TURKISH PSYCHOLOGICAL COUNSELING AND GUIDANCE JOURNAL
2026, VOL. 16, NO. 82, 614-630

Official Journal of
Turkish Psychological Counseling
and Guidance Association

ISSN: 1302 – 1370, E-ISSN: 2822 – 6569

https://doi.org/10.17066/tpdrd.1950028

RESEARCH ARTICLE

From Negative Body Image to Social Appearance Anxiety The Indirect Role of Psychological Flexibility

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ARTICLE HISTORY

Received: 12/05/2026

Accepted: 01/09/2026

KEYWORDS

Negative body image

Psychological flexibility

Social appearance anxiety

Structural equation modeling

ABSTRACT

Negative body image is closely associated with anxiety about how one's appearance is evaluated in social contexts, yet the psychological correlates underlying this association remain insufficiently understood. Using a cross-sectional online survey, this study examined whether higher negative body image (NBI) was indirectly connected to higher social appearance anxiety (SAA) through lower psychological flexibility (PF). Participants were 394 adults aged between 18-40 (M = 25.46, SD = 5.12). The hypothesized associations were tested using structural equation modeling (SEM), which was followed by measurement invariance and multigroup SEM analyses across female and male participants. In the full sample, NBI was negatively associated with PF and positively associated with SAA, whereas PF was negatively associated with SAA. The indirect association between NBI and SAA through PF was statistically significant (β = .185, 95% CI [.104, .281]), while the direct association remained significant (β = .496, 95% CI [.363, .621]). The indirect association represented approximately 27% of the total NBI-SAA association. The indirect association was also statistically significant among female participants (β = .202, 95% CI [.116, .289]), but not among male participants (β = .051, 95% CI [−.255, .356]). Overall, the results show that PF emerged as a relevant psychological correlate of the connection between NBI and SAA and provide a foundation for further investigation of this relationship.

Introduction

The rise of social media has accelerated the global dissemination of appearance ideals, shaping how individuals perceive and evaluate their bodies (Perloff, 2014). In Türkiye, negative body image (NBI) and social appearance anxiety (SAA), particularly among young adults (Özer & Güzel, 2023), have become increasingly relevant areas of research. Türkiye also ranks among the leading countries in terms of the number of aesthetic procedures performed (International Society of Aesthetic Plastic Surgery [ISAPS], 2022). This population-level statistic does not provide evidence regarding individuals' body image or appearance anxiety and is included only as a broad indicator of the visibility of appearance-related practices within the sociocultural context. More directly, the widespread circulation of appearance ideals provides a relevant context for examining the association between NBI and concerns about social evaluation based on appearance.

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Psychological flexibility (PF) may be a relevant psychological correlate within this association. From a theoretical perspective, PF reflects the capacity to remain open to difficult thoughts and emotions while continuing to engage in personally valued actions. Although previous research suggests that both general and body-image-specific flexibility are associated with body-related and social-evaluative experiences, the present study focuses specifically on general PF.

Negative Body Image and Social Appearance Anxiety

Body image is a multidimensional construct including cognitive, affective, and perceptual evaluations of one's physical self (Cash, 2012). Rather than developing in isolation, body image is shaped within broader sociocultural contexts. According to the Tripartite Influence Model (Thompson et al., 1999), peers, parents, and media, including social media platforms, communicate and reinforce culturally valued appearance ideals. The internalization of these ideals and engagement in appearance-based comparisons may lead to discrepancies between one's perceived appearance and the socially valued ideal, which are associated with negative body image (NBI) and body dissatisfaction (Fardouly et al., 2015; Grogan, 2016).

Objectification Theory provides a complementary framework for understanding these associations (Fredrickson & Roberts, 1997). The theory proposes that sociocultural environments may encourage individuals to view their bodies from an external observer's perspective and evaluate themselves primarily in terms of outward appearance. Through this process of self-objectification, attention may shift from bodily experiences and capabilities toward monitoring appearance and anticipated evaluation by others. From a cognitive-behavioral perspective, these sociocultural experiences may also be reflected in maladaptive appearance-related schemas, cognitive distortions, and negative automatic thoughts (Beck, 2011; Cash, 2012; Hofmann et al., 2012). The activation of such schemas may lead to increasing concerns about negative appearance-based evaluation, a central feature of social appearance anxiety (SAA; Hart et al., 2008).

Within this theoretical framework, SAA can be positioned as an interpersonal correlate of negative body evaluations, involving concerns that one's appearance may result in criticism, rejection, or unfavorable social judgments (Doğan, 2010; Levinson et al., 2013). The Social Comparison Theory (Festinger, 1954) suggests that repeated comparisons with idealized appearance standards may be linked to greater body dissatisfaction and social-evaluative concerns. These processes may, in turn, coincide with avoidance behaviors and broader psychological distress (Hofmann, 2007).

