Studia Psychologica

Theoria et Praxis

Warszawa 2022

Wydawnictwo Naukowe
Uniwersytetu Kardynała Stefana Wyszyńskiego

UNIWERSYTET KARDYNAŁA STEFANA WYSZYŃSKIEGO W WARSZAWIE

INSTYTUT PSYCHOLOGII

TOM 22 NUMER 1 2022

REDAKCJA STUDIA PSYCHOLOGICA: THEORIA ET PRAXIS
Instytut Psychologii UKSW
ul. Wóycickiego 1/3 bud. 14
01-938 Warszawa
e-mail: studia_psychologica@uksw.edu.pl

SKŁAD
Maciej Faliński

WWW http://czasopisma.uksw.edu.pl/index.php/sp
ISSN (print) 1642-2473 ISSN (online) 2449-5360

SPIS TREŚCI

REVISITING MINORITY STRESS THEORY TO UNDERSTAND PSYCHOLOGICAL DISTRESS AMONG CZECH SEXUAL MINORITIES

https://doi.org/10.21697/sp.2022.22.1.01

MICHAL **PITOŇÁK**[1*]
ZSÓFIA **CSAJBÓK**[12+]
[1] National Institute of Mental Health, Klecany, Czech Republic
[2] Faculty of Humanities, Charles University, Prague, Czech Republic

ABSTRACT

Minority stress theory explains psychological vulnerability in sexual minorities; however, data is scarce in the Central and Eastern European region. Combining the minority stress model with the Psychological Mediation Framework, we tested a theoretically developed path model. Participants were 1452 (M_{age} = 24.9 years) Czech sexual-minority individuals (38.7% gay, 27.1% lesbian, 18.7% bisexual women). The model explained 55.5% of the variance of psychological distress in the overall sample, representing a total effect of 9.75% (p < .001) increase in measurement units by the modeled associations. Within the subsamples, the associations were similar between harassment and rejection, stigma awareness, and rejection sensitivity, as well as emotional dysregulation, rumination, and psychological distress. However, internalized homonegativity was a stronger factor of psychological well-being in gay men and lesbian women than in bisexual women. Bisexual women may have experienced less social support and more emotional dysregulation due to more concealment and rejection sensitivity, respectively. While we confirmed that the minority stress model applies to the Czech context and explained well psychological distress in sexual minorities, our data highlights notable differences between bisexual women who reported highest rates of distress compared to gay men and lesbian women.

KEYWORDS
MINORITY STRESS
SEXUAL ORIENTATION
PSYCHOLOGICAL DISTRESS
MEDIATION
REJECTION SENSITIVITY

* CORRESPONDENCE ADDRESS
* Correspondence: michal.pitonak@nudz.cz Topolová 748, 250 67 Klecany, Czech Republic
+ Correspondence for statistical analyses: zsofia.csajbok@fhs.cuni.cz

POWRÓT DO TEORII STRESU MNIEJSZOŚCIOWEGO W CELU ZROZUMIENIA DYSTRESU PSYCHICZNEGO WŚRÓD CZESKICH MNIEJSZOŚCI SEKSUALNYCH

ABSTRAKT

Teoria stresu mniejszościowego wyjaśnia psychologiczną wrażliwość mniejszości seksualnych, jednak dane są niewystarczające w regionie Europy Środkowej i Wschodniej. Łącząc model stresu mniejszościowego z ramami mediacji psychologicznej, przetestowaliśmy teoretycznie opracowany model ścieżek. Uczestnikami było 1452 (M_{age} = 24,9 lat) czeskich osób należących do mniejszości seksualnych (38,7% gejów, 27,1% lesbijek, 18,7% kobiet biseksualnych). Model wyjaśnił 55,5% wariancji dystresu psychicznego w całej próbie, reprezentując całkowity efekt 9,75% ($p < 0,001$) wzrostu jednostek pomiaru przez modelowane powiązania. W podpróbach powiązania były podobne między nękaniem a odrzuceniem, świadomością stygmatyzacji i wrażliwością na odrzucenie, a także rozregulowaniem emocjonalnym, przeżywaniem i stresem psychicznym. Jednak zinternalizowana homonegatywność była silniejszym czynnikiem dobrostanu psychicznego u gejów i lesbijek niż u kobiet biseksualnych. Kobiety biseksualne mogły doświadczać mniejszego wsparcia społecznego i większego rozregulowania emocjonalnego z powodu odpowiednio większej wrażliwości na ukrywanie i odrzucenie. Chociaż potwierdziliśmy, że model stresu mniejszościowego odnosi się do kontekstu czeskiego i dobrze wyjaśnia stres psychiczny u mniejszości seksualnych, nasze dane uwydatniają znaczące różnice między kobietami biseksualnymi, które zgłosiły najwyższe wskaźniki stresu w porównaniu z homoseksualistami i lesbijkami.

SŁOWA KLUCZOWE

stres mniejszościowy, orientacja seksualna, cierpienie psychiczne, mediacja, wrażliwość na odrzucenie

Conflicts of interests
The authors declared no potential conflicts of interest with respect to the research, authorship, and publication of this article.
Funding
This work was funded by the Czech Science Foundation under grant GA ČR P407 n. 19-14801S "Minority stress in non-heterosexuals in the Czech Republic."
Data accessibility statement
The data and codes that support the findings of this study are available from the corresponding author for statistical analyses, Z.C., upon request.
Author contribution statement
M.P.: conceptualization, writing – original draft; Z.C.: conceptualization, formal analysis, writing – original draft.

Revisiting minority stress theory to understand psychological distress among Czech sexual minorities.

INTRODUCTION

Research over previous decades has provided ample evidence of substantial mental-health disparities between heterosexuals and sexual minorities (Ross et al., 2018). To date, the prevailing explanation for these, often profound, mental health disparities is the minority stress framework that suggests unique, chronic, and societally based stigma-related stress requires additional adaptations on the side of sexual minorities (Brooks, 1981; Hatzenbuehler et al., 2009; Meyer, 2003).

According to Meyer (2003; 2015), minority stress processes can be distinguished by distal stressful experiences and proximal stressors. Distal stressful experiences, sometimes regarded as objective stressful events, may include a range of stressors: life events, chronic strains, everyday discrimination, microaggressions, non-events (anticipated life course events that have been thwarted), or other. Proximal stressors, sometimes regarded as individual or subjective stressors, are distinct because individuals' perceptions and appraisals influence them. They may include various internalized societal attitudes and norms such as heterosexism and internalization of homonegativity (or various forms of anti-LGB self-stigma), expectations of rejection, as well as complex processes related to sexual and gender identity visibility management (e.g., its concealment, disclosure, degree of outness).

Although some minority stressors are experienced also by other socially stigmatized groups (i.e., via prejudice/discrimination-related events, as well as anxious expectations of rejection), sexual-minorities face them under specific circumstances stemming mostly from the fact that their stigmatized identity is concealable and is connected to the onset of sexual attraction and human sexual development during adolescence (Quinn & Chaudoir, 2009). Consequently, sexual minorities are often subjected to minority stressors, even from their close friends and family, who may not know their sexual or gender identity. For these reasons, and in accord with the bulk of research that followed Meyer's (2003) framework (Feinstein, 2020; Hatzenbuehler et al., 2009; Timmins et al., 2020), we will consider both distal and proximal minority stressors as group-specific processes that gay men, lesbian women, and bisexual people experience.

As an extension of this original minority stress framework, Hatzenbuehler (2009) introduced the Psychological Mediation Framework (PMF) as an integrative framework that outlined potential complex psychological mechanisms and interactions between specific minority stress processes and various general psychological processes. The PMF proposed that minority stress processes, such as Internalized Homonegativity (IH), rejection Sensitivity (RS), and Sexual Identity Concealment (CONC), affect general psychological processes such as rumination and emotional dysregulation, social/interpersonal problems, and cognitive functioning, which together may further mediate the relationship between minority stress and psychological concerns. Studies testing PMF have specifically identified the importance of considering rejection sensitivity and social support as important mediators between heterosexist stigma and psychological distress (Dyar et al., 2016; Schwartz et al., 2016). The PMF thus approaches minority stressors both as distal as well as specific proximal predictors of psychological difficulties.

Recent research recognized the need for theoretical and empirical exploration to illuminate the precise pathways between both specific and general psychological processes and other factors. These pathways are also not yet fully understood regarding how they may compromise health and wellbeing in various sexual minority subgroups (Feinstein, 2020; Timmins et al., 2020). Before we propose our model, we discuss the three specific proximal minority stress processes in detail.

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INTERNALIZED HOMONEGATIVITY

Internalized homonegativity is typically regarded as a form of self-stigmatization (Berg et al., 2016) related to one's negative feelings about their sexual orientation (Herek, 2004). As a result of the internalization of societal stigma about sexual minorities, IH is constitutive of a conflict between same-sex attraction and a perceived need to conceal or suppress one's minority sexuality before "coming out" (Frost & Meyer, 2009). IH has also been found to have negative associations with sexual minority involvement in the LGB+ community, the number of their LGB+ friends, and the degree of participation in LGB+ events such as pride parades (Ross & Rosser, 1996). Generally, IH is considered maladaptive because absorbing negative societal attitudes into one's self-perceptions can undermine psychological wellbeing and lead to mental health problems (Meyer, 2003), including a negative impact on self-esteem, feelings of inferiority, relationship strain, and depressive symptoms (Costa et al., 2013; Frost & Meyer, 2009; Nardelli et al., 2019).

REJECTION SENSITIVITY AND SEXUAL ORIENTATION

The concept of rejection sensitivity draws from the belongingness hypothesis, which posits that "all human beings have a pervasive drive to form and maintain at least a minimum quantity of lasting, positive, and significant interpersonal relationships" (Baumeister & Leary, 1995, p. 497). One of the central human motives is the desire to be accepted and avoid rejection. Some people may interpret rejection cues benignly and maintain subsequent equanimity. In contrast, others may perceive rejection even when cues are minor or imagined, driving them to overact in ways that negatively affect their relationships and wellbeing (Downey & Feldman, 1996). Feldman and Downey proposed that people's readiness to perceive and overreact to rejection may be facilitated by an anxious expectation of rejection from significant others. Hence, they applied the term rejection sensitivity to people who anxiously expect, readily perceive, and overreact to rejection (Feldman & Downey, 1994). They defined RS as a "tendency to expect and be concerned about rejection across various social situations" (Feldman & Downey, 1994, p. 223).

Nevertheless, rejection expectations are related but not identical to RS because the latter includes both a cognitive process (i.e., perceived likelihood of rejection – expectation) and an affective process (i.e., concern or anxiety about rejection). Pachankis et al. (2008) were the first to extend the RS construct to gay men and found that RS in gay men may function as a mediator between parental rejection and IH. Further research that included sexual minority women substantiated that RS is associated with experiences of heterosexist harassment and discrimination (Feinstein et al., 2012). It was also found that RS may be an essential mediator between the relationship of discriminatory experiences and IH, as well as motivations to conceal one's sexual identity, and the development of psychological problems (Dyar et al., 2018; Feinstein, 2020). RS in sexual minorities was associated with adverse mental health outcomes, including depression, anxiety, and posttraumatic stress (Dyar et al., 2016, 2018).

SEXUAL IDENTITY CONCEALMENT

Third of the originally proposed proximal minority stressors is related to the fact that sexual-minority status can be a concealable identity (Quinn & Chaudoir, 2009). For this reason, geographers of sexualities who employed various poststructuralist, queer, and feminist perspectives have been for some time pointing to the fact that LGB individuals' negotiation

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of sexual identities both in public and private places need to be considered as complex context-dependent processes with both active, passive, conscious, and unconscious factors at play (Valentine, 1993). Also, in public health research, many studies show that sexual identity concealment is understudied as studies have failed to fully understand its effect on psychological wellbeing (Pachankis, Mahon, et al., 2020). In some contexts, like in highly stigmatizing environments, concealment may serve as a protective factor or an adaptation strategy (Pachankis & Bränström, 2018). In addition, a person's level of outness across multiple settings (e.g., home, at work, or school) and across different interpersonal contexts (e.g., family, significant others, acquaintances) may be different and dependent on multiple factors (Knoble & Linville, 2012). Sexual identity concealment may thus be driven by a diverse set of reasons, for example, by avoidance of prejudice, discrimination, or rejection. Still, "visibility management" was found to come at a cost to psychological wellbeing either because of its association with deprived social support (Mohr & Daly, 2008) or via increased emotional distress (Potoczniak et al., 2009).

