




Problematic pornography use as an externalizing depression symptom in cisgender men: A cross-sectional questionnaire study

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FULL-LENGTH REPORT



ABSTRACT

Background and aim: Depression is characterized by feeling sad, empty, hopeless, and a markedly diminished interest or pleasure in almost all daily activities. However, men often exhibit externalizing depression symptoms, such as abusing alcohol or drugs, or displaying irritability or anger, which align with how men are expected to be and behave, thus conforming to masculinity ideologies. The present study investigates whether problematic pornography use (PPU), which is characterized by poor impulse control and distressing or problematic perceptions of one's pornography consumption, may function as an externalizing depression symptom. *Methods:* We assessed depression, externalizing symptoms, conformity to masculinity ideologies, and PPU among 265 cisgender men (age: $M = 31.8$, $SD = 7.0$; 90.2% identified as heterosexual, 9.8% as sexual minority) living in German-speaking countries of Europe. A manifest mediation path model showed that more depressive symptoms (predictor) were associated with stronger conformity to masculinity ideologies (mediator), which in turn was linked to both more externalizing symptoms (Outcome 1) and increased PPU (Outcome 2). *Results:* The correlation between conformity to masculinity ideologies and externalizing symptoms was not significant. The two indirect paths from depressive symptoms to the two outcomes through conformity to masculinity ideologies did not differ significantly in strength. *Discussion and conclusions:* These findings suggest that PPU may serve a similar psychological function as other externalizing symptoms by allowing men to mask depressive symptoms through behaviors that align with masculinity ideologies. Future interventions should examine whether screening for PPU can help identify men experiencing mental health issues and employing maladaptive coping strategies.

KEYWORDS

problematic pornography use (PPU), masculinity ideologies, depression, externalizing symptoms, German-speaking men, gender

INTRODUCTION

Research shows that pornography consumption can be used to regulate emotions, distract from distress, suppress negative feelings, or cope with psychological discomfort (Koós et al., 2024). The present study investigates whether problematic pornography use may function as an externalizing depression symptom (Addis, 2008), particularly in men showing severe symptoms of depression and strong conformity to masculinity ideologies (Mahalik et al., 2003).

Depression

Depression is characterized by a range of symptoms, with depressed mood (i.e., feeling sad, empty, or hopeless) and a markedly diminished interest or pleasure in almost all daily

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activities persisting for over two weeks as central features. Other cognitive, behavioral, and neurovegetative symptoms significantly impair an individual's ability to function, such as psychomotor agitation or retardation, fatigue or loss of energy, diminished ability to think or concentrate, indecisiveness, reduced self-esteem, and recurrent thoughts of death or suicidal ideation (American Psychiatric Association, 2022; World Health Organization, 2025). Globally, the estimated 12-month prevalence of depression is between 4% and 5% (Marx et al., 2023), with European estimates reaching 6.9% (Wittchen et al., 2011). Lifetime prevalence is estimated to exceed 30% (Marx et al., 2023). Depression accounts for over 7.3% of the total disease burden in Europe and imposes substantial societal costs through sick days, disability, and early retirement (Wittchen et al., 2011).

A meta-analysis of over 65 studies found that women are, on average, twice as likely to experience depression as men (Salk, Hyde, & Abramson, 2017). However, the prevalence of depression in men may be underestimated, as men more frequently express depression symptoms that are not included in standard diagnostic classification criteria, such as those in the International Classification of Diseases – 11th Revision (ICD-11) or the Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition – Text Revision (DSM-5-TR) (American Psychiatric Association, 2022; World Health Organization, 2025). Men are more likely than women to express depression through externalizing symptoms, such as engaging in risky behaviors, suppressing or distracting themselves from depressive feelings, abusing alcohol or drugs, displaying irritability or anger, or socially withdrawing (Spendelov, 2015). The DSM-5-TR highlights that men “may be more likely than depressed women to report greater frequencies and intensities of maladaptive self-coping and problem-solving strategies, including alcohol or other drug misuse, risk taking, and poor impulse control” (American Psychiatric Association, 2022, p. 362).

Masculinity and externalizing depression symptoms

The masked depression framework (Addis, 2008) suggests that men are more likely to exhibit externalizing symptoms because such behaviors align with prevailing masculinity ideologies. Masculinity ideologies are culturally defined expectations of male behavior, emphasizing self-reliance, emotional stoicism, sexual interest and activity, confidence, competence, physical toughness, and risk-taking, including alcohol consumption (Pleck, 1995; Pleck, Sonenstein, & Ku, 1993). Men differ in the extent to which they conform to masculinity ideologies (Mahalik et al., 2003), and research shows that men with stronger conformity to masculinity ideologies are particularly likely to exhibit externalizing depression symptoms (Eggenberger, Komlenac, Ehlert, Grub, & Walther, 2022; McDermott, Addis, Gazarian, Eberhardt, & Brasil, 2022).

Externalizing symptoms may also serve as coping strategies for men experiencing depression (Addis, 2008; Chuick et al., 2009). However, such strategies are often considered maladaptive because, although they may provide short-term

relief, they pose health risks and may contribute to further distress (Addis, 2008; Chuick et al., 2009).

