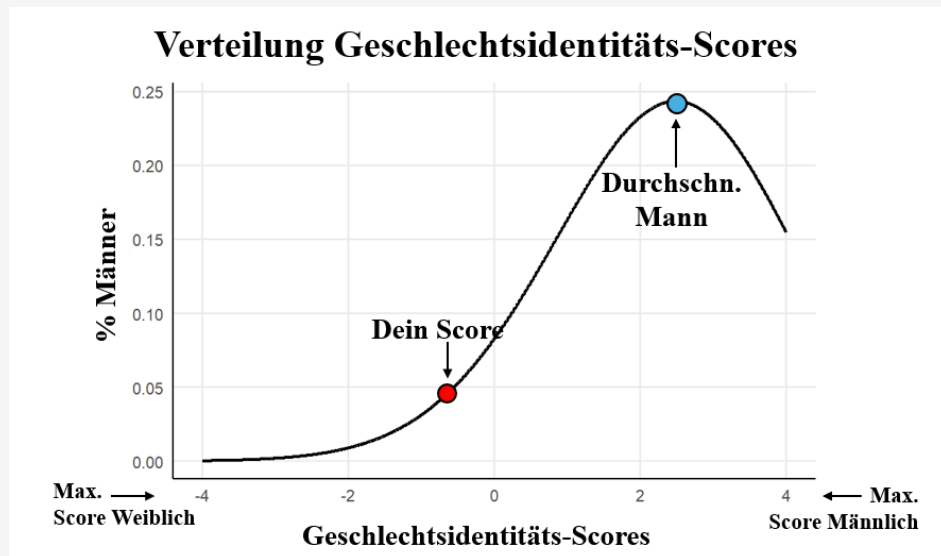
Glückwunsch – du hast den Geschlechtsspezifischen Wissenstest abgeschlossen!

Dieser Test wurde entwickelt, um Unterschiede im Wissen über geschlechtsspezifische Themen zu messen. Frühere Studien zeigen, dass bestimmte Wissensbereiche stärker mit traditionell männlich oder weiblich geprägten Rollen und Selbstbildern verbunden sind. Die Auswertung basiert auf einer Skala von –4 (ausgeprägt weiblich) bis +4 (ausgeprägt männlich).

Ihr Score beträgt: –1,83

Was bedeutet das?

Im Vergleich zu anderen männlichen Testteilnehmern, die im Durchschnitt einen Score von +2,24 erreichen, liegt ihr Ergebnis deutlich darunter. Dies weist darauf hin, dass ihre Antworten denen von Frauen ähnlicher sind als denen von Männern. In früheren Studien wurde ein solcher Score häufig mit einem weniger männlichen Selbstbild in Verbindung gebracht. Die folgende Grafik zeigt Ihren Wert im Vergleich zur typischen Verteilung unter männlichen Teilnehmern:



No-Threat Condition

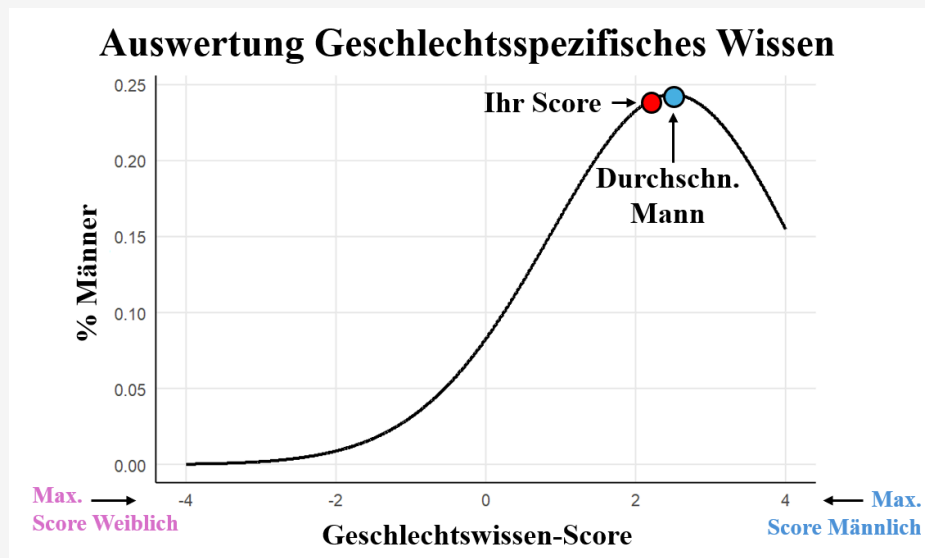
Glückwunsch – du hast den Geschlechtsspezifischen Wissenstest abgeschlossen!