AIMS AND RELEVANCE

Drawing from minority stress theory, the Psychological Mediation Framework (Hatzenbuehler, 2009), and advancements in the Rejection Sensitivity Model (Feinstein, 2020), we aim to better understand the roles of specific and general psychological processes associated with psychological distress in sexual minorities. By employing our recently developed measure of structural stigma awareness as a predictor of rejection sensitivity, we aim to provide more evidence of the appropriateness of minority stress theory and its derived explanatory frameworks and contribute to testing its cross-cultural robustness to answer calls raised by other authors (Sattler & Lemke, 2019).

Studies on the mental health of sexual minorities in Central and Eastern European countries are scarce (Ploderl & Tremblay, 2015). Meanwhile, sexual minority men experience more discrimination and structural stigma in Central and Eastern European countries than in other parts of Europe (Pachankis & Bränström, 2018). To account for this gap in data about psychological distress among sexual minorities in non-western countries, the present study represents the Czech Republic as a post-socialist environment.

Based on our theory-driven conceptual framework, we developed and tested a model in which we proposed that subjective perception of stigma mediates the relationship between discriminatory experiences and rejection sensitivity. Rejection sensitivity then relates to internalized homonegativity and concealment, which in turn, also act as mediators between rejection sensitivity and general psychological processes (i.e., emotional dysregulation, rumination) and social support that together negatively affect psychological distress (Figure 1).

METHODS

PROCEDURE

Participants completed an online self-administered questionnaire and were recruited via social networking sites and various LGB+ organizations that were proactively contacted by our research team members or by a group of volunteers. Participation was voluntary and without compensation. To advertise participation outside the internet, we also distributed printed posters, small adverts, and business cards in major Czech cities. Several key contacts were mobilized to recruit harder-to-reach LGB+ participants (e.g., seniors, and ethnic minorities).

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The data collection was conducted between December 2019 and February 2020. The study was approved by the Ethics Committee of the National Institute of Mental Health, Klecany, Czech Republic (No. 122/18). All participants provided informed consent. This study was not preregistered.

PARTICIPANTS

Altogether 1,452 participants were included in the current study: 598 (41.2%) men, 702 (48.3%) women, 42 (2.9%) trans men, 11 (0.8%) trans women, 79 (5.4%) non-binary/gender queer/gender fluid, and 20 (1.4%) participants who selected "other" option in term of their gender identity.. Among them, 562 (38.7%) identified as gay, 393, (27.1%) identified as lesbian, 77 (5.3%) as bisexual men (cis and trans), 272 (18.7%) as bisexual women (cis and trans), 18 (1.2%) as bisexual non-binary, 64 (4.4%) as pansexual, 34 (2.3%) as asexual, and 32 (2.2%) opted to decribe their sexual identity by "other" option. Mean age of the participants was 24.90 (SD = 10.28) ranging between 15 to 70 (skewness = 1.44, kurtosis = 1.76).

MEASURES

We included measures that have been either validated for use in Czech language or we adapted them using the translation process that followed the *Principles of good practice for the translation and cultural adaptation process* by ISPOR Task Force for Translation and Cultural Adaptation (Wild et al., 2005). The adaptation process was performed by a group of five experts from different academic fields and backgrounds, diverse in their sexual orientation and gender identities. Five different versions of translations were harmonized and piloted prior to the launch of the final version.

To measure distal minority stressors, we used the harassment and rejection subscale of Heterosexist Harassment, Rejection, and Discrimination Scale (HHRDS; Szymanski, 2006). We translated an LGB-inclusive, adapted version of the scale (Feinstein et al., 2012). Participants reported their agreement (1 = "never happened to me"; 6 = "happened almost all the time") to seven items which we averaged into a single score (Cronbach's α = .82).

To measure structural stigma awareness or subjective perception of minority stress at the societal level, we constructed a 4-item measure based on items used in the EU-wide Fundamental Rights Agency LGBT survey in 2012, which were also included in the Czech LGBT+ discrimination survey conducted by the Czech Ombudsman's office (Public Defender of Rights, 2019). Four items were included, for example: "In your opinion, how widespread is offensive language about lesbian, gay, bisexual and/or transgender people by politicians in Czech society?". For the analysis, we used averaged scores of the four items (1 = very rare; to 4 = very widespread; α = .73).

We translated the 12-item Rejection Sensitivity Scale (Feinstein, 2012a) into Czech with minor adaptations to the local context. The questionnaire measures the degree of concern with sexual minorities-related rejection expectation and anxiety (e.g., "How concerned would you be that they don't talk to you because of your sexual orientation?", 1 = not concerned at all, 6 = very concerned) and likelihood (e.g., "How likely is it that they didn't talk to you because of your sexual orientation?", 1 = very unlikely, 6 = very likely). The anxiety scores and likelihood scores were then multiplied and divided by 72 forming the overall rejection sensitivity index (values thus ranged between 0.17 and 6; α = .90).

Internalized Homonegativity (IH) was measured by a subscale of the Lesbian, Gay, and Bisexual Identity Scale (LGBIS), which is a revised (Mohr & Kendra, 2011) version of the former LGIS scale (Mohr & Fassinger, 2000). The partial Czech translation and its

psychometric evaluation were reported elsewhere (Pitoňák & Čihák, 2023). The IH subscale included three items, for example "If it were possible, I would choose to be straight" (1 = strongly disagree; 6 = completely agree; α = .84).

The degree of sexual orientation concealment was measured by the Czech adaptation of the Sexual Orientation Concealment Scale (SOCS; Frost & Meyer, 2009). Our adapted version measured the sexual orientation identity openness toward family, friends, neighbors, and colleagues or schoolmates. The average of all four items was used to indicate identity openness ranging between 0 (out to all) to 3 (out to none; α = .84).

We used the 12-item Multidimensional Scale of Perceived Social Support (Zimet et al., 1988). Three subscales focused on different domains of social support (friends, family, and significant others). Our translated version obtained good internal consistency on the overall score (averaged scores ranging between 1 = strongly disagree, to 7 = very strongly agree; α = .92).

The short version, 12-item Emotion Dysregulation Scale was used (Powers et al., 2015). The scale taps into three domains: emotional experiencing (e.g., "Emotions overwhelm me"), cognition (e.g., "When I'm upset, everything feels like a disaster or crisis"), and behavior (e.g., "When my emotions are strong, I often make bad decisions"), loading onto a general factor. Using our Czech translation, the average total scores ranged between 1 (not true) to 7 (very true) with excellent internal consistency (α = .95).

We used the "brooding" subscale of the Ruminative Response Scale (RUM; Treynor et al., 2003), capturing the passive and repetitive thinking about negative life events (e.g., Think, "Why can't I handle things better?", 1 = almost never, 4 = almost always) with good internal consistency among the five items (α = .80).

The Brief Symptom Inventory-18 (BSI-18), adapted into Czech by Tišanská et al. (2020), was employed to measure psychological distress. Three subscales measured depression, anxiety, and somatization symptoms (each measuring six items, 1 = not at all, 5 = very much) in the past week. As recommended, we used the average of all items (α = .94).

DATA ANALYSIS

Based on our theoretical review, we built our model (Figure 1) in the following way. Psychological distress was regressed on harassment and rejection, structural stigma awareness, rejection sensitivity, internalized homonegativity, concealment, social support, emotional dysregulation, and rumination. The relationship between rejection sensitivity and harassment and rejection was mediated by structural stigma awareness. Rejection sensitivity was a mediator between internalized homonegativity and concealment and structural stigma awareness. Internalized homonegativity and concealment were included as mediators between rejection sensitivity and social support, emotional dysregulation, and rumination. We estimated correlations between the parallel mediators, that is, between internalized homonegativity and concealment, and among social support, emotional dysregulation, and rumination. Full information maximum likelihood method was used to estimate the missing values in Concealment ($N_{missing}$ = 238). Maximum likelihood estimator was used estimating asymmetric confidence intervals with 10,000 bootstrap replications. Psychological distress significantly differed between gay, lesbian, bisexual men and women, and other sexual orientation subgroups ($F[4, 1447] = 47.17, p < .001, \eta_p^2 = .12$). Also, the subgroups coded as dummy variables were in a significant interaction with harassment and rejection (i.e., HHRDS, the main exogenous variable of the model) when predicting psychological distress (interaction $p = .003$ in bisexual women, $p = .004$ in lesbians group when gays group were set as the reference group). Further, because other research suggested that sexual identity concealment affected

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psychological distress differently among gay/lesbian/bisexual individuals (Feinstein & Dyar, 2017), we analyzed the data on the complete sample and on the three largest subsamples each (gay, lesbian, and bisexual women). The analyses were conducted in SPSS 26 and Mplus 8.8. Data and Mplus codes can be obtained from the corresponding author for statistical analyses upon request.

RESULTS

Descriptive statistics, including zero-order correlations among the main study variables and their means and standard deviations in the overall sample and across the three main subsamples, are presented in Tables 1 and 2, respectively. Moderate correlations were found among harassment and rejection, structural stigma awareness, rejection sensitivity, emotional dysregulation, rumination, and psychological distress (Table 1). As expected, given the close relatedness of the constructs, particularly strong correlations were found between emotional dysregulation, rumination, and psychological distress. When comparing variable means among gay, lesbian, and women groups, although all variables differed, concealment (η_p^2 = .08), emotional dysregulation (η_p^2 = .07), and psychological distress (η_p^2 = .09) showed the biggest differences in effect size (Table 2). Bonferroni *post hoc* comparisons showed that bisexual women concealed their sexual identity more than gay and lesbian participants (both p < .001), experienced more emotional dysregulation (both p < .01), as well as more psychological distress (both p < .001) than gay and lesbian group. Lesbian participants also had more emotional dysregulation (p < .001) and psychological distress (p < .001) compared to gay group.

MULTIPLE MEDIATION MODEL TESTED ON THE OVERALL SAMPLE

Being a just identified model model, the multiple mediation model had a perfect model fit. The model explained 55.5% of the variance of psychological distress in our overall study sample. The model also explained the variance of social support (22.7%), rumination (20.7%), emotional dysregulation (19.3%), rejection sensitivity (15.8%), and structural stigma awareness (14.0%). However, internalized homonegativity (0.01%) and concealment (3.0%) were not strongly predicted by the model. Among all standardized regression paths, harassment and rejection strongly predicted structural stigma awareness (β = 0.37, p < .001), rejection sensitivity (β = 0.24, p < .001) and rumination (β = 0.21, p < .001) in a positive direction, and social support in a negative direction (β = -0.31, p < .001). The effect of structural stigma awareness on rejection sensitivity was also strong (β = 0.24, p < .001). Concealment also strongly predicted social support in a negative direction (β = -0.28, p < .001). Further, emotional dysregulation (β = 0.40, p < .001) and rumination (β = 0.25, p < .001) were strong predictors of psychological distress. Detailed results with all standardized regression coefficients are presented in Figure 1 and Table 3. Unstandardized coefficients can be found in Supplementary Table 1.

Notably, the total effect from harassment and rejection to psychological distress was 0.39 (p < .001) with an increase in psychological distress by each unit of increase in harassment and rejection (i.e., unstandardized model result). Because the BSI was measured on a 1 to 5 scale, this 0.39 total effect represented a 9.75% increase if we recalculate this in the questionnaire's unit range. The total effect was mediated for 71.8% by altogether structural stigma awareness, rejection sensitivity, social support, emotional dysregulation, rumination, internalized homonegativity, and concealment (i.e., all measures included in the model apart from

the exogenous HHRDS and outcome BSI variables). The independent direct effect of harassment and rejection on psychological distress after controlling for all mediator variables was significant (B = 0.11, p < .001) accounting for 28.2%.