Problematic pornography use as maladaptive coping

Another coping strategy discussed under the mood management theory (Zillmann, 1988), which suggests that individuals select specific media or messages to regulate their mood states, is pornography consumption. Research has identified a link between an increased number of depression symptoms and frequent pornography consumption (Singareddy et al., 2025). Studies also indicate that individuals use pornography to regulate emotions, distract from distress, suppress negative feelings, or cope with psychological discomfort (Koós et al., 2024). However, pornography consumption as a strategy for managing negative emotions is associated with problematic pornography use (PPU) (Castro-Calvo, Giménez-García, Gil-Llario, & Ballester-Arnal, 2018).

In line with the 11th revision of the International Classification of Diseases (ICD-11), PPU can be a manifestation of compulsive sexual behavior disorder. PPU is characterized by a persistent pattern of failure to control intense, repetitive impulses or urges, resulting in frequent pornography consumption that is accompanied by distress, problematic self-perceptions, and impairments in social and functional domains (Kor et al., 2014; World Health Organization, 2024). Moreover, PPU has been linked to emotion regulation difficulties and maladaptive coping mechanisms for stress (Testa, Villena-Moya, & Chiclana-Actis, 2024). Supporting the notion that PPU functions as a maladaptive coping strategy, a longitudinal study found that among men, higher levels of negative emotions and impulsivity predicted increased PPU three years later (Rousseau, Bóthe, & Štulhofer, 2021).

AIM OF THE STUDY

Based on the masked depression framework (Addis, 2008), we examined the link between depression symptoms and conformity to masculinity ideologies and expected with strong depression symptoms to “mask” these symptoms by enacting behaviors aligned with masculinity ideologies. This expectation is in line with previous research that showed that increased conformity to masculinity ideologies is associated with more externalizing depression symptoms (Eggenberger et al., 2022; McDermott et al., 2022). Additionally, based on the mood management theory (Zillmann, 1988) and past findings linking increased conformity to masculinity ideologies to PPU, especially in men with low self-esteem (Borgogna, McDermott, Browning, Beach, & Aita, 2019; Borgogna, McDermott, Berry, & Browning, 2020), the present study investigates whether PPU functions as an externalizing depression symptom. If PPU serves as a coping strategy, similar to other externalizing symptoms of depression, men with high levels of depressive symptoms may engage in PPU to alleviate emotional distress and to

mask their depression through behaviors that align with masculinity ideologies (Addis, 2008). Therefore, similar relationships between depressive symptoms, conformity to masculinity ideologies, and either externalizing symptoms or problematic pornography use were expected. The tested model is presented in Fig. 1, and the following hypotheses are examined:

- H1 Increased symptoms of depression are associated with stronger conformity to masculinity ideologies, which in turn is associated with more externalizing depression symptoms.
- H2 Increased symptoms of depression are associated with stronger conformity to masculinity ideologies, which in turn is associated with increased problematic pornography use.

METHOD

Procedure

This study represents a secondary analysis of data collected as part of a larger project evaluating the effectiveness of a men-specific psychotherapeutic program for major depressive disorder, in comparison to cognitive behavioral therapy (CBT) and a waitlist condition (Walther et al., 2023).

Data collection for the present study took place between December 2022 and October 2024 through targeted recruitment in the wider area of Zurich via newspapers, institutional mailing lists and online advertisements, and mental health networks. The survey was hosted on UniPark (Tivian XI GmbH, Cologne, Germany) and RedCap (REDCap Consortium, Nashville, TN, USA).

Inclusion criteria required participants to identify as cisgender men, be between 25 and 50 years old, and have proficiency in German. As the project focused on different psychotherapy treatments for depression in men, the study

recruited two groups: men with moderate to severe symptoms of depression who self-reported no previous psychiatric disorders or history of psychotherapy or psychopharmacological treatment, and healthy men with no or mild symptoms of depression who self-reported no current or past psychiatric disorders or history of psychotherapy or psychopharmacological treatment. All participants completed two online screenings that included different sets of questions. As the data were collected at a single point in time for each variable, the present study applied a cross-sectional design. Participants provided informed consent online for both the screenings and study participation, agreeing to the storage and use of their data for scientific purposes. As compensation, participants received between CHF 150 and CHF 200, as well as free psychotherapy, depending on the study group they were assigned to in the main project.

Final sample composition

A total of 2,148 individuals entered the baseline screening after providing informed consent. Of these, 501 did not identify as men, 179 did not meet the age criteria, and 25 were excluded due to insufficient German proficiency. Additionally, 545 individuals were excluded because of self-reported current or past psychopharmacological or psychological treatment. Another 134 participants were removed for leaving large portions of the survey (i.e., entire scales) incomplete, and 210 did not respond to or attend both screenings. Because the main project included a treatment group that required participants to meet specific thresholds for depressive symptoms (PHQ-9 sum score ≥ 10 or MDRS-22 sum score ≥ 51 ; Kroenke, Spitzer, & Williams, 2001; Rice, Fallon, Aucote, & Möller-Leimkühler, 2013), an additional 64 participants who had registered for the treatment study but did not meet the criteria for depression were excluded from the present analysis (Walther et al., 2023).