Dieser Test wurde entwickelt, um Unterschiede im Wissen über geschlechtsspezifische Themen zu messen. Frühere Studien zeigen, dass bestimmte Wissensbereiche stärker mit traditionell männlich oder weiblich geprägten Rollen und Selbstbildern verbunden sind. Die Auswertung basiert auf einer Skala von -4 (ausgeprägt weiblich) bis +4 (ausgeprägt männlich).

Ihr Score beträgt: +2,18

Was bedeutet das?

Ihr Score liegt nahe beim Durchschnitt männlicher Teilnehmer, der bei +2,24 liegt. Das bedeutet, dass ihre Antworten typisch für männliche Testteilnehmer sind. In früheren Studien wurde ein solcher Score häufig mit einem ausgeglichenen und typischen Wissensprofil in geschlechtsspezifischen Themenbereichen in Verbindung gebracht. Die folgende Grafik zeigt Ihren Wert im Vergleich zur typischen Verteilung unter männlichen Teilnehmern:



Word Fragment Completion Task

Table3

Word Fragment Completion Task: Aggressive Cognition Items

Fragment	Aggressive	Neutral
_UT	Wut	Mut, Hut, Gut, Tut
_ORN	Zorn	Dorn, Korn, Horn, Vorn
_IER	Gier	Bier, Tier, Vier, Hier, Pier
_AGE	Rage	Vage, Tage, Sage, Lage, Page, Jage, Gage, Zage
_UNDE	Wunde	Runde, Hunde, Munde, Kunde, Bunde
_IEB	Dieb, Hieb	Sieb, Lieb, Rieb
_ASS	Hass	Nass, Fass, Bass, Dass, Pass, Lass, Mass
_OBEN	Toben	Loben, Hoben, Roben
_AGEN	Jagen, Wagen	Sagen, Tagen, Magen, Ragen, Nagen, Lagen, Zagen, Hagen
_AMPF	Kampf	Dampf, Mampf

Note. Fragment = word stem presented to participants. Aggressive = completions coded as aggressive cognition. Neutral = completions coded as neutral.

Table4

Word Fragment Completion Task: Anxious Cognition Items

Fragment	Anxious	Neutral
_ORGEN	Sorgen	Morgen, Borgen
_ANGEN	Bangen	Fangen, Wangen, Sangen, Rangen, Langen, Zangen
_EUE	Reue	Neue
_ROST	Trost	Prost, Frost
_AST	Last	Mast, Fast, Rast, Bast, Hast, Gast
_EERE	Leere	Beere, Heere, Teere
_ERN	Fern	Kern, Gern, Lern, Bern
_ESSEL	Fessel	Kessel, Sessel, Nessel
_ANISCH	Panisch	Manisch
_ANNE	Panne	Kanne, Tanne, Wanne

Note. Fragment = word stem presented to participants. Anxious = completions coded as anxious cognition. Neutral = completions coded as neutral.

Sample Size Planning

Table5

Effect Sizes for Masculinity Threat and Motivation of Masculine Behavior

Study	Dependent Variable	Effect Size	Note
Vandello et al. (2008), Study 4	anxious cognition	$d = 0.55$	-
Stanaland & Gaither (2021)	aggressive cognition	$d = 0.41$	-
Vandello et al. (2008), Study 5	aggressive cognition	$d = 0.91$	-
Stanaland et al. (2024)	aggressive cognition	$d = 0.35$	adolescents
Stanaland et al. (2024)	pressured motivation	$f = 0.17$	adolescents

Note. Effect Sizes for aggressive and anxious cognition induced by a masculinity threat. All studies measured aggressive and anxious cognition using a WFCT and induced operationalized masculinity threat via a negative feedback on the Gender Knowledge Test.