Within the overall model, we also tested the mediating effect of structural stigma awareness between harassment and rejection and rejection sensitivity. We found that the total effect of harassment and rejection and structural stigma awareness on rejection sensitivity was significant (B = 0.47, p < .001), and the mediating indirect effect of structural stigma awareness was as well (B = 0.13, p < .001, i.e., 25.5% of the total effect). Also, as part of the overall model, the total effect of rejection sensitivity on psychological distress was significant (B = 0.10, p < .001), that effect was practically fully mediated (100%) by social support, emotional dysregulation, rumination, internalized homonegativity, and concealment (indirect effect: B = 0.10, p < .001). This strong indirect effect was the most articulated by emotional dysregulation (B = 0.05, p < .001), and rumination (B = 0.03, p < .001). We further tested the mediating effect of internalized homonegativity and concealment between rejection sensitivity and social support. The overall effect of rejection sensitivity on social support was significant (B = -0.09, p = .004), while the indirect effect was as well (B = -0.04, p < .001, i.e., 44.4% of the total effect). Here, concealment was a significant mediator (indirect effect: B = -0.03, p = .001), while the mediating indirect effect of internalized homonegativity was not significant.

MULTIPLE MEDIATION MODEL TESTED WITHIN GAY, LESBIAN, AND BISEXUAL WOMEN SUBGROUPS

Subsequently, we estimated the model results within three subsamples: gay, lesbian, and bisexual woman (Table 3). The model explained the variance of psychological distress in gay men (48.1%), lesbian woman (58.9%), and bisexual women (56.6%). Notable similarities were found between the three subsamples. The effect of harassment and rejection was particularly strong on structural stigma awareness as well as the effect of structural stigma awareness and harassment and rejection on rejection sensitivity in each subsample. Harassment and rejection had a particularly strong effect on social support in a negative direction, and on emotional dysregulation, and on rumination in a positive direction. Lastly, the three subgroups were also similar in the strong positive association from emotional dysregulation and rumination to psychological distress.

On the other hand, we found notable differences among the subsamples. In contrast to the other subsamples, the model of bisexual women showed strong effects of rejection sensitivity on internalized homonegativity (β = 0.21, p = .002). In contrast, the effect of rejection sensitivity on concealment was significant in the gay (β = 0.14, p = .008) and lesbian (β = 0.15, p = .015) subsamples, but not among bisexual women. Harassment and rejection also predicted lesbians' concealment (β = 0.14, p = .007) but not in the other subgroups. Although, concealment was a relatively strong negative predictor of social support in each sexual orientation group, it was less pronounced in bisexual women (β = -0.16, p = .013) than in gay (β = -0.28, p < .001) and lesbian groups (β = -0.32, p < .001). Internalized homonegativity was a negative predictor of social support among gay (β = -0.13, p = .001) and lesbian groups (β = -0.16, p = .001), but not in bisexual women. The effect of rejection sensitivity on emotional dysregulation was the most articulated among gay participants (β = 0.27, p < .001), while in contrast, the effect of structural stigma awareness on emotional dysregulation was the most articulated in bisexual women (β = 0.18, p = .004). The effect of internalized homonegativity on emotional dysregulation was significant but weak, only in the gay subsample (β = 0.09, p = .018). Concealment had an effect on emotional dysregulation in gays (β = 0.18, p < .001) and lesbian groupss (β = 0.18, p < .001), but not in bisexual women. Similarly, rejection sensitivity, internalized homonegativity, and concealment significantly affected rumination in gay and lesbian group, but not in bisexual women. In contrast, structural stigma awareness

influenced rumination in bisexual women (β = 0.17, p = .010), which effect was absent in lesbian group and weak in gay group (β = 0.09, p = .032). The negative effect of social support on psychological distress was the most pronounced in bisexual women (β = -0.20, p < .001), also present in gay group (β = -0.10, p = .008), but not in lesbian groups. On the other hand, concealment affected psychological distress only in lesbian group (β = 0.13, p = .004), but not in gay group and bisexual women. See detailed standardized results in Table 3 and unstandardized results in Supplementary Table 1.

DISCUSSION

To date, most research on mental health in sexual minorities has focused on North Americans or Western Europeans. In turn, underrepresentation of sexual minorities in other regions is caused and sustained by the lack of socio-cultural awareness of the deteriorating stigma effects of minority stress on sexual minorities and gender diverse people within socio-political environments that are less inclined towards embracing "LGBT+ affirmative and inclusive" approaches. On the other hand, this situation leaves unanswered questions regarding cross-cultural robustness of the minority stress framework and its later derived frameworks, psychological mediation, or rejection sensitivity models (Sattler & Lemke, 2019).

All reviewed frameworks postulate that mental health in sexual minorities is compromised by stigma-related factors, which can be categorized on a spectrum from distal to proximal (Meyer, 2003) as well as ordered on multiple dimensions spanning from the systemic/structural, interpersonal, to individual factors (Pachankis et al., 2021). As a result of a single-state design of our study focusing on Czechia, a Central European country of ten million, we did not consider the inclusion of variables that could potentially detect objective variances at the level of structural stigma (e.g., differences in laws and cultural traditions). Hence our selected primary predicting variable (HHRDS) is aimed at the level of interpersonal experiences.

SHARED ASSOCIATIONS OF MINORITY STRESS PROCESSES

In alignment with previous findings, we confirmed that across our whole sample (and including within the gay, lesbian and bisexual women subsamples) heterosexist discriminatory experiences were associated with more structural stigma awareness, and both factors were found to be positively associated with rejection sensitivity as well as withgeneral (non-specific) psychological processes, including rumination and emotional dysregulation, and negatively with social support. Szymanski et al. (2014), in their study of sexual minority women also found that the association between internalized homonegativity and distress is, among other processes, mediated via rumination; in our sample, it was only significant among gay men and lesbian women, suggesting that internalized stigma may be involved in different psychosocial processes in bisexual women. Similarly, Rendina et al. (2017) in their longitudinal study of sexual minority men living with HIV confirmed the mediating role of emotional dysregulation between internalized stigma and symptoms of psychological distress. Our sample confirmed this relatively weak mediation path only for the gay men subgroup.

The associations between the distal minority stressors and general psychological processes seem to contribute to negative psychological functioning in either sexual minority subgroup. However, confirming these relatively established findings was not our primary aim. Instead, we wanted to better understand the mediating roles and potentially different mechanisms of proximal minority stressors in our whole sample and within different subgroups. Here,

the theory or available research did not give us clear guidance because profound inconsistencies regarding the roles of the "traditional triad" of proximal minority stressors (RS, CONC and IH as proposed by Meyer 2003) were observed (Timmins et al., 2020). Thus, we decided to pay particular attention to each of the proximal minority stressors and included a measure to account for a subjective assessment of structural stigma, which we modeled as a proxy for the cognitive dimension of stigma awareness. We hypothesized that greater exposure to negative stimuli (i.e., experience with heterosexist discrimination in the past year) might relate to more structural stigma awareness. Nevertheless, because of the lack of consensus on the directions of causality between the proximal minority stressors and general psychological processes, we drew from theory and previous findings (Dyar et al., 2018; Feinstein, 2020) and expected that subject is first sensitized to a stimulus, for example, that rejection sensitivity is activated/preceded by discriminatory experience and stigma awareness. In other words, we found it theoretically sound to test measures of heterosexist discrimination and stigma awareness in our model as predictors of rejection sensitivity, which as a construct imbues the cognitive (i.e., stigma awareness) by affective (i.e., anxious expectation) dimension of minority stress.

PSYCHOLOGICAL MEDIATION FRAMEWORK MEDIATION PATHS

Although recent studies progressed with more understanding of the role of rejection sensitivity (Dyar et al., 2018; Feinstein, 2020), we still did not find a clear direction for our model construction in terms of other proximal minority stressors. Stigma awareness may do both: it may primarily motivate concealment or lead to the internalization of stigma. Thus, our model considered both (CONC and IH) as parallel, mutually associated mediators.

We observed only a weak association between internalized stigma and heterosexist discrimination, but this was not unexpected as authors tend to explain this weak association by mediating roles of anticipated stigma and rejection sensitivity and view them as maladaptive or stressful factors compared to the experiences of stigma (Berg et al., 2015). In other words, stigma awareness and rejection sensitivity may represent the stressful responses that negatively affect mental health in sexual minorities, whereas internalized stigma and concealment act as further mediators of their negative effect on psychological functioning. For example, Dyar et al. (2018) found that rejection sensitivity contributed to other rejection-related processes (e.g., preoccupation with stigma, concealment motivation, difficulty developing a positive sexual identity), which in turn contributed to depression and anxiety. Indeed, our results confirmed that the total effect of rejection sensitivity on psychological distress was practically fully mediated by emotional dysregulation and rumination, and to a lesser extent, by internalized homonegativity, concealment, and social support.

DISCUSSING SUB-GROUP DIFFERENCES

As the path coefficients differed between samples, it became clear that the "traditional triad" of the proximal minority stressors plays different roles within subgroups of sexual minorities. They were also differently associated with maladaptive coping mechanisms (emotional dysregulation and rumination) and social support. For example, although being significant in all subgroups, we found that rejection sensitivity impacted emotional dysregulation the most strongly in gay, compared to lesbian participants and bisexual women. This result may be perhaps explained by the effects of (toxic) masculine gender norms on emotion coping and help-seeking behavior in men.

However, we found the most pronounced differences between bisexual women and the other two groups. For example, rejection sensitivity in bisexual women was associated with emotional dysregulation and internalized homonegativity, but it did not predict concealment in contrast to gay and lesbian participants. In addition, rejection sensitivity, concealment, and internalized homonegativity were all significantly associated with rumination in gay and lesbian group but not in bisexual women. However, on the other hand, stigma awareness predicted emotional dysregulation most strongly among bisexual women. Similarly, the ameliorative psychosocial effects of social support as a parallel mediator with rumination and emotional dysregulation seems to be differently associated with the proximal minority stressors in bisexual women (as opposed to gay and lesbian participants whose effect was mediated by the proximal minority stressors).

Previous research shows that social support may be less available for people with concealable stigmatized identities (Quinn & Chaudoir, 2009). Hence, we expected that it would be negatively associated with both the distal minority processes (i.e., HHRDS, SSA) and with concealment and internalized stigma, which were found to mediate the effects of rejection sensitivity (Dyar et al., 2018; Feinstein, 2020). Perhaps because of its broader interpersonal psychosocial nature, being one of the most essential factors buffering against psychological distress, social support had the strongest association with concealment across all subgroups. Interestingly, based on our results, rejection sensitivity's effect on social support may be mediated by internalized stigma and its indirect association with concealment in bisexual women. Because the only proximal minority stressor that had a significant effect on social support in bisexual women was concealment, we believe it may be of primary interest of future research to explore the role of concealment among bisexual women, as also suggested by other, recent research (Timmins et al., 2020).

Generally, we can confirm that concealment had a most pronounced ill effect on psychological distress via its association with social support, especially in lesbian and gay participants and, to a lesser extent, in bisexual women. One possible motivation for sexual minorities to conceal their stigmatized identities is internalized stigma. Concealment may be a way to evade discrimination (Berg et al., 2015), and our data support this explanation. However, as current debates about this rather complex process show (Pachankis et al., 2020; Timmins et al., 2020), sexual minorities conceal their identities for several reasons, and depending on the context, it may be both protective and maladaptive (Pachankis & Bränström, 2018).

To summarize, our data show that the distal dimensions of minority stress may constitute such a broad cluster of factors that they are also sensitive to bisexual women's experiences. However, as our path analysis suggests, proximal minority stressors may act differently in bisexual women compared to gay and lesbian participants since their respective measures were less sensitive to detect distinct experiences of bisexual women. Literature focusing on understanding the differences between gay, lesbian and bisexual women experiences is still slim (Feinstein & Dyar, 2017), whereas the mechanisms of stigma and discrimination specific to bisexual people remain largely invisible (Ross et al., 2018). Future studies may investigate some of the specific bi-negative stigmas and discrimination sources identified, for example, by Israel and Mohr (2004): general negative attitudes toward same-sex relationships/attractions; contestations of bisexual identity authenticity; portrayals rendering bisexual people's sexuality as deviant or hypersexual; and perceived lower loyalty of bisexual people (especially women) as partners. Indeed, all these explanations and the relative exclusion and invisibility of bisexuality among the "LGBT+ community" have been recognized as potential sources of comparatively highest rates of psychological distress in bisexual people (Ross et al., 2018).