Measures

Sociodemographic information. Sociodemographic information was collected using self-constructed questions addressing participants' age, gender identity (Fraser, 2018), sex assigned at birth, sexual orientation (i.e., identity label) (Young & Bond, 2023), relationship status, highest level of education, occupation, and nationality. Additionally, participants were asked whether they had children. For the analysis, response categories with few observations were grouped into larger categories to ensure meaningful sample descriptions while maintaining 10 – 15 observations per category to avoid unreliable parameter estimates and inflated standard errors (Field, 2009). For example, heterosexually identifying men were distinguished from sexual minority men by combining participants who identified as gay (4.9%), bisexual (3.8%), or indecisive (1.1%) into one category. The exact recoding of categories for each variable is detailed in Table A1 in the Appendix.

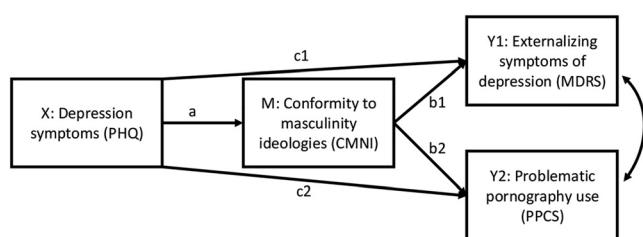


Fig. 1. Manifest Mediation Path Model Testing Problematic Pornography Use as an Externalizing Symptom of Depression. Note. Age, sexual orientation, relationship status, parental status (having children), education, occupation, and nationality were included as covariates predicting externalizing symptoms of depression and problematic pornography use (not shown in the figure). Paths a, b1, b2, c1, and c2 represent the tested path coefficients. PHQ = Patient Health Questionnaire – 9; CMNI = Conformity to Masculine Norms Inventory – 30; MDRS = Male Depression Risk Scale – 22; PPCS = Problematic Pornography Consumption Scale – 18.

Depression. The Patient Health Questionnaire (PHQ-9) assesses how often participants experienced different symptoms of depression (e.g., “little interest or pleasure in doing things”) over the past two weeks using nine items (Kroenke et al., 2001). Responses are given on a four-point Likert scale (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day). The internal consistency of the English-language version is reported to be Cronbach’s $\alpha = 0.86 - 0.89$ (Kroenke et al., 2001), while the German-language version has been reported to have Cronbach’s $\alpha = 0.88$ (Gräfe, Zipfel, Herzog, & Löwe, 2004; Löwe, Spitzer, Zipfel, & Herzog, 2002). In the present study, mean scores across all symptoms were calculated, with higher scores representing more symptoms of depression. The internal consistency exceeded 0.85 (Table 1).

The Male Depression Risk Scale (MDRS-22) (Rice et al., 2013) assesses externalizing symptoms of depression (Addis, 2008) over the past month using 22 items. Participants rated how often they experienced symptoms on an eight-point Likert scale (1 = not at all (0 days); 8 = almost always (25 or more days)). The MDRS-22 captures externalizing symptoms such as anger, aggression, hostility, distraction, emotional suppression, withdrawal from relationships, risk-taking, alcohol or drug abuse, irritability, and somatic symptoms (e.g., stomach pain). The English-language version has Cronbach’s $\alpha = 0.91$ (Rice et al., 2013), while the German-language version reports $\lambda^2 = 0.62 - 0.91$ (Walther et al., 2021). In the present study, a mean score across all items was used, with higher scores indicating more externalizing symptoms. The internal consistency was 0.89 (Table 1).

Conformity to masculinity ideologies. The present study used the German-language version (Komlenac et al., 2023) of the Conformity to Masculine Norms Inventory (CMNI) (Mahalik et al., 2003) to assess the extent to which participants conform to behaviors aligned with traditional masculinity ideologies (e.g., “I will do anything to win.”). Participants rated their agreement with each statement on a six-point Likert scale (0 = strongly disagree; 5 = strongly agree). A mean score across all 30 items was calculated, with

higher scores indicating stronger conformity to masculinity ideologies. The English-language total score has been reported to have Cronbach’s $\alpha = 0.94$ (Mahalik et al., 2003). In the German-language version, McDonald’s ω ranged from 0.63 to 0.94 (Komlenac et al., 2023). In the present study, the total score had an internal consistency of Cronbach’s $\alpha = 0.79$ (Table 1).

Problematic pornography use. Participants’ problematic pornography use, i.e., whether pornography consumption takes a prominent role in everyday life, is used for emotion regulation, or causes conflicts with social functioning, was assessed using the Problematic Pornography Consumption Scale (PPCS) (Böthe et al., 2018). The scale also includes items assessing whether participants increase the intensity of pornography use (i.e., frequency or content-related intensity), whether participants have attempted but failed to reduce pornography consumption, and whether they experience withdrawal symptoms, i.e., unpleasant feelings when not consuming pornography. Participants indicated on a seven-point Likert scale how frequently (1 = never, 7 = all the time) they experienced a certain indicator of problematic pornography use (e.g., “Watching porn got rid of my negative feelings”) over the past six months. In the present study, the German-language version was used (Böthe et al., 2024). Previous research reported Cronbach’s α values ranging from 0.93 to 0.95 in the present study, higher mean scores across all 18 items indicated stronger problematic pornography use, with a reliability of 0.93 (Table 1).