Psychological flexibility (PF) may be relevant to how individuals relate to difficult body-related thoughts, emotions, and social-evaluative concerns. Grounded in Acceptance and Commitment Therapy, PF refers to the capacity to remain in contact with present-moment experiences while persisting in or modifying behavior in accordance with personally chosen values (Hayes et al., 2012). Related domain-specific research indicates that body image flexibility is connected with the ability to experience difficult body-related thoughts and emotions without excessive avoidance or rigid behavioral responses (Sandoz et al., 2013). However, the present study highlights general PF rather than body-image-specific flexibility. General PF may nevertheless relate to a less rigid relationship with appearance-related thoughts and feelings. Accordingly, the present study examined whether higher NBI was indirectly associated with higher SAA through lower PF.

Psychological Flexibility as a Mediator

Psychological flexibility (PF) refers to an individual's ability to accept painful experiences, remain open to internal thoughts and emotions, stay present in the moment, and act in alignment with personally held values (Hayes et al., 2012). As a core concept within Acceptance and Commitment Therapy (ACT), PF is grounded in the view that psychological difficulties often arise from experiential avoidance and cognitive fusion, that is, the tendency to become overly identified with one's thoughts (Hayes et al., 2012). Accordingly, PF involves acknowledging and accepting challenging thoughts and emotions without attempting to avoid them, while organizing one's behavior around personally meaningful values.

PF can be conceptualized and considered at both general and domain-specific levels. General PF refers to an individual's capacity to remain open to unwanted internal experiences while engaging in behaviors consistent with personally held values across diverse life domains (Hayes et al., 2012). In contrast, body image flexibility relates specifically to the ability to experience body-related thoughts, emotions, and sensations without allowing them to interfere with valued actions (Sandoz et al., 2013). Although both constructs are grounded in

the ACT model, body image flexibility represents a domain-specific application of PF. It is therefore conceptually more proximal to body-related experiences. Consistent with this distinction, body image flexibility has been associated with lower body dissatisfaction, dysmorphic concern, eating psychopathology, and appearance-related distress (Linardon et al., 2021; Santos-Pereira et al., 2024).

Nevertheless, recent research revealed that general PF may also be related to body image and appearance-related outcomes. Mendes et al. (2021) reported an indirect connection between external shame and disordered eating through psychological inflexibility among adolescent females. Psychological inflexibility is theoretically related to, but should not be treated as identical to, general PF; it reflects rigid and avoidant responses to internal experiences. Similarly, Fang et al. (2022) found that higher general PF correlated with lower negative body image among Chinese university students and that intervention-related changes in PF occur in line with improvements in body image. In a similar vein, Xu et al. (2026) reported an indirect association between body image disturbance and depression through psychological inflexibility among young adults with acne. Other studies have linked general PF with SAA (Karaaziz et al., 2023), while experiential avoidance, a central component of psychological inflexibility, has been indirectly associated with SAA regarding cognitive fusion (Çelikbaş & Akbayrak, 2025). Taken together, these findings suggest that body image flexibility provides a more proximal, domain-specific framework for understanding body-related outcomes, whereas general PF may represent a broader correlate of body image disturbance and appearance-related distress. The present study therefore focused on general PF to examine whether this broader transdiagnostic construct was indirectly connected to the concurrent relationship between NBI and SAA.

According to Hayes et al. (2012), PF comprises six interrelated core components, which are present-moment awareness, acceptance, cognitive defusion, self-as-context, values, and committed action. Present-moment awareness refers to mindfully engaging with ongoing experiences rather than becoming entangled in thoughts about the past or future events. Acceptance entails remaining open to unpleasant thoughts and emotions instead of suppressing or avoiding them. Cognitive defusion involves viewing thoughts as transient mental events rather than as unquestionable truths, thereby reducing automatic reactions to these thoughts. Self-as-context denotes a broadened and stable sense of self that transcends specific thoughts, emotions, and autobiographical narratives. Values involve identifying what is genuinely important in life and setting goals that reflect these priorities. Finally, committed action refers to the sustained pursuit of behaviors consistent with one's values, even in the presence of obstacles.

General PF may be relevant to how individuals respond to difficult emotions, thoughts, and body-related perceptions. A greater capacity to remain open to these experiences while engaging in valued actions may be associated with less rigid responses to appearance-related concerns and lower SAA. However, the relationship between general PF and appearance-specific outcomes requires direct empirical examination since general PF is broader than body image flexibility.

The Present Study

Despite growing scholarly attention to body image and appearance-related anxiety, the psychological correlates underlying the association between NBI and SAA remain insufficiently understood, particularly among Turkish adults. Body image concerns are not limited to personal evaluations; they are further situated within social interactions and concerns about external evaluation. Previous studies have consistently documented a positive association between NBI and SAA (Acar, 2022; Kim & Chung, 2016). Lower self-esteem (Göbel et al., 2023), higher body mass index (Andini & Hamidah, 2022; Göbel et al., 2023; Titchener & Wong, 2015), body dissatisfaction, and overweight status (Andini & Hamidah, 2022; Titchener & Wong, 2015) have also been associated with greater appearance-related anxiety.