Pitoňák, M., Csajbók, Z. (2022), Revisiting minority stress theory to understand psychological distress among Czech sexual minorities. *Studia Psychologica: Theoria et Praxis*, 22(1), 5–22.
https://doi.org/10.21697/sp.2022.22.1.01

LIMITATIONS

As is typical for samples composed of lesbian, gay, bisexual, trans, and queer (LGBTQ) persons, the sample we used was a convenience sample, and thus, we cannot claim that our sample is representative of the underlying sexual minority population. Our sample involved predominantly young participants, and students, who had access to online resources. Harder-to-reach participants, especially those who do not identify with LGB+ communities have been underrepresented. Our internalized stigma measure may have been insufficiently sensitive to detect potential associations because our sample's diversity may have been insufficient to detect this variance.

Further, the cross-sectional character of our study did not allow for testing causal hypotheses. We fully accept this limitation. However, we are convinced that even stochastic associations identified in a robust sample from otherwise underrepresented regions such as Central and Eastern Europe may provide the scholarly community with important insights. Still, it is possible that the hypothesized relationships may have also been found in other orders (e.g., internalized homonegativity preceding rejection sensitivity). Additionally, our study design did not allow us to consider other factors known to affect psychological well-being and distress in sexual minorities, such as substance use (Bandermann & Szymanski, 2014), effects of self-acceptance (Woodford et al., 2014), or factors that detect variances in socio-political and (hetero)normative environments to which sexual minorities need to "compensate" (Meyer, 2015; Riggs & Treharne, 2017).

CONCLUSIONS

Our study is the first to consider the core tenets of minority stress theory, the psychological mediation framework, and the rejection sensitivity model as mutually complementing explanatory frameworks in Czechia, representing one of many Central and Eastern European post-socialist contexts that are so far largely underrepresented in research. Using a diverse convenience sample of Czech sexual minorities and established measures used in similar studies, we were able to construct a path model that explained 56% of the variance in psychological distress of sexual minority participants, clearly showing that both distal and proximal minority stressors are associated with psychological distress in sexual minorities. Although our design prevented us from making causal inferences, our model sustains that the proximal minority stress "triad" may be an outcome of interpersonal forms of stigma and discrimination.

This research supports that distal minority stress processes indeed compromise psychological wellbeing in sexual minorities. At the same time, it points out that the mediating pathways are better understood among gay men and lesbian women but require development of new measures inclusive of bisexual women and plausibly also bisexual men, specific experiences. Various therapeutic interventions have been developed to tackle these adverse effects of minority stress in sexual minorities (Pachankis, McConocha, et al., 2020). However, the societal, cultural, and political sources of minority stress need to be addressed at the systemic level (Pachankis et al., 2021) in the form of inclusive and affirmative legislation that will contribute to delegitimization of stigma as the fundamental cause of disparities that were the focus of this study.

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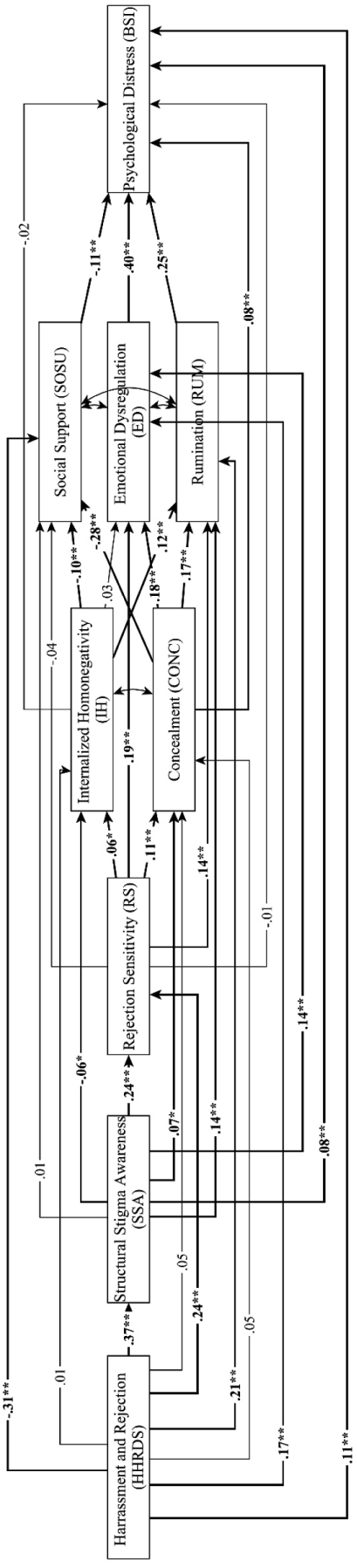

Figure 1. Multiple mediation model predicting Psychological Distress with Harassment and Rejection, mediated by Structural Stigma Awareness, Rejection Sensitivity, Internalized Homonegativity, Concealment, Social Support, Emotional Dysregulation, and Rumination.
Standardized model results were presented on their respective lines. Significant paths were marked in bold. The correlation between IH and CONC was .24 ($p < .001$), between SOSU and ED was -.20 ($p < .001$), SOSU and RUM was -.15 ($p < .001$), and ED and RUM was .60 ($p < .001$).

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

Table 1. Descriptive statistics and zero-order correlations among all measurements

	1	2	3	4	5	6	7	8
1. Harassment and Rejection (HHRDS)	–							
2. Structural Stigma Awareness (SSA)	0.37**	–						
3. Rejection Sensitivity (RS)	0.33**	0.33**	–					
4. Internalized Homonegativity (IH)	0.01	-0.03	0.05	–				
5. Concealment (CONC)	0.11**	0.12**	0.15**	0.24**	–			
6. Social Support (SOSU)	-0.35**	-0.15**	-0.19**	-0.17**	-0.35**	–		
7. Emotional Dysregulation (ED)	0.30**	0.28**	0.32**	0.08*	0.25**	-0.34**	–	
8. Rumination (RUM)	0.32**	0.28**	0.29**	0.16**	0.26**	-0.32**	0.68**	–
9. Psychological Distress (BSI)	0.38**	0.33**	0.28**	0.08*	0.30**	-0.40**	0.68**	0.62**

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

Table 2. Means comparison between the three stratified subgroups

	Overall		Gay		Lesbian		Bisexual women			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	F^a	η_p^2
Harassment and Rejection (HHRDS)	1.97	0.84	1.87	0.76	2.04	0.87	1.97	0.82	5.07**	.01
Structural Stigma Awareness (SSA)	2.49	0.61	2.34	0.60	2.48	0.59	2.63	0.63	21.64**	.03
Rejection Sensitivity (RS)	2.08	1.18	1.99	1.19	2.13	1.20	2.23	1.20	3.93*	.01
Internalized Homonegativity (IH)	1.93	1.11	2.01	1.18	1.82	1.03	1.99	1.12	3.44*	.01
Concealment (CONC)	1.38	0.87	1.14	0.85	1.22	0.82	1.75	0.76	44.52**	.08
Social Support (SOSU)	5.34	1.28	5.49	1.23	5.47	1.23	5.11	1.29	9.43**	.02
Emotional Dysregulation (ED)	4.06	1.54	3.55	1.43	4.20	1.51	4.55	1.53	48.17**	.07
Rumination (RUM)	2.26	0.71	2.09	0.68	2.26	0.72	2.41	0.72	20.38**	.03
Psychological Distress (BSI)	2.14	0.85	1.83	0.66	2.17	0.86	2.43	0.94	56.93**	.09

[a] df1 = 2 and df2 = 1224 (or 1031 in concealment).

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

Table 3. Standardized model estimates within the overall sample and the subsamples

	Overall	Gay	Lesbian	Bisexual women
N	1452	562	393	272
Structural Stigma Awareness regressed on				
Harassment and Rejection	0.37**	0.40**	0.38**	0.34**
Rejection Sensitivity regressed on				
Structural Stigma Awareness	0.24**	0.24**	0.21**	0.34**
Harassment and Rejection	0.24**	0.21**	0.28**	0.21*
Internalized Homonegativity regressed on				
Rejection Sensitivity	0.06*	-0.01	0.05	0.21**
Structural Stigma Awareness	-0.06*	-0.05	-0.04	-0.05
Harassment and Rejection	0.01	0.04	0.03	0.01
Concealment regressed on				
Rejection Sensitivity	0.11**	0.14**	0.15*	0.09
Structural Stigma Awareness	0.07*	0.03	0.02	-0.06
Harassment and Rejection	0.05	0.01	0.14**	0.07
Social Support regressed on				
Internalized Homonegativity	-0.10**	-0.13**	-0.16**	-0.05
Concealment	-0.28**	-0.28**	-0.32**	-0.16*
Rejection Sensitivity	-0.04	-0.02	-0.05	-0.09
Structural Stigma Awareness	0.01	-0.02	0.04	0.04
Harassment and Rejection	-0.31**	-0.25**	-0.39**	-0.26**
Emotional Dysregulation regressed on				

	Overall	Gay	Lesbian	Bisexual women
N	1452	562	393	272
Internalized Homonegativity	0.03	0.09*	0.05	0.05
Concealment	0.18**	0.18**	0.18**	0.01
Rejection Sensitivity	0.19**	0.27**	0.14*	0.15**
Structural Stigma Awareness	0.14**	0.02	0.08	0.18**
Harassment and Rejection	0.17**	0.16**	0.21**	0.21**
Rumination regressed on				
Internalized Homonegativity	0.12**	0.18**	0.14**	0.08
Concealment	0.17**	0.15**	0.16**	0.05
Rejection Sensitivity	0.14**	0.16**	0.16**	0.10
Structural Stigma Awareness	0.14**	0.09*	0.07	0.17**
Harassment and Rejection	0.21**	0.21**	0.24**	0.29**
Psychological Distress regressed on				
Social Support	-0.11**	-0.10*	-0.08	-0.20**
Emotional Dysregulation	0.40**	0.39**	0.35**	0.33**
Rumination	0.29**	0.25**	0.29**	0.30**
Internalized Homonegativity	-0.02	0.03	-0.04	0.00
Concealment	0.08**	0.04	0.13**	0.04
Rejection Sensitivity	-0.01	0.04	-0.03	0.02
Structural Stigma Awareness	0.08**	0.08*	0.10**	0.04
Harassment and Rejection	0.11**	0.06	0.14**	0.11*
Internalized Homonegativity correlation with				
Concealment	0.24**	0.26**	0.25**	0.22**
Social Support correlation with				
Emotional Dysregulation	-0.20**	-0.18**	-0.22**	-0.20**
Rumination	-0.15**	-0.07	-0.19**	-0.16*
Emotional Dysregulation correlation with				
Rumination	0.60**	0.57**	0.59**	0.62**

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

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DATING APP USERS AFTER TWO YEARS: A DARK TRIAD AMPLIFICATION

https://doi.org/10.21697/sp.2022.22.1.02

LENNART **FREYTH***
Johannes Kepler University Linz, Department of Work-, Organizational, and Media Psychology, Austria

ABSTRACT

A 2-year longitudinal study examined how dating app use (N = 82, 36 women) affects changes in personality (i.e., the Dark Triad and Big Five traits), and visual social media use (i.e., dating apps, Instagram). Dating app users were higher in narcissism and Machiavellianism after two years but not in the Big Five traits. Early time and sessions on dating apps were associated with more sessions on dating apps, more time on Instagram, and higher narcissism later. Men increased in narcissism, women decreased in extraversion, openness, conscientiousness, and increased in agreeableness. The use of dating apps affects personality into an antagonistic direction, especially women.