Statistical analysis

Descriptive statistics (means, standard deviations, percentages) and correlations between variables were calculated using SPSS, version 29.0.2.0 (IBM Corp., Armonk, NY, USA). The variables did not show marked violations of the assumption of normal distribution (skewness: $-0.4-1.3$; kurtosis: $-0.2-1.4$) (Weston & Gore, 2006).

To test the hypotheses, a manifest path model was calculated (Fig. 1) using the *lavaan* package, version 0.6–19 (Rosseel, 2012) in R, version 4.5.0 (R Core Team, 2024).

Table 1. Descriptive statistics and correlations between variables

| Variable | M (SD) | Range | α | 2. | 3. | 4. | 5. |
|--|------------|-----------|----------|------|-------|-------|-------|
| 1. Age | 31.8 (7.0) | 25.0–50.0 | | 0.07 | 0.09 | –0.01 | –0.05 |
| 2. Depression ^a | 1.2 (0.6) | 0.0–3.0 | 0.85 | | 0.66* | 0.26* | 0.36* |
| 3. Externalizing symptoms ^b | 2.3 (0.9) | 1.0–6.1 | 0.89 | | | 0.34* | 0.27* |
| 4. Conformity to Masculinity Ideologies ^c | 2.0 (0.5) | 0.7–3.4 | 0.79 | | | | 0.33* |
| 5. Problematic pornography use ^d | 1.9 (0.9) | 1.0–5.3 | 0.93 | | | | |

^aThe response options were: 0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day.

^bThe response options were: 1 = not at all (0 days), 2 = sometimes (1–4 days), 3 = around 25% of the time (5–8 days), 4 = less than half of the time (9–12 days), 5 = more than half of the time (13–16 days), 6 = around 75% of the time (17–20 days), 7 = frequently (21–24 days), 8 = almost always (25 or more days).

^cThe response options were: 0 = strongly disagree, 1 = disagree, 2 = somewhat disagree, 3 = somewhat agree, 4 = agree, 5 = strongly agree.

^dThe response options were: 1 = never, 2 = rarely, 3 = occasionally, 4 = sometimes, 5 = often, 6 = very often, 7 = all the time.

* $p < 0.001$.

Additionally, the *haven* package (Wickham, Miller, & Smith, 2023) was used to import the SPSS file (.sav) into R.

In the model, externalizing symptoms of depression (variable Y1) and problematic pornography use (variable Y2) were predicted by the frequency of depressive symptoms (variable X, paths c1 and c2). The model also tested whether conformity to masculinity ideologies (variable M) mediated the associations between depressive symptoms and either externalizing symptoms of depression (direct path b1; indirect path c1') or problematic pornography use (direct path b2; indirect path c2'). The association between depressive symptoms and conformity to masculinity ideologies was modeled as path a. Finally, the correlation between externalizing symptoms of depression and problematic pornography use was calculated. Age (continuous in years), sexual orientation (1 = heterosexual identity, 2 = sexual minority persons), relationship status (1 = single, 2 = in a relationship), parental status (1 = no children, 2 = at least one child), education (1 = junior secondary education, 2 = university entrance level, 3 = university degree), occupation (1 = employed, 2 = not employed), and nationality (1 = Austrian, German, Swizz; 2 = other nationality) were included as covariates predicting externalizing symptoms of depression and problematic pornography use.

All path coefficients were estimated using bootstrap bias-corrected 95% confidence intervals, based on 5,000 bootstrap samples. Results were considered statistically significant if $p \leq 0.05$ or if the 95% confidence intervals did not include zero. Model fit indices were calculated using the maximum likelihood (ML) estimator (Kline, 2015; Yuan & Bentler, 2000) and scale-adjusted chi-square tests (Satorra & Bentler, 2001, 2010). The model was considered to show acceptable fit when the following criteria were met: scaled χ^2 p value ≥ 0.05 (Weiber & Mühlhaus, 2014, p. 222), root mean square error of approximation (RMSEA) ≤ 0.08 (Browne & Cudeck, 1993, p. 144), standardized root mean square residual (SRMR) ≤ 0.10 , comparative fit index (CFI) ≥ 0.90 and Tucker–Lewis Index (TLI) ≥ 0.90 (Weiber & Mühlhaus, 2014, p. 211 ff.).

The link between depression symptoms and externalizing depression symptoms was expected to have a large effect size (McDermott et al., 2022). In contrast, the links between conformity to masculinity ideologies and PPU (Borgogna et al., 2019; Borgogna, McDermott, et al., 2020), as well as conformity to masculinity ideologies and externalizing depression symptoms (Eggenberger et al., 2022; McDermott et al., 2022), were expected to have small to medium effect sizes (Cohen, 1988). To detect significant coefficients for both large and small to medium effect sizes in a mediation analysis with a power of 0.8, a sample of 118 is recommended (Fritz & MacKinnon, 2007). The bias-corrected bootstrap method used in the present study is known for its reliability and robustness, even in small samples (Hayes, 2022).