Figure1

Power Analysis for Masculinity Threat on Aggressive Cognition

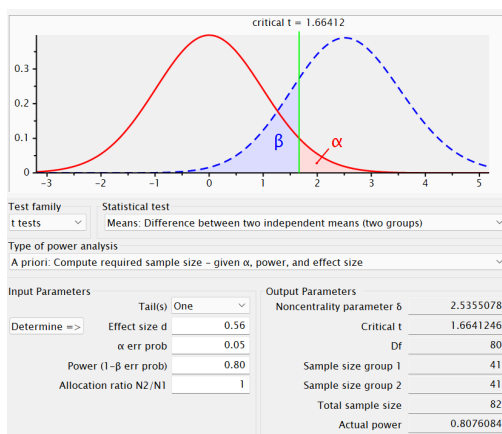
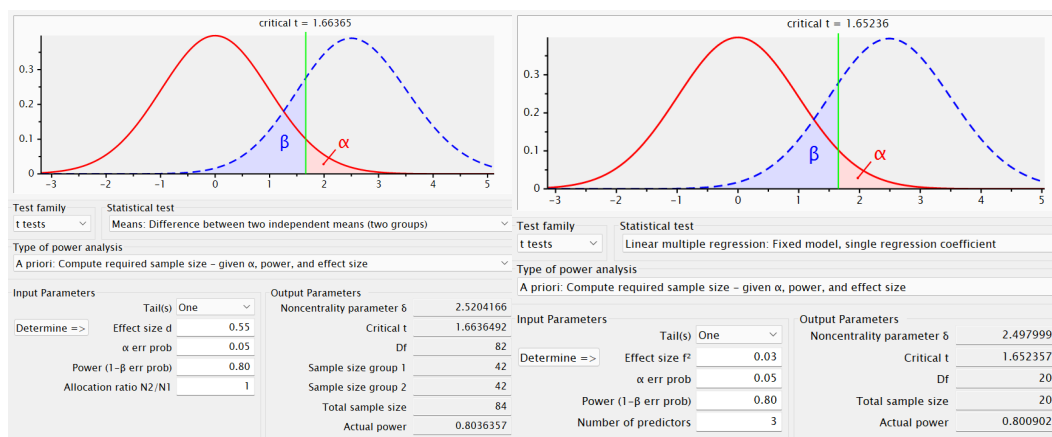


Figure2

Power Analysis for Masculinity Threat on Aggressive & Anxious Cognition

Appendix B

Results Supplement

Table6

Descriptive Statistics for Motivation for Masculine Behavior Items

Item	Description	<i>M</i>	<i>SD</i>
1	I'm masculine because I want others' acceptance and approval.	3.55	1.78
2	I'm masculine because that is what people expect from me.	3.75	1.74
3	I'm masculine because I want people to like me.	3.35	1.68
4	I'm masculine around other people because that is how others think I should be.	3.51	1.74
5	I'm not feminine because people wouldn't like me.	2.97	1.68
6	It's important to me to be masculine.	4.06	1.79
7	I enjoy being masculine.	5.29	1.49
8	It makes me happy if I'm masculine.	4.32	1.68
9	It is important to me not to be feminine.	3.26	1.77

Note. *N* = 154. Items 1–5 = Pressured Motivation subscale; Items 6–9 = Autonomous Motivation subscale. Items rated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree).

Table7

Response Frequencies for Aggressive Word Fragment Completion Items

Item	Fragment	Negative	Positive	% Positive	Missing
1	_UT	139	7	4.8	8
2	_ORN	130	20	13.3	4
3	_IER	138	11	7.4	5
4	_AGE	136	12	8.1	6
5	_UNDE	146	5	3.3	3
6	_IEB	74	78	51.3	2
7	_ASS	129	14	9.8	11
8	_OBEN	83	57	40.7	14
9	_AGEN	110	32	22.5	12
10	_AMPF	51	90	63.8	13

Note. Negative = neutral word completion; Positive = aggressive word completion. % Positive calculated excluding missing responses.

Table8

Response Frequencies for Anxious Word Fragment Completion Items

Item	Fragment	Negative	Positive	% Positive	Missing
1	_ORGEN	99	45	31.2	10
2	_ANGEN	140	5	3.4	9
3	_EUE	16	92	85.2	46
4	_ROST	107	38	26.2	9
5	_AST	94	46	32.9	14
6	_EERE	95	53	35.8	6
7	_ERN	121	23	16.0	10
8	_ESSEL	139	12	7.9	3
9	_ANISCH	15	90	85.7	49
10	_ANNE	120	24	16.7	10

Note. Negative = neutral word completion; Positive = anxious word completion. % Positive calculated excluding missing responses.

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