KEYWORDS
DARK TRIAD
BIG FIVE
LONGITUDINAL
DATING APPS
INSTAGRAM
SOCIAL MEDIA

* CORRESPONDENCE ADDRESS Lennart Freyth, Johannes Kepler University Linz, Altenbergerstr. 69, 4040 Linz, Austria, E-mail: freyth.research@outlook.com

UŻYTKOWNICY APLIKACJI RANDKOWYCH PO DWÓCH LATACH: WYŻSZY POZIOM CECH CIEMNEJ TRIADY

ABSTRAKT

W dwuletnim badaniu podłużnym zbadano, w jaki sposób korzystanie z aplikacji randkowych (N = 82, 36 kobiet) wpływa na zmiany osobowości (tj. cechy Ciemnej Triady i Wielkiej Piątki) oraz korzystanie z mediów społecznościowych (tj. aplikacje randkowe, Instagram). Użytkownicy aplikacji randkowych mieli wyższy poziom narcyzmu i makiawelizmu po dwóch latach, ale nie cechy Wielkiej Piątki. Wczesny czas i sesje w aplikacjach randkowych wiązały się z większą liczbą sesji w aplikacjach randkowych, więcej czasu na Instagramie i wyższym narcyzmem później. U mężczyzn zwiększył się narcyzm, podczas gdy u kobiet zmniejszyła się ekstrawersja, otwartość, sumienność i wzrosła ugodowość. Korzystanie z aplikacji randkowych wpływa na osobowość w antagonistycznym kierunku, szczególnie w przypadku kobiet.

SŁOWA KLUCZOWE

Mroczna Triada, Wielka Piątka, badanie podłużne, aplikacje randkowe, Instagram, media społecznościowe

Dating app use is associated with high Dark Triad traits (i.e., narcissism, Machiavellianism, psychopathy; Jonason & Bulyk, 2020; Sevi, 2019). Narcissists are more frequently picked and therefore overrepresented on dating apps, Machiavellians use dating apps for improving their flirting skills and further agentic reasons, while psychopaths search hookups (Freyth & Batinic, 2021; Lyons et al., 2020; Sevi, 2019). Associations of the Big Five traits and dating app use are less clear (Freyth & Batinic, 2021). As individuals chose their environment to fit their personality (Roberts & Robin, 2004), this environment and frequently repeated behaviors (Hennecke et al., 2014), can influence traits. In case of dating apps, it is still unknown if personality change is affected by the selected environment itself (Roberts & Robin, 2004). As personality should be stable over two years (Weisberg et al., 2011; Klimstra et al., 2020), potential changes should be attributed to this environment.

Dating apps offer a nearly infinite pool of mates, are completely based on positive choices (i.e., "matches"), thus leaving out negative feedback by experiencing rejection—this could favor an increase in the Dark Triad traits. And despite men and women use the same technology, different mating preferences (Buss, 1989) might lead to different changes: While women present their beauty on profile-photos, receive positive feedback and uncountable messages, men might get disappointed by non-responding women and behave more opportunistic once they are on a date organized via dating apps. Similar principles apply to Instagram, which could supplement dating app use because both visual social media unifies a short-term mating-tendency (i.e., high Dark Triad traits; Freyth et al., 2023; Jonason & Bulyk, 2020).

This 2-year longitudinal study among dating app users investigates the effect of dating apps use on the Dark Triad traits, the Big Five traits, and the use of visual social media. A general increased short-term mating-tendency (i.e., Dark Triad traits) is expected because of the person-environment fit. Moderating for sex and for continuous/non-continuous use (i.e., those who still used/not used dating apps in 2020) enables identifying further effects of use.

METHOD

PARTICIPANTS AND PROCEDURE

Data was provided by a German tracked online-panel (Beatery by Respondi), for dating apps (i.e., Badoo, Tinder, Lovoo) users of 2018, providing summed usage time of the last 3 months (April/May/June 2018; July/August/September 2020; see Freyth & Batinic, 2021). We reached 82 tracked users (5€ incentive) after two years ($M[SD]$ = 40.61[12.41] years). Of them (46 men, 90% heterosexual) 41 were in a committed relationship, 41 were not. Use of dating apps and Instagram (2020 only) was tracked for three months. After two years there were 20 continuous users, 57 used Instagram. Minimal sample size to detect medium effects (Szucs & Ioannidis, 2021) was calculated with 55 (power = 0.95, f = 0.46, α = .05)[1].

1 Online calculator: https://www.statskingdom.com/sample_size_manova.html

Freyth, L. (2022), Dating app users after two years: A Dark Triad amplification. *Studia Psychologica: Theoria et Praxis*, 22(1), 23–31.
https://doi.org/10.21697/sp.2022.22.1.02

MEASURES

We used the German Big-Five-Intventory-Short (15 items; Schupp & Gerlitz, 2008). Participants rated their agreement (1 = *totally disagree*, 7 = *totally agree*; "I am someone who…") on neuroticism (e.g., "…gets nervous easily"; ω = .68), extraversion (e.g., "…is talkative", ω = .80), openness (e.g., "…has an active imagination", ω = .77), agreeableness (e.g., "…has a forgiving nature", ω = .56), and conscientiousness (e.g., "…does thing efficiently", ω = .63). Items were average into scores.

We used the German Naughty Nine scale (9 items; Küfner et al., 2014). Participants assessed their agreement (1 = *totally disagree*, 9 = *totally agree*) on narcissism (e.g., "I tend to strive for prestige and status", ω = .82), Machiavellianism (e.g., "I have used flattery to impose my will", ω = .80), and psychopathy (e.g., "I tend not to care about the moral of my actions", ω = .69). We average the items into indexes.

Usage time was measured by Respondi and reported in average daily minutes of dating app (time *M*(*SD*)= 12.80(31.35), sessions *M*(*SD*) = 0.96(2.29)) and Instagram use (time *M*(*SD*) = 8.51(13.04), sessions *M*(*SD*) = 2.85(4.99)). Data was skewed, so time and session were naturally log-transformed.

RESULTS

First, tests for personality changes were conducted. Overall, narcissism and Machiavellianism increased, and neuroticism decreased over two years (Table 1). In men Machiavellianism slightly increased. Among women higher narcissism was reported after two years. Non-continuous users were higher in neuroticism than continuous users.

Then associations with dating app use were tested. Time and sessions of dating app use in 2018 did not correlated with the magnitude of trait-change (Table 2), but with increased sessions on dating apps and time on Instagram after two years. Moderations by sex and continuous dating app use were tested using Fisher *z*-test. Men spending more time and sessions on dating apps were more narcissistic after two years compared to women. Women spending more time and sessions on dating apps were less extraverted, open, and conscientious, but more agreeable after two years than men. Spending more time and sessions on dating apps among continuous users were characterized as more narcissistic and less Machiavellian than non-continuous users, whereas non-continuous users were less extraverted than continuous users after two years. Trait-intercorrelations are reported in the supplements.

DISCUSSION

Over two years, it was examined how dating app use affects changes in the Dark Triad traits, the Big Five traits, and dating app and Instagram use. One fourth of users still used dating apps after two years. Overall, dating app users were higher in narcissism and Machiavellianism after two years. Spending more time and sessions on dating apps were more narcissistic after wo years. Men spending more time and sessions on dating apps were more narcissistic than women after two years, whereas women with more time and sessions on dating apps were less extraverted, open, and more agreeable compared to men after two years. Over a, for adults, relatively short time of two years central traits such as the Big Five traits (Weisberg et al., 2011) and the Dark Triad traits (Klimstra et al., 2020) were expected to stay stable. Therefore, observed personality changes are attributed to environmental factors, which here

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was the use of dating apps. The most obvious changes were amplifications of narcissism and Machiavellianism, and with that short-term mating tendencies. Yet, moderations showed effects in the Big Five traits too, interestingly mostly among women. Women become but more compliant (i.e., agreeable) but less assertive (i.e., extraverted), explorative (i.e., openness), and self-disciplined (i.e., conscientious), and so potentially more susceptible for opportunistic mating. These changes are contrary to age effects (Weisberg et al., 2011), thus environmental attribution. They might be caused by rewarding women for showing visual cues in a short-term mating environment by an instant and endless availability of compliments and sex partners, which in this scale would hardly be possible in the real world.

Non-continuous users seemed to compensate dating apps with Instagram. Lower extraversion and agreeableness than continuous users might indicate identical except for going, or at least organizing, dates with strangers on dating apps. Findings might indicate that visual social media—not only dating apps—attract deceptive individuals looking for opportunistic mating environments (Jonason & Bulyk, 2020). In environments favoring virtue signaling and approval like social media (Grubbs et al., 2019), the Dark Triad traits are beneficial: When perceived as rare but advantageous they appear attractive (Brisson, 2018) and are therefore desirable as mates. Thus, "dark" individuals stay on these apps as they appear to be an adaptive fit to their personalities.

The Dark Triad traits are short-term mating strategies, whereof Machiavellians consider more future consequences but still suffer from low impulse control (Jonason & Tost, 2010). They probably return into the online mating pool when things get complicated with their partners, or when caught cheating (Sevi et al., 2020). Maybe, Machiavellians are just the best long-term strategists among short-term oriented individuals (Lyons et al., 2020). Thus, an increase in Machiavellianism might be a consequence of learning new deceitful dating strategies while using visual social media like dating apps.

LIMITATIONS, FUTURE DIRECTIONS & CONCLUSION

Despite having captured a rare sample and providing longitudinal data, this study suffers from some limitations. Mainly, the user-dropout during the beginning of the crisis 2020 was impossible to expect, but the a-priori study design was kept and not filled up with other, non-tracked users. Future studies need larger sample sizes for more between-group comparisons. To ensure a high participation rate short scales were used, but this way facets like self-centered antagonism, meanness, disinhibition, and withdrawal remained unexamined to investigate more specific affects in men and women (Freyth et al., 2023; Weisberg et al., 2011). Future research should study longer intervals, changes in individuals unexperienced with dating apps, changes in using motives and mate choices, the role of psychopathy, and interactional effects between sex and continuous use.

First-time longitudinal study among dating app users investigated changes in personality and visual social media use after two years. Overall, the Dark Triad traits were amplified, the Big Five traits stayed stable. In women an increased antisocial tendency was observed. Previous dating apps use was later supplemented by Instagram use via their shared underlining short-term mating-oriented character. Given increased opportunistic tendencies, the future of dating carries large-scale consequences, especially for and through women.

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Table 1. Changes from 2018 to 2020 in traits

	Narcissisim	Machiavelli-anism	Psychopathy	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Overall								
M (SD) 2018	3.36 (1.52)	2.68 (1.36)	2.69 (1.22)	4.04 (1.16)	4.48 (1.33)	4.88 (1.23)	5.09 (0.92)	5.64 (0.95)
M (SD) 2020	3.72 (1.98)	3.06 (1.80)	2.78 (1.69)	3.78 (1.32)	4.56 (1.55)	4.83 (1.41)	5.26 (0.99)	5.67 (1.00)
t	-2.44*	-2.26*	-0.06	3.08*	-0.71	0.57	-1.48	-0.54
d	-0.27	-0.25	-0.07	0.34	-0.08	0.06	-0.17	-0.06
Men								
M (SD) 2018	3.19 (1.39)	2.94 (1.32)	3.03 (1.15)	3.78 (1.13)	4.46 (1.32)	4.84 (1.25)	5.09 (0.99)	5.59 (1.01)
M (SD) 2020	3.45 (1.76)	3.29 (1.91)	3.21 (1.70)	3.47 (1.32)	4.43 (1.40)	4.77 (1.53)	5.19 (0.98)	5.64 (1.18)
t	-1.32	-1.70†	-0.84	2.52*	0.26	0.46	-0.45	-0.39
d	-0.2	-0.26	-0.13	0.37	0.04	0.07	-0.07	-0.06
Women								
M (SD) 2018	3.58 (1.65)	2.35 (1.37)	2.25 (1.20)	4.37 (1.13)	4.52 (1.36)	4.92 (1.23)	5.10 (0.84)	5.70 (0.89)
M (SD) 2020	4.06 (2.21)	2.78 (1.63)	2.24 (1.54)	4.18 (1.22)	4.72 (1.73)	4.90 (1.26)	5.34 (1.00)	5.72 (9.70)
t	-2.10*	-1.46	0.07	1.75†	-1.22	0.35	-1.75†	-0.36
d	-0.36	-0.25	0.01	0.30	-0.21	0.06	-0.30	-0.06
2020: Continuos vs. Non-continuous users								
M (SD) non-cont.	3.70 (2.07)	3.08 (1.80)	2.67 (1.68)	3.99 (1.27)	4.55 (1.59)	4.81 (1.22)	5.26 (1.00)	5.73 (0.96)
M (SD) contiuous	3.79 (1.74)	3.00 (1.84)	3.12 (1.74)	3.13 (1.28)	4.58 (1.43)	4.87 (1.93)	5.23 (0.96)	5.52 (1.14)
t	-0.17	0.18	-1.01	2.61*	-0.09	-0.14	0.11	0.81
d	-0.04	0.05	-0.27	0.67	-0.02	-0.04	0.03	0.21

† <.10, * p < .05.