Ethics

The clinical trial registration took place at <https://clinicaltrials.gov/> (Identifier: NCT05435222). Ethics approval was given by

the Ethics Committee of the Canton Zurich (Switzerland): Project ID: 2022–01141. All participants were informed in accordance with the study protocol approved by the Ethics Committee (Clinical Study Protocol Version 3, 15.12.2022) and provided written informed consent.

RESULTS

Participants

Among the 265 cisgender men, the majority (91.7%) held Swiss, German, or Austrian nationality, while 9.8% reported a nationality from another country. On average, men were 32 years old (Table 1). More than half of the sample (57.4%) was in a relationship, and 42.6% identified as single. A total of 215 men (81.1%) had children, whereas 50 (18.9%) did not. Most participants (90.2%) identified as heterosexual, while 9.8% were sexual minority men. Regarding education, 68.7% of men had a university degree, 20.0% had a university entrance qualification, and 11.3% had completed mandatory schooling or vocational training. The majority of the participants (65.7%) were employed, while 34.3% were in education or unemployed.

Descriptive statistics

The descriptive results are presented in Table 1. Overall, men reported experiencing symptoms of depression on several days over the past two weeks, while externalizing symptoms were, on average, reported on 5 – 8 days in the preceding month. Overall, 21.1% of participants had no or minimal depressive symptoms (PHQ-9 sum score = 0 – 4), 4.2% had mild symptoms (score = 5 – 9), 52.8% had moderate symptoms (score = 10 – 14), 16.6% had moderately severe symptoms (score = 15 – 19), and 5.3% had severe symptoms of depression (score = 20 – 27), according to PHQ-9 classification guidelines (Kroenke et al., 2001).

On average, men indicated they “somewhat disagreed” that behaviors exemplifying conformity to masculinity ideologies applied to them and reported experiencing problematic pornography use nearly never (Table 1).

Increased symptoms of depression correlated with more externalizing symptoms, greater conformity to masculinity ideologies, and higher levels of problematic pornography use. Externalizing symptoms were also associated with greater conformity to masculinity ideologies and more problematic pornography use. Lastly, higher conformity to masculinity ideologies was linked to increased problematic pornography use (Table 1).

Manifest path model

The results of the manifest path model are presented in Table 2. Model fit indices indicated an acceptable representation of the data: $\chi^2(7) = 7.8$, $p = 0.348$; CFI = 0.991; TLI = 0.987; RMSEA = 0.021 (CI 95% = 0.000–0.08); SRMR = 0.022. The model explained a relatively small proportion (7%) of the variance in men’s conformity to

Table 2. Coefficients of the manifest path model

| Component in model | Target variable | R ² | Regressors (Label in Fig. 1) | b | Beta (SE) | Bootstrapped 95% CI |
|---|--------------------------------------|----------------|---|-----------------------------|--------------|---|
| Mediator (M) | Conformity to masculinity ideologies | 0.07 | Depression (a) | 0.21 | 0.26 (0.06) | 0.15, 0.38 |
| Outcome 1 (Y1) | Externalizing symptoms | 0.47 | Depression (c1) | 0.89 | 0.61 (0.03) | 0.54, 0.67 |
| | | | Conformity to masculinity ideologies (b1) | 0.31 | 0.17 (0.05) | 0.08, 0.26 |
| | | | Age | 0.01 | 0.04 (0.07) | −0.09, 0.17 |
| | | | Sexual orientation | 0.11 | 0.03 (0.05) | −0.06, 0.13 |
| | | | Children | −0.06 | −0.03 (0.07) | −0.16, 0.10 |
| | | | Relationship status | −0.12 | −0.06 (0.05) | −0.16, 0.03 |
| | | | Education | −0.01 | −0.01 (0.05) | −0.11, 0.09 |
| | | | Occupation | −0.01 | −0.01 (0.05) | −0.10, 0.09 |
| | | | Nationality | −0.19 | −0.06 (0.05) | −0.16, 0.05 |
| | | | Outcome 2 (Y2) | Problematic pornography use | 0.24 | Depression (c2) |
| Conformity to masculinity ideologies (b2) | 0.43 | 0.24 (0.06) | | | | 0.13, 0.36 |
| Age | 0.00 | −0.03 (0.06) | | | | −0.15, 0.10 |
| Sexual orientation | 0.28 | 0.10 (0.06) | | | | −0.03, 0.22 |
| Children | 0.07 | 0.03 (0.07) | | | | −0.11, 0.17 |
| Relationship status | 0.02 | 0.01 (0.06) | | | | −0.11, 0.13 |
| Education | 0.06 | 0.05 (0.05) | | | | −0.05, 0.14 |
| Occupation | 0.02 | 0.01 (0.06) | | | | −0.10, 0.12 |
| Nationality | 0.62 | 0.20 (0.08) | | | | 0.05, 0.34 |
| Indirect effect (c1') | Externalizing symptoms | | | | | Depression via Conformity to masculinity ideologies |
| Total effect | | | Depression and Conformity to masculinity ideologies | 0.96 | 0.65 (0.03) | 0.59, 0.71 |
| Indirect effect (c2') | Problematic pornography use | | Depression via Conformity to masculinity ideologies | 0.09 | 0.06 (0.02) | 0.03, 0.10 |
| Total effect | | | Depression and Conformity to masculinity ideologies | 0.48 | 0.34 (0.05) | 0.25, 0.43 |

Note. Path model: $\chi^2(7) = 7.8$, $p = 0.348$; CFI = 0.991; TLI = 0.987; RMSEA = 0.021 (CI 95% = 0.000–0.08); SRMR = 0.022.

masculinity ideologies, suggesting that increased symptoms of depression were associated with greater conformity to masculinity ideologies.