Table 2. Correlations of dating app use 2018 (time/sessions) with personality change (Δ) and dating app/Instagram use 2020, Fisher's z-test for moderation

	Overall	*Men*	*Women*	*z* (sex)	*Continuous Users*	*Non-continuous users*	*z* (continuity)
Δ trait-change							
Narcissism	.04/.18	.60*/.59*	-.33/-.12	4.48*/3.45*	.49†/.58*	-.09/.06	2.14*/2.06*
Machiavellianism	-.19/-.22	-.14/-.24	-.20/-.18	0.27/-0.27	-.66*/-.60*	.03/-.02	-2.81*/-2.30
Psychopathy	-.05/-.11	-.10/-.21	.13/.14	-1.00/-1.53	-.33/-.32	-.02/-.11	-1.10/-1.53
Neuroticisim	-.15/-.16	-.16/-.21	-.27/-.23	0.50/0.09	.07/-.07	-.18/-.08	0.86/0.03
Extraversion	-.14-/.13	.27./.30	-.55*/-.58*	3.87*/4.20*	.23/.29	-.36/-.40†	2.09*/2.47*
Openness	-.11/-.11	.06/<.01	-.52*/-.40	2.75*/1.87†	.22/.16	-.31/-.24	1.86†/1.39
Agreeableness	.27/-.29	-.09/.01	.65*/.60*	-3.74*/-2.95*	.08/.07	.37†/.42†	-1.05/-1.02
Conscientiousness	.02/.05	.17/.20	-.28/-.25	1.99*/1.98*	.29/.27	-.04/.05	1.16/0.77
Dating apps							
Time	.21/.02	.53†/.26	n.a./n.a.	n.a./n.a.	.21/-.02	n.a./n.a.	n.a./n.a.
Sessions	.32†/.31†	.49*/48*	.26/.27	1.17/1.06	.38/.25	n.a./n.a.	n.a./n.a.
Instagram							
Time	.36*/.45*	.29/.43	.40/.44	-0.86/-0.05	.27/.39	.33/.41	-0.23/-0.80
Sessions	.09/.15	.14/.21	<.01/.05	0.61/0.71	.18/.29	-.17/-.17	1.21/1.62

Note: Δ = 2020-2018; p < .10, * p < .05; calculated online (http://quantpsy.org/corrtest/corrtest.htm)

SUPPLEMENT

Table S1. Intertrait-correlations from 2018 to 2020 (r/ρ)

	2018							
	Narcissism	Machiavellianism	Psychopathy	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
2020								
Narcissism	.69*/.69*	.40*/.40*	.14/.18†	.22*/.25*	.24*/.17	.10/.10	-.10/-.10	-.20*/-.23*
Machiavellianism	.45*/.43*	.53*/.58*	.29*/.28*	.18/.22†	.15/.16	-.05/-.06	-.12/-.13	-.26*/-.26*
Psychopathy	.28*/.29*	.27*/.23*	.46*/.50*	.18/.15	-.25*/-.26*	-.20†/-.22†	-.22†/-.24*	-.19†/-.15
Neuroticism	.24*/.23*	.12/.16	-.07/-.06	.81*/.81*	-.22*/-.23*	-.28*/-.28*	-.19†/-.10	-.46*/-.47*
Extraversion	.21†/.18†	.11/.08	<.01/-.05	-.28*/-.28*	.84*/.83*	<.01/<.01	<.01/-.04	.31*/.28*
Openness	.05/.07	.09/.08	-.17/-.21†	-.30*/-.28*	.37*/.34*	.77*/.83*	.15/.10	.26*/.28*
Agreeableness	-.19†/-.19†	-.23*/-.21†	-.37*/-.35*	-.18†/-.14	.03/<.01	.16/.17	.59*/.60*	.05/.05
Conscientiousness	-.19†/-.20†	-.29*/-.32*	-.10/-.09	-.55*/-.60*	.33*/.39*	.29*/.36*	.21†/.16	.70*/.70*

Note: † $p < .10$, * $p < .05$; r = Pearson'r r/ρ = Spearman's ρ.

Table S2. Men: Intertrait-correlations and t-tests for traits from 2018 to 2020 (β/ρ)

	2018							
	Narcissism	Machiavellianism	Psychopathy	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
2020								
Narcissism	.67*/.67*	.42*/.42*	.33*/.35*	.24/.26†	.30*/.22	.18/.13	-.06/-.08	-.07/-.10
Machiavellianism	.56*/.56*	.58*/.63*	.30*/.27†	.35*/.36*	.03/.02	.04/-.01	-.19/-.18	-33*/-.34*
Psychopathy	.38*/.35*	.33*/.24	.42*/.43*	.41*/.36*	-.35*/-.35	-.17/-.18	-.09/-.08	-.22/-.19
Neuroticism	.18/.18	.14/.15	.06/.02	.79*/.79*	-.32*/-.37*	-.37*/-.39*	-.29†/-.25†	-.56*/-.57*
Extraversion	.23/.21	.19/.18	.06/.02	-.34*/-.41*	.85*/.82*	.54*/.45*	-.02/-.09	.42*/.33*
Openness	.01/.02	-.04/-.03	-.27†/-.28†	-.36*/-.34*	.60*/.61*	.72*/.77*	.13/.11	.32*/.42*
Agreeableness	-.21/-.14	-.34*/-.28†	-.27†/-.26†	-.40*/-.36	.09/.09	.18/.27†	.59*/.59*	.06/.12
Conscientiousness	-.16/-.15	-.25†/-.31*	-.11/-.11	-.65*/-.67*	.37*/.44*	.32*/.41*	.25†/.19	.78*/.81*
M(SD) 2018	3.19(1.39)	2.94(1.32)	3.03(1.15)	3.78(1.13)	4.46(1.32)	4.84(1.25)	5.09(0.99)	5.59(1.01)
M(SD) 2020	3.45(1.76)	3.29(1.91)	3.21(1.70)	3.47(1.32)	4.43(1.40)	4.77(1.53)	5.19(0.98)	5.64(1.18)
t	1.32	1.70†	0.84	-2.52*	-0.26	-0.46	0.45	0.39
d	0.20	0.26	0.13	-0.37	-0.04	-0.07	0.07	0.06

Note: † $p < .10$, * $p < .05$; r = Pearson'r r/ρ = Spearman's ρ.

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Table S3. Women: Intertrait-correlations and t-tests for traits from 2018 to 2020 (*β*/*ρ*)

	2018						
	Narcissism	Machiavellianism	Psychopathy	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
2020								
Narcissism	.70*/.69*	.47*/.51*	.07/.16	.14/.20	.18/.10	<.01/.06	-.15/-.10	-.38*/-.38*
Machiavellianism	.37*/.33†	.43*/.51	.22/.24	.05/.09	.32†/.32†	-.17/-.11	-.02/-.07	-.15/-.13
Psychopathy	.26/.37*	.09/.10	.40*/.46*	.11/.14	-.14/-.16	-.22/-.21	-.45*/-.48*	-.14/-.13
Neuroticisim	.27/.26	.26/.27	-.03/.05	.82*/.82*	-.13/-.10	.20/.21	-.06/.09	-.39*-.40*
Extraversion	.17/.11	.08/.07	-.02/-.05	-.20/-.23	-85*/.84*	.08/.11	<.01/.03	.17/.22
Openness	.10/.12	-.14/-.15	.01/-.12	-.27/-.26	.01/-.02	.86*/.92*	.19/.13	.14/.10
Agreeableness	-.20/-.25	-.06/-.09	-.47*/-.43*	.04/.08	-.04/.17	.12/.03	.60*/.65*	.01/<.01
Conscientiousness	-.28/-.24	-.39*/-.39*	-.05/-.06	-.50*/-.49*	.28/.33	.26/.33†	.12/.06	.54*/.51*
M(SD) 2018	3.58(1.65)	2.35(1.37)	2.25(1.20)	4.37(1.13)	4.52(1.36)	4.92(1.23)	5.10(0.84)	5.70(0.89)
M(SD) 2020	4.06(2.21)	2.78(1.63)	2.24(1.54)	4.18(1.22)	4.72(1.73)	4.90(1.26)	5.34(1.00)	5.72(0.70)
t	2.10*	1.46	-0.07	-1.75†	1.22	-0.35	1.75†	0.36
d	0.36	0.25	-0.01	-0.30	0.21	-0.06	0.30	0.06

Note: † $p < .10$, * $p < .05$; r = Pearson'r r/ρ = Spearman's ρ.

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A JOKE FOR YOU, A STATUS-BOOST FOR MEN: MEN'S TENDENCY TO TELL AFFILIATIVE JOKES IS RELATED TO THEIR SELF-PROMOTION STYLE

https://doi.org/10.21697/sp.2022.22.1.03

ŁUKASZ **JACH**, GABRIELA **PIETRZAK***
University of Silesia in Katowice, Poland

ABSTRACT

A sense of humor is a desirable characteristic in both romantic and platonic relationships, and people communicate their sense of humor by telling jokes. However, there are sex differences in joking, so men tell jokes more often than women. Men's benefits from joking correspond with such fundamental social motives, as mate seeking and mate retention, affiliation, and self-protection. However, less is known about the relation between tendency to tell jokes and more general styles of self-presentation, that is, tactical ways of behaving that can be used in many social interactions. In our study (N = 139 Polish men aged 18 to 60 [M = 29.94, SD = 11.66]), we wanted to examine the relationships between self-presentation styles (e.g., self-promotion and self-depreciation), humor styles (e.g., affiliative, self-enhancing, aggressive, and self-defeating), and tendency to tell jokes in adult men. We found that men focused on self-promotion produced humor more often and their humor styles contained more affiliative and self-enhancement aspects. Moreover, men's use of affiliative humor completely mediated the relationship between their self-promotion and their tendency to tell jokes. We also found that men oriented on self-depreciation use more self-defeating humor, but their self-defeating motivation does not correlate with their tendency to tell jokes. Our results suggest that men may tell jokes, especially those involving affiliative humor, to tactically achieve their self-promotion goals.