The model explained 47% of the variance in men's externalizing symptoms. Increased symptoms of depression were associated with higher levels of externalizing symptoms. Additionally, greater conformity to masculinity ideologies was related to more externalizing symptoms. Indirect path coefficients indicated that increased depressive symptoms were linked to more externalizing symptoms through greater conformity to masculinity ideologies (Table 2).

The model explained 24% of the variance in men's problematic pornography use. Individuals with a nationality other than Austrian, German, or Swiss reported higher levels of problematic pornography use. Increased depressive symptoms were associated with greater problematic pornography use, and higher conformity to masculinity ideologies was also related to increased problematic pornography use. Indirect path coefficients showed that depressive symptoms were linked to increased problematic pornography use via greater conformity to masculinity ideologies (Table 2).

The contrast between $c1'$ and $c2'$ was tested by specifying an additional model in which the coefficients $c1'$ and $c2'$ were constrained to be equal. A chi-square difference test comparing this constrained model to the original model, in which the two indirect paths were freely estimated, showed no significant difference, $\chi^2(1) = 0.8$, $p = 0.363$. This suggests that the two indirect paths, from depressive symptoms to externalizing symptoms ($c1'$) and to problematic pornography use ($c2'$), did not differ. The correlation between externalizing symptoms and problematic pornography use was not significant in the model ($\beta = 0.02$, $SE = 0.07$, 95% CI [−0.12, 0.16]).

DISCUSSION

The present study replicated past findings, providing results corroborating previous findings about the association between increased depression symptoms and stronger conformity to masculinity ideologies (Addis, 2008; Valkonen & Hanninen, 2013; Wong, Ho, Wang, & Miller, 2017), as well as between stronger conformity to masculinity ideologies and more externalizing depression symptoms (Eggenberger

et al., 2022; McDermott et al., 2022; Rice et al., 2013) (H1). Additionally, the study found associations between stronger conformity to masculinity ideologies and greater PPU (Borgogna et al., 2019; Borgogna, McDermott, et al., 2020), as well as between increased depression symptoms and greater PPU (Singareddy et al., 2025) (H2).

The study extends existing literature by exploring PPU as an additional externalizing symptom of depression (Addis, 2008; Chuick et al., 2009). Bivariate correlations revealed associations between externalizing depression symptoms and PPU, between PPU and conformity to masculinity ideologies, and between conformity to masculinity ideologies and externalizing depression symptoms. However, the association between conformity to masculinity ideologies and externalizing depression symptoms was no longer significant in the full model. Additionally, the indirect paths from depressive symptoms to externalizing symptoms via conformity to masculinity ideologies were not significantly different from the indirect paths from depressive symptoms to PPU via conformity to masculinity ideologies. These findings suggest that men may engage in PPU as a way of masking their depression through behaviors that align with masculinity ideologies, and that PPU may serve a similar psychological function as other externalizing symptoms.

A strong sexual desire and frequent sexual activity are often regarded as central components of masculinity ideologies (Epstein, 1994). Frequent masturbation and pornography consumption may therefore serve as mechanisms through which men conform to masculinity norms that emphasize high sexual desire and frequent sexual activity, without engaging in multiple partnerships (Borgogna, Smith, McDermott, & Whatley, 2020). Consistently, stronger conformity to masculinity ideologies has been linked to higher levels of PPU (Borgogna et al., 2019; Borgogna, McDermott, et al., 2020).

Men not only masturbate more frequently than women but also use masturbation to regulate emotions, including anxiety and distress (Hevesi, Tamas, & Rowland, 2023). Research has identified a link between increased depression symptoms and frequent pornography consumption (Singareddy et al., 2025). In line with the mood management theory (Zillmann, 1988), men experiencing strong depressive symptoms may use pornography as a coping mechanism to regulate negative emotions. Similar to other externalizing symptoms of depression, pornography consumption, masturbation, and experiencing an orgasm may provide temporary relief from or serve to mask, underlying feelings of sadness, emptiness, hopelessness, or diminished pleasure (American Psychiatric Association, 2022; World Health Organization, 2025) while reinforcing masculinity norms (Addis, 2008; Chuick et al., 2009), particularly the widely held belief in men's strong sexual drive (Epstein, 1994).

However, PPU is characterized by poor impulse control, distressing perceptions of one's pornography consumption, and associated social and functional impairments (Kor et al., 2014). As such, it is considered a maladaptive coping strategy (Testa et al., 2024), similar to other externalizing

symptoms of depression, such as alcohol or drug abuse, irritability, anger, or social withdrawal (Addis, 2008; Chuick et al., 2009).