KEYWORDS
HUMOR STYLES
JOKES
PUBLIC IMAGE
SELF-PRESENTATION
SOCIAL STATUS

* CORRESPONDENCE ADDRESS Łukasz Jach, Institute of Psychology, University of Silesia in Katowice, Grażyńskiego 53, 40-126 Katowice, Poland. E-mail: lukasz.jach@us.edu.pl

ŻART DLA CIEBIE, WZROST STATUSU DLA MĘŻCZYZN: TENDENCJA MĘŻCZYZN DO OPOWIADANIA ŻARTÓW AFILIACYJNYCH JEST ZWIĄZANA Z ICH STYLEM AUTOPROMOCJI

ABSTRAKT

Poczucie humoru jest pożądaną cechą zarówno w związkach romantycznych, jak i platonicznych, a ludzie komunikują swoje poczucie humoru, opowiadając dowcipy. Istnieją jednak różnice płciowe w żartowaniu, mężczyźni opowiadają dowcipy częściej niż kobiety. Korzyści, jakie mężczyźni czerpią z żartowania, korespondują z takimi podstawowymi motywami społecznymi, jak poszukiwanie i utrzymywanie partnera, przynależność i ochrona samego siebie. Mniej jednak wiadomo na temat relacji między skłonnością do opowiadania dowcipów a bardziej ogólnymi stylami autoprezentacji, czyli taktycznymi sposobami zachowania, które mogą być wykorzystywane w wielu interakcjach społecznych. W naszym badaniu (N = 139 polskich mężczyzn w wieku od 18 do 60 lat [M = 29,94, SD = 11,66]) chcieliśmy zbadać zależności między stylami autoprezentacji (autopromocją i autodeprecjacją), stylami humoru (afiliacyjnym, samodeprecjonującym, agresywnym i w służbie ego) oraz skłonnością do opowiadania dowcipów u dorosłych mężczyzn. Odkryliśmy, że mężczyźni, którzy byli skoncentrowani na autopromocji, częściej wytwarzali humor, a ich style humorystyczne zawierały więcej aspektów afiliacyjnych i dotyczących wzmacniania siebie. Co więcej, używanie przez mężczyzn humoru afiliacyjnego całkowicie mediowało związek między autopromocją a skłonnością do opowiadania dowcipów. Odkryliśmy również, że mężczyźni nastawieni na samodeprecjonowanie częściej używają autodestrukcyjnego humoru, ale ich autodestrukcyjna motywacja nie koreluje ze skłonnością do opowiadania dowcipów. Nasze wyniki sugerują, że mężczyźni mogą opowiadać dowcipy, zwłaszcza te zawierające humor afiliacyjny, aby taktycznie osiągnąć swoje cele dotyczące autopromocji.

SŁOWA KLUCZOWE

style humoru, dowcipy, wizerunek publiczny, autoprezentacja, status społeczny

INTRODUCTION

People have an ongoing interest in how others perceive them and even in relatively mundane encounters (e.g., at home, work, or school) people monitor others' reactions to them and often try to convey images of themselves that promote their attainment of desired goals (Leary & Kowalski, 1990). Self-presentation styles manifest themselves in everyday situations and affect how a person is perceived by others (Leary, 1996). There are two styles of tactical self-presentation: self-promotion and self-depreciation (Wojciszke, 2002). Self-promotion is presenting oneself in a favorable light as a competent person, equipped with certain knowledge and numerous skills, successful and deserving, self-confident and worthy. Self-depreciation is presenting oneself as a modest, helpless, and incompetent person, burdened with flaws, suffering failures, and being personally responsible for them, unsure of oneself and one's skills (Wojciszke, 2002).

Both self-promotion and self-depreciation are status-relevant individual activities (Chapais, 2017) and status seeking is another fundamental social motive (Kenrick et al., 2010; Neel et al., 2016) identified among people from different cultures (Pick et al., 2022). Self-promotion enhances social status, which in men translates into increased access to resources and desirable mates (Von Rueden et al., 2011). In groups, high social status is also associated with being a leader and having an influence on important collective decisions (Van Vugt, 2006). While the benefits of self-promotion are more pronounced, self-depreciation can also bring benefits. Being a follower of an effective leader can provide personal benefits without having to take responsibility for important decisions (Van Vugt et al, 2008). Self-depreciation also corresponds to the self-debasement tactic by which people manipulate others to elicit and terminate their actions (Buss et al., 1987). Moreover, when people are perceived as like others, they may benefit more from social interactions (Guéguen et al., 2011) and people feel uncomfortable when they believe that their higher performance poses a threat to another person (Exline et al., 2013), and they trust members of their group less when they perceive them as diverse (Zhang et al., 2022). Therefore, one's self-depreciation tactic may serve to calibrate one's perceived level of skills with the levels of other group members to increase the level of ingroup similarity (Kim, 2014; Laursen, 2017).

People can also influence their social image through humor. A sense of humor is a desirable characteristic in both romantic (Brauer & Proyer, 2002) and friendly relationships (Sprecher & Regan, 2002), and people communicate their sense of humor by telling jokes (Hurley et al., 2011). The ability to generate funny content is related to higher intelligence (Greengross & Miller, 2011; Howrigan & MacDonald, 2008), openness to experience, and extraversion (Howrigan & MacDonald, 2008), so telling jokes may communicate a high level of these traits. However, there are sex differences in joking, so men tell jokes more often than women (Jach et al., 2022) and men's jokes are rated funnier than women's jokes (Greengross et al., 2020). In men, telling jokes may be related to their mating strategies (Greengross & Miller, 2011). Men tell jokes to get the attention of their potential romantic partners (Wilbur & Campbell, 2011) and women are more interested in dating men who joke in social situations (Guéguen, 2010). Women more than men prefer partners who joke during dating and as long-term partners (Hone et al, 2015). Women whose partners have a better sense of humor are more likely to initiate sex and perceive their partners as more intelligent, more creative, more self-confident, and with better leadership skills (Gallup et al., 2014).

However, telling jokes may also have intrasexual functions. Under conditions of intrasexual competition, men are superior to women in humor production ability and exhibit enhancement in humor ability following exposure to attractive women primes (Barel, 2019), therefore, in the mating context men may try to outperform their mating rivals in joking skills. Telling, understanding, and appreciating jokes requires a specific background, so

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https://doi.org/10.21697/sp.2022.22.1.03

through joking, men can communicate their knowledge, culture, and worldview to others (Flamson & Barrett, 2008). Jokes can also facilitate creating alliances because people have more positive attitudes toward others with a similar sense of humor (Curry & Dunbar, 2006) and affiliative humor helps to shape stable friendship dyads (Hunter et al., 2016). On the other hand, people use aggressive jokes to ridicule others and to damage their self-concept (DiCioccio, 2012). The function of aggressive humor may also be to manipulate others and make them more conforming and more afraid of failing through an implied threat of ridicule (Janes & Olson, 2000). Moreover, the aggressive humor of leaders translates into higher anxiety, more ruminations, and more withdrawal behaviors in their employees (Chen et al., 2022).

In addition to affiliative and aggressive humor, there are also self-enhancing and self-defeating humor styles (Martin et al., 2003). Self-enhancing humor focuses on intrapsychic aspects and its function is to help cope with stressors and adverse life events (Kuiper et al., 1993) as well as negative emotions (Ford et al., 2017). On the other hand, the motivation to use self-defeating humor is to entertain others by exposing one's weaknesses and failures (Martin et al., 2003). Self-defeating humor correlates positively with loneliness, shyness, and depression, and negatively with self-esteem (Steiger et al., 2011). However, self-defeating humor also correlates positively with seductiveness, manipulativeness, humorousness, and risk-taking (Kfrerer & Schermer, 2020), therefore, it may help in self-presentation as a weak person in need of immediate assistance (Doliński, 2016).

Men can benefit from joking in specific contexts, such as romantic relationships (Guéguen, 2010), creating alliances (Flamson & Barrett, 2008), and intrasexual competition (Barel, 2019). Therefore, men's benefits from joking correspond with such fundamental social motives, as mate seeking and mate retention, affiliation, and self-protection (Kenrick et al., 2010; Neel et al., 2016). However, less is known about the relation between tendencies to tell jokes and more general styles of self-presentation, that is, tactical ways of behaving that can be used in many social interactions (Leary, 1996; Wojciszke, 2002).

In the current study, we examined the relationships between self-presentation styles, humor styles, and tendency to tell jokes in men. Self-promotion reflects motivations for increasing social status and enhancing one's public image (Leary & Kowalski, 1990). Two common strategies for achieving high status are a prestige-acquiring strategy based on benevolent sharing of knowledge and skills with community members, and a dominance-acquiring strategy based on formidability and aggression (Henrich & Gil-White, 2001). Therefore, we predicted positive correlations of self-promotion and self-enhancing humor because people may use self-enhancing humor to reduce the anxiety related to tasks they encounter (Ford et al., 2017) and performing tasks in a way that others can see may elevate their social status. We also predicted a positive correlation of self-promotion and affiliative humor because people can use affiliative humor to make others like them more and likeability is related to being higher on prestige (Cheng et al., 2013). Moreover, we predicted a positive correlation of self-promotion and aggressive humor because people can elevate their status through aggression that leads to domination over others (Henrich & Gil-White, 2001) and aggressive uses of humor are intended to belittle other people (Martin et al., 2003).

On the other hand, self-devaluation is aimed at strategically undermining one's social status, and people with lower self-esteem use more negative humor (e.g., aggressive humor and self-defeating humor; Ozyesil, 2012), therefore, we predicted a positive correlation between self-depreciation with self-defeating humor. The ability to generate humor is an indicator of desirable traits (e.g., intelligence; Greengross & Miller, 2011; Howrigan & MacDonald, 2008), therefore, we predicted that self-promotion would correlate positively with tendency to tell jokes. We also wanted to check if self-presentation styles predict tendency to tell jokes and if humor styles mediate the relationships between self-presentation styles and tendency to tell jokes.

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METHOD

PARTICIPANTS AND PROCEDURE

A sample of 139 Polish men aged 18 to 60 (M = 29.94, SD = 11.66) consented to participate in an anonymous, online study via Lime Survey platform. The participants were informed of the nature of the study. If they consented via a tick-box, they provided information about their demographic characteristics and they filled out the questionnaires related to their humor styles, tendency to tell jokes, and self-presentation styles, such as self-promotion and self-depreciation. A G*Power analysis indicated that the sample size was large enough to detect relatively small effects in correlation analyses ($|\rho|$ = .23) with appropriate power (1-β = .80) given α equal to .05 (Faul et al., 2007). After the survey, participants were thanked, debriefed, and had an opportunity to contact the second author via e-mail in case of questions or concerns.

MEASURES

We measured humor styles using the Polish translation (Hornowska & Charytonik, 2011) of the Humor Styles Questionnaire (Martin et al., 2003). Participants were asked how much they agreed (1 = *strongly disagree*; 7 = *strongly agree*) with 32 items corresponding the affiliative humor (e.g., "I enjoy making people laugh.", Cronbach's α = .82), self-enhancing humor (e.g., "If I am feeling depressed, I can usually cheer myself up with humor.", α = .79), aggressive humor (e.g., "If someone makes a mistake, I will often tease them about it.", α = .76), and self-defeating humor (e.g., "I let people laugh at me or make fun at my expense more than I should.", α = .78). The items were averaged to form indexes for each type of humor.

To measure tendency to tell jokes, we designed our own scale. Participants were asked how much they agreed (1 = *strongly disagree*; 7 = *strongly agree*) with five items corresponding to tendency to tell jokes (item 1: "If I hear a good joke I'll probably repeat it.", ; item 2: "I like telling jokes.", item 3: "People laugh at my jokes."; item 4: "I remember the jokes I hear and I repeat them.", and Item 5: "I am good at telling jokes."). The scale had good internal consistency (α = .86) and satisfactory fit as a unidimensional scale (χ^2/df = 1.62, CFI = .992, TLI = .981; $SRMR$ = .021; $RMSEA$ = .067) when we included a covariance between item 1 and item 4. The items were averaged to form an index for tendency to tell jokes.

We measured self-presentation styles using the Self-Presentation Questionnaire (Wojciszke, 2002). Participants were asked how often (1 = *never*; 5 = *very often*) they do things described in 30 items corresponding the self-promotion (e.g., "I give the impression that I know more than I really do.", α = .87) and self-depreciation (e.g., "I avoid talking about my successes.", α = .85). The items were averaged to form indexes for each type of self-presentation style.

RESULTS

Descriptive statistics and correlations are presented in Table 1. Older participants were more likely to use self-enhancing humor and younger participants were more likely to use aggressive humor and self-defeating humor and were more self-deprecating. However, the age of participants was not related to their self-promotion, affiliative humor, and tendency to tell jokes. Self-promotion correlated positively with affiliative humor, self-enhancing humor, and tendency to tell jokes. Moreover, we observed negative correlation of self-promotion

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and self-depreciation. However, self-promotion did not correlate with aggressive humor and self-defeating humor. Self-depreciation correlated positively with self-defeating humor; however, it correlated negatively with self-enhancing humor and tendency to tell jokes.