Although the DSM-5-TR acknowledges that men may exhibit externalizing symptoms in addition to or instead of traditional depressive symptoms (American Psychiatric Association, 2022, p. 362), PPU is not listed among them. Given previous findings that especially men with low self-esteem, a symptom of depression, show stronger links between masculinity conformity and PPU (Borgogna et al., 2019; Borgogna, McDermott, et al., 2020), and the present study's finding that the indirect paths from depressive symptoms to externalizing symptoms via conformity to masculinity ideologies were not significantly different from the indirect paths from depressive symptoms to PPU via conformity to masculinity ideologies, future editions of the DSM and ICD may need to recognize PPU as a potential externalizing symptom of depression (American Psychiatric Association, 2022, p. 362; World Health Organization, 2025). Future longitudinal and clinical studies are needed to support this suggestion.

The study's results align with recommendations that interventions targeting PPU should incorporate emotion regulation training, stress management, and coping strategies (Testa et al., 2024). Gender-sensitive therapeutic approaches addressing major depression should consider pornography consumption as a potential externalizing symptom (Walther et al., 2023). Thereby, clinicians should emphasize that pornography consumption is not inherently harmful but that its use as an emotion regulation strategy can contribute to mental health difficulties (Castro-Calvo et al., 2018).

However, PPU may not always result from emotion regulation difficulties. In the present study, a considerable proportion of variance in PPU remained unexplained by the model. This suggests that, in addition to depression symptoms and conformity to masculinity ideologies, other factors should be considered. For instance, some men may experience PPU due to guilt and shame about their pornography use. Viewing pornography despite moral reservations, described as moral incongruence, has been linked to subjective distress, perceptions of pornography use as problematic (Droubay, Shafer, & Butters, 2020; Grubbs et al., 2019, 2020), and pornography-induced sexual guilt (Wright, 2021). In the present study, PPU may have elicited shame, guilt, or distress (Wright, 2021), symptoms similar to those in standard ICD-11 and DSM-5-TR depression criteria (American Psychiatric Association, 2022; World Health Organization, 2025). Consequently, this may have strengthened the association between PPU and depression rather than reinforcing the link between masculinity conformity and externalizing symptoms (Addis, 2008; Chuick et al., 2009).

Future intervention studies (Walther et al., 2023) should examine pornography consumption's role in the expression of depression and assess moral incongruence as a potential risk factor for PPU and depressive symptoms (Droubay et al., 2020; Grubbs et al., 2019, 2020).

Limitations

Although the present study formulated the tested mediation model based on theoretical frameworks such as the masked depression framework (Addis, 2008) and the mood management theory (Zillmann, 1988), as well as prior empirical findings (Borgogna et al., 2019, 2025; Borgogna, McDermott, et al., 2020; Eggenberger et al., 2022; McDermott et al., 2022), its cross-sectional design does not allow conclusions about temporal succession or causality (Patten, 2000). A past longitudinal study supports the notion that PPU functions as a maladaptive coping strategy, showing that higher levels of negative emotions and impulsivity predicted increased PPU three years later (Rousseau et al., 2021). Nevertheless, it is also possible that PPU contributes to the development of depressive symptoms. Therefore, future longitudinal research is needed to clarify the directionality of these associations and further support the interpretations drawn from the present study.

Moreover, the public discourse on pornography as a “public health issue” (Perrin et al., 2008, p. 11), emphasizing its negative “effects” or “harms” for sexual and mental health (Kohut & Campbell, 2019; Leonhardt & Willoughby, 2019; Miller, McBain, Li, & Raggatt, 2019; Wright et al., 2017, 2019), should be critically examined. As highlighted by the Antecedents-Context-Effects Model (Campbell & Kohut, 2017), most studies, including the present one, cannot fully account for antecedent factors that predispose individuals to consume pornography or determine its specific consequences.

As this study reports a secondary analysis of a larger project (Walther et al., 2023), it is subject to several limitations related to the study design. These include the omission of relevant variables such as coping strategies and the use of a cross-sectional design. The sample composition also presents limitations, such as the application of inclusion criteria that were not specifically aligned with the current research question, the absence of targeted recruitment based on the present study’s focus, and a limited sample size. Nevertheless, the present study includes participants with a wide range of depressive symptoms, from none or mild to severe, as measured by the Patient Health Questionnaire (PHQ-9) (Kroenke et al., 2001), and a range of externalizing symptoms comparable to those reported in the validation study of the Male Depression Risk Scale (MDRS) (Rice et al., 2013).

The majority of the present study’s participants had tertiary education, representing a sample with an overproportionate number of individuals holding tertiary education. Although many previous studies on pornography consumption have similarly recruited participants with tertiary education or those currently enrolled in higher education (Henrich, Heine, & Norenzayan, 2010; Short, Black, Smith, Wetterneck, & Wells, 2012), this sample characteristic limits the generalizability of the findings. In the present study, several path coefficients, especially the indirect effects, were relatively small in magnitude. Given that studies involving participants with tertiary education often report larger effect sizes than studies conducted with more

representative samples (Peterson, 2001), some of the path coefficients observed in the present study may not be replicable in broader populations.