Affiliative humor correlated positively with the other humor styles as well as tendency to tell jokes and self-enhancing humor correlated positively with tendency to tell jokes; however, self-enhancing humor did not correlate with aggressive humor and self-defeating humor. Aggressive and self-defeating humor correlated positively; however, neither of these two humor styles correlated with tendency to tell jokes.

Since age correlated with some variables studied, we also calculated partial correlations accounting for age. Tendency to tell jokes and self-promotion correlated positively with aggressive humor and the partial correlation between self-depreciation and self-enhancing humor was not significant. The remaining partial correlations were in line with previously observed correlations.

Subsequently, we run mediation analysis with self-presentation styles as predictors, humor styles as mediators, and tendency to tell jokes as an outcome. We showed direct, indirect, and total effects in Table 2. Our model explained 30.4% of tendency to tell jokes. The analysis revealed a positive total effect of self-promotion on tendency to tell jokes; however, this effect was fully mediated by the positive direct effect of affiliative humor on tendency to tell jokes. Moreover, we discovered some direct effects; self-promotion positively affected self-enhancing humor, and self-depreciation positively affected self-defeating humor.

DISCUSSION

As we expected, self-promotion correlated positively with affiliative humor. This result indicates that men more focused on presenting themselves as competent, multi-skilled, and valuable from the point of view of the group more often use humor aimed at building a positive atmosphere and strengthening group bonds. This is in line with results showing that prestige-oriented people are more approachable (Henrich & Gil-White, 2001) and that others perceive those who have adopted a prestige-acquiring strategy as likable (Cheng et al., 2013). This result is also in line with rules of influence based on reciprocation, and liking (Cialdini, 2007). People are more positive about others when they receive messages that make them feel good when they like them. Mentioned effects can be achieved through the use of positive, friendly humor that emphasizes community aspects.

Self-promotion also correlated with self-enhancing humor, suggesting that men who are more status-oriented tend to use humor to encourage themselves, comfort themselves, and reduce the anxiety related to the tasks they encounter (Ford et al., 2017). However, we did not observe a correlation between self-promotion and such humor styles as aggressive humor and self-defeating humor. Thus, men who are motivated to achieve high social status do not seem to tend to achieve their goals either by lowering other people's self-esteem and sense of competence or by jokingly portraying themselves as less competent or failing. This suggests that men seek self-promotion through positive rather than negative humor styles and avoid the ambiguity of implying that they often fail and behave incompetently. However, when accounting for age, we revealed a positive correlation between self-promotion and aggressive humor, thus the relationship between these variables may be more complex and needs more research. Moreover, a negative correlation between self-promotion and self-depreciation additionally suggests that men avoid the ambiguous presentation of their public image. In fact, people perceive targets who use more positive humor styles as having higher self-esteem and targets who use more negative humor styles as having lower self-esteem (Zeigler-Hill et al., 2013). Moreover, research conducted so far also suggests

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that self-deprecatory humor might not serve the needs of self-promoting candidates within political, competitive settings (Stewart, 2011).

On the other hand, self-depreciation correlated negatively with self-enhancement humor and positively with self-defeating humor. This indicates that men motivated to lower their public image and status avoid using humor to cheer themselves up in the face of the tasks they face. In social situations, they also more often use humor aimed at showing their weaknesses and lack of useful skills. These results are consistent with the dynamics of self-depreciation as related to both self-identification and influence tactics. Men who consider themselves incompetent and helpless may avoid using self-enhancing humor in order not to distort their own opinion of themselves (Stopa et al., 2012). They may also use humor to present their failures to others to make their social image more consistent with their self-image (Leary & Kowalski, 1990). On the other hand, for men pragmatically striving for self-depreciation, the use of self-defeating humor may help achieve goals related to withdrawal from action and obtaining help from others (Speer, 2019). However, when accounting for age, the partial correlation between self-deprecation and self-enhancing humor was not significant. This result suggests that in men self-depreciation may be not related to less frequent self-enhancing behavior but rather have different functions, e.g., related to better group fit (Guéguen et al., 2011, Kim, 2014; Laursen, 2017)

The tendency to tell jokes correlated positively with self-promotion. The results indicate that men motivated to enhance their public image tend to tell more jokes. This is in line with the results showing that people associate the ability to create humorous content with such highly valued traits as intelligence (Greengross & Miller, 2011; Howrigan & MacDonald, 2008), openness to experience, and extraversion (Howrigan & MacDonald, 2008). On the other hand, men focused on self-promotion may act for increasing their social capital and humor may indicate their interest in initiating new relationships and maintaining existing ones (Li et al., 2009). However, the tendency to tell jokes did not correlate with self-depreciation. The lack of relationship between the tendency to tell jokes and self-depreciation may result from two motivations that are the source of self-depreciation. On the one hand, people who are truly convinced of their low self-worth may feel that they are not competent at telling jokes. On the other hand, people who intentionally seek to diminish their status may use self-defeating humor. However, there is a paradox in using self-defeating humor as an influence technique: its content indicates a lack of competence, but its form (joking) indicates possession of positively assessed traits (e.g., intelligence; Greengross & Miller, 2011; Howrigan & MacDonald, 2008). In fact, people using manipulation tactics (e.g., those high on Dark Triad traits) do not prefer to use regression tactics as a way of presenting themselves as weak and helpless (Jonason & Webster, 2012).

Mediation analysis revealed that men's motivation for self-promotion affects their tendency to tell jokes, but this effect is mediated by affiliative humor. Men who are motivated to enhance their public status joke more often, but the content of these jokes tends to focus on affiliative aspects, emphasizing friendly intentions and community issues. There were also positive effects of self-promotion on self-enhancing humor and self-depreciation on self-defeating humor, but neither of these effects affected tendency tell jokes. These results point to less social and more internal functions of these humor styles. Men focused on self-promotion may enhance themselves with humor, which may help them pursue goals related to such motives as mate selection (Guéguen, 2010) or intrasexual competition (Barel, 2019). Men oriented on self-depreciation may use self-defeating humor to convince themselves of low competence and lack of actions that could lead to an increase in their social status.

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LIMITATIONS & CONCLUSION

Our study is not free from limitations. First, we did not compare men and women, so we cannot fully consider the results obtained to be specific only to men. Second, we only measured the general tendency to tell jokes without considering different social contexts of telling jokes (e.g., intersexual versus intrasexual, relationships with people with equal versus unequal social positions). Third, we did not distinguish between possible sources of motivation for self-depreciation (e.g., related to low self-esteem versus related to social influence). Fourth, we conducted our research in a convenience sample of Polish participants, so research in a more representative and more culturally diverse sample is needed to draw more grounded conclusions. Fifth, our study was cross-sectional and did not take into account longitudinal measures and mediation implies change over time (Maxwell & Cole, 2007). If self-presentation strategies, humor, styles, and tendency to tell jokes are relatively stable variables, the indirect effect we observed could be positively biased. Future studies should take into account longitudinal measures or use statistical methods that are less dependent on the aspect of time.

In our study, we examined the relationship between men's motivations for self-promotion and self-depreciation, their tendency to tell jokes, and the styles of humor they use. We found that men focused on self-promotion produce humor more often and their humor styles contain more affiliative and self-enhancement aspects. Moreover, men's use of affiliative humor completely mediated the relationship between their self-promotion and their tendency to tell jokes. We also found that men oriented towards self-depreciation use more self-defeating humor, but their self-defeating motivation does not correlate with their tendency to tell jokes. Our results suggest that men may tell jokes, especially those involving affiliative humor, to tactically achieve their self-promotion goals.

Table 1. Descriptive statistics and correlations of age, self-presentation styles, humor styles and tendency to tell jokes

	1	2	3	4	5	6	7	8
1. Age	--							
2. Self-promotion	.14							
3. Self-depreciation	-.41**	-.35** (-.33**)						
4. Affiliative humor	-.11	.34** (.37**)	-.10 (-.16)					
5. Self-enhancing humor	.20*	.25** (.23**)	-.21* (-.14)	.28** (.31**)				
6. Aggressive humor	-.23**	.13 (.17*)	-.04 (-.04)	.20* (.18*)	-.16 (-.12)			
7. Self-defeating humor	-.27**	-.01 (.03)	.39** (.32**)	.23** (.21*)	-.07 (-.02)	.41** (.37**)		
8. Tendency to tell jokes	.06	.27** (.27**)	-.20* (-.20*)	.52** (.53**)	.25** (.24**)	.15 (.17*)	.08 (.10)	--
Mean (*SD*)	29.94 (11.66)	3.19 (0.60)	2.59 (0.61)	5.04 (0.84)	3.57 (1.04)	3.61 (1.03)	3.57 (1.04)	5.00 (1.24)

Note. Partial correlations when accounting for age are given in parentheses.

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

Table 2. Mediation analysis of tendency to tell jokes with self-presentation styles as predictors and humor styles as mediators

Effect type	Effect	*b* (*SE*)	Lower 95% *C.I.*	Upper 95% *C.I.*	β	*z*
Predictor ➔ outcome, total	Self-promotion ➔ Tendency to tell jokes	.47 (.18)	.12	.82	.23	2.63**
	Self-depreciation ➔ Tendency to tell jokes	-.25 (.18)	-.60	.09	-.12	-1.43
Predictor ➔ outcome, direct	Self-promotion ➔ Tendency to tell jokes	.08 (.19)	-.27	.45	.04	0.45
	Self-depreciation ➔ Tendency to tell jokes	-.25 (.18)	-.61	.09	-.13	-1.40
Predictor ➔ mediator	Self-promotion ➔ Affiliative humor	.49 (.12)	.26	.73	.35	4.20**
	Self-promotion ➔ Self-enhancing humor	.33 (.15)	.06	.63	.20	2.27*
	Self-promotion ➔ Aggressive humor	.24 (.16)	-.08	.55	.14	1.47
	Self-promotion ➔ Self-defeating humor	.25 (.15)	-.06	.54	.14	1.61
	Self-depreciation ➔ Affiliative humor	.04 (.13)	-.23	.30	.03	0.27
	Self-depreciation ➔ Self-enhancing humor	-.23 (.15)	-.50	.06	-.14	-1.56
	Self-depreciation ➔ Aggressive humor	.02 (.13)	-.22	.27	.01	0.17
	Self-depreciation ➔ Self-defeating humor	.76 (.14)	.47	1.04	.45	5.26**
Mediator ➔ outcome	Affiliative humor ➔ Tendency to tell jokes	.67 (.13)	.42	.92	.46	5.23**
	Self-enhancing humor ➔ Tendency to tell jokes	.12 (.09)	-.06	.28	.10	1.36
	Aggressive humor ➔ Tendency to tell jokes	.08 (.10)	-.13	.28	.07	0.79
	Self-defeating ➔ Tendency to tell jokes	.00 (.12)	-.23	.24	.00	0.00
Predictor ➔ outcome, indirect	Self-promotion ➔ Affiliative humor ➔ Tendency to tell jokes	.33 (.11)	.15	.57	.16	3.03**
	Self-promotion ➔ Self-enhancing humor ➔ Tendency to tell jokes	.04 (.04)	-.01	.13	.02	1.04
	Self-promotion ➔ Aggressive humor➔ Tendency to tell jokes	.02 (.03)	-.04	.09	.01	0.60
	Self-promotion ➔ Self-defeating humor ➔ Tendency to tell jokes	.00 (.03)	-.07	.08	.00	0.00
	Self-depreciation ➔ Affiliative humor ➔ Tendency to tell jokes	.02 (.03)	-.15	.20	.01	0.27
	Self-depreciation ➔ Self-enhancing humor ➔ Tendency to tell jokes	-.03 (.09)	-.08	.02	-.01	-1.00
	Self-depreciation ➔ Aggressive humor ➔ Tendency to tell jokes	.00 (.03)	-.03	.04	.00	0.11
	Self-depreciation ➔ Self-defeating humor ➔ Tendency to tell jokes	.00 (.02)	-.18	.19	.00	0.00

Note. Confidence intervals (*C.I.*) calculated with bootstrap percentiles method (5000 samples).

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

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