Most participants were Western, educated, and from industrialized, wealthy, and democratic societies (Klein, Savaş, & Conley, 2022), limiting the cultural generalizability of the findings. The study may not be representative of non-Western contexts, such as those in Asia or Africa.

Another limitation is the underrepresentation of sexual minority men and the exclusion of gender minority men. Research suggests that sexual and gender minority individuals consume pornography more frequently than cisgender heterosexual individuals (Böthe, Vaillancourt-Morel, Bergeron, & Demetrovics, 2019), that gay men report higher levels of problematic pornography use than heterosexual men (Borgogna, Griffin, Grubbs, & Kraus, 2022), and that sexual and gender minority individuals experience higher rates of depression and poorer health outcomes than cisgender heterosexual individuals (Jacmin-Park, Rossi, Dumont, Lupien, & Juster, 2022; Valen, Orantes, Burke, & Antshel, 2025; Vázquez et al., 2024; Wittgens et al., 2022). Additionally, conformity to masculinity ideologies varies by sexual orientation (Anghel, Mahalik, & Harris, 2023; Komlenac et al., 2023) and gender identity (Anzani, Decaro, & Prunas, 2023), and the relationship between masculinity ideologies and externalizing symptoms is more pronounced in heterosexual men than in sexual minority men (Eggenberger et al., 2022). Therefore, the present study is limited by its binary and cisnormative approach, its focus on heterosexual individuals, and its lack of inclusivity regarding sexual and gender minority individuals (Grigoreva & Szaszko, 2024). Future research should employ more sophisticated and extensive recruitment methods to ensure greater representation of sexual and gender minority individuals and integrate gender identity and sexual orientation as central variables in study design, research questions, analysis, and discussion.

CONCLUSIONS

The present study suggests that problematic pornography use (PPU) may be one of the externalizing depression symptoms used to “mask” depression through behaviors aligned with masculinity ideologies (Addis, 2008; Chuick et al., 2009). In addition to other externalizing depression symptoms such as anger, aggression, hostility, distraction, emotional suppression, withdrawal from relationships, risk-taking, alcohol or drug abuse, irritability, and somatic symptoms (e.g., stomach pain) (Rice et al., 2013), PPU may serve as a coping mechanism for men with high levels of depression and strong conformity to masculinity ideologies.

Future qualitative studies should explore the specific role of pornography consumption and PPU in men with depression, particularly how pornography use functions as a coping strategy that aligns with masculinity ideologies despite underlying distress (Chuick et al., 2009). Intervention studies should examine whether screening for PPU can

help identify men experiencing mental health issues and employing maladaptive coping strategies (Testa et al., 2024). Additionally, future research should determine whether gender-sensitive therapeutic approaches for major depression that address pornography consumption as a potential externalizing symptom can reduce PPU, similar to other externalizing depression symptoms (Walther et al., 2023).

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Appendix

Table A1. Coding of Sociodemographic Variables for the Analysis

| Variable | Original categories | N (%) | Category for the analysis |
|---------------------|--------------------------------|-------------------|---|
| Sexual orientation | Heterosexual | 239 (90.2) | Heterosexual |
| | Gay | 13 (4.9) | Sexual minority |
| | Bisexual | 10 (3.8) | |
| | Asexual | 0 (0.0) | |
| | Other | 0 (0.0) | |
| | Indecisive | 3 (1.1) | |
| Relationship status | Single | 110 (41.5) | Single |
| | In a relationship | 106 (40.0) | In a relationship |
| | Married | 46 (17.4) | |
| | In a registered partnership | 0 (0.0) | |
| | Divorced | 0 (0.0) | Single |
| | Widowed | 0 (0.0) | |
| Education | No completed education | 0 (0.0) | Mandatory schooling or vocational training |
| | Special school | 0 (0.0) | |
| | Secondary school (lower track) | 1 (0.4) | |
| | Secondary school | 0 (0.0) | |
| | Apprenticeship | 0 (0.0) | University entrance qualification |
| | Vocational training | 29 (10.9) | |
| | High school/Abitur or Matura | 53 (20.0) | |
| | University degree | 176 (66.4) | |
| Additional | 6 (2.3) | University degree | |
| Occupation | Employed full-time (90–100%) | 107 (40.4) | Employed |
| | Employed part-time (50–80%) | 47 (17.7) | |
| | Employed part-time (10–50%) | 20 (7.5) | |
| | Unemployed | 11 (4.2) | In training/not employed |
| | Disability pension recipient | 1 (0.4) | |
| | Early retirement | 0 (0.0) | |
| | Studying/in training | 76 (28.7) | |
| | Parental leave/housework | 0 (0.0) | |
| | Other | 3 (1.1) | |
| Nationality | Swiss | 191 (72.1) | German-speaking countries (Swiss, German, Austrian) |
| | German | 49 (18.5) | |
| | Austrian | 3 (1.1) | |
| | Liechtensteinian | 1 (0.4) | |
| | Luxembourgish | 0 (0.0) | Other nationality |
| | French | 1 (0.4) | |
| | Italian | 1 (0.4) | |
| | Belgian | 0 (0.0) | |
| | Other | 19 (7.2) | |