One potentially relevant construct within the NBI-SAA association is PF, which refers to the capacity to remain in contact with present-moment experiences, remain open to difficult thoughts and emotions, and act in accordance with personally chosen values (Hayes et al., 2012). Previous research has linked general PF with social anxiety and appearance-related distress (Masuda et al., 2011; Shepherd et al., 2019). Related studies have documented body image flexibility, a domain-specific construct grounded in the broader psychological flexibility framework. More specifically, body image flexibility has been associated with more adaptive body-

related outcomes and lower appearance-related distress (Brichacek et al., 2024; Sandoz et al., 2013; Santos-Pereira et al., 2024; Webb et al., 2020; Zucchelli et al., 2019). Since body image flexibility refers specifically to responses to body-related thoughts, emotions, and experiences, these findings provide specific evidence for a conceptually related but distinct construct rather than a direct support for general PF.

Given these grounds and connections, the present study focused on general PF rather than body image flexibility. Specifically, the study aimed at whether a broader transdiagnostic construct, which extends beyond body-specific experiences, was statistically connected to the association between NBI and SAA. In previous research, Acar (2022) examined body image flexibility in relation to body image and SAA, thereby providing a closely related, domain-specific foundation for the current study. Accordingly, the current study investigated whether higher NBI is indirectly associated with higher SAA through lower general PF. Notably, Kılıç and Kabasakal (2025) revealed that general PF statistically accounted for part of the association between body image and life satisfaction. Nevertheless, life satisfaction represents a broad well-being outcome, whereas SAA concerns appearance-based social evaluation more specifically. The present study therefore extends previous research by examining general PF in relation to a more proximal interpersonal correlate of NBI. This research is among the first studies to investigate the indirect association between NBI and SAA through general PF.

The Turkish sociocultural context may be particularly relevant because traditional appearance norms coexist with increasing exposure to digital media and idealized appearance content (Özer & Güzel, 2023). Previous studies have reported higher SAA among female participants than among male participants (Seki & Dilmaç, 2015; Şimşir et al., 2019), although appearance-related concerns are existing across females and males. National statistics also show a widespread social media use in Türkiye, with 86.5% of the population using social media (Turkish Statistical Institute [TSI], 2024). It was reported to be an average daily use of 2 hours and 43 minutes. Among the social media tools and Instagram was identified as the most frequently used platform (Ministry of Transport and Infrastructure [MTI], 2025). Such a widespread exposure provides a broader context in which idealized appearance standards, appearance comparisons, and concerns about social evaluation may become prevalent. Türkiye's high number of aesthetic procedures may similarly indicate the visibility of appearance-related practices within the broader sociocultural context, although this population-level statistic does not directly reflect individuals' NBI or SAA (ISAPS, 2022).

Taken together, existing studies showed that both general and body-image-specific flexibility are connected to appearance-related experiences. However, whether general PF is statistically related to the specific association between NBI and SAA needs to be further addressed. This examination is significant to clarify whether a broader form of psychological flexibility is also connected to appearance-based social-evaluative concerns beyond the domain-specific flexibility, which are widely examined in previous research. Motivated by this gap, the current study examined whether higher NBI was indirectly associated with higher SAA through lower general PF. Accordingly, the following hypotheses were tested:

H1: NBI will be positively associated with SAA.

H2: NBI will be negatively associated with PF.

H3: PF will be negatively associated with SAA.

H4: NBI will be indirectly and positively associated with SAA through lower PF.

Method

Participants and Procedure

The participants consisted of 394 young adults (267 women, 67.7%; 127 men, 32.2%) recruited through convenience sampling (see Table 1). Their ages ranged from 18 to 40 years (M = 25.4, SD = 5.12). In terms of physical characteristics, participants reported a height range between 148 cm and 195 cm (M = 166.8, SD = 8.15) and a weight range between 50 kg and 150 kg (M = 65.9, SD = 14.1). With respect to educational background, 38 participants (9.64%) were high school graduates, 233 (59.1%) were university students, and 123 (31.2%) were university graduates. Regarding aesthetic-related variables, 14.7% of participants reported having undergone at least one cosmetic procedure (e.g., a surgery, botox, fillers), whereas 85.2% had not previously experienced any operations. Notably, more than half of the participants (57.1%) shared a desire to undergo a cosmetic procedure in the future, while 42.8% reported having no such desire.

Table 1. *Participants' Demographic Characteristics*

Variables	Group	N (M, SD)	%(range)
Sex	Female	267	67.7
	Male	127	32.2
Age	—	25.4 ± 5.12	18—40
Height (cm)	—	166.8 ± 8.15	148—195
Weight (kg)	—	65.9 ± 14.4	50—115
Education status	High school graduate	38	9.64
	University student	233	59.1
	University graduate	123	31.2
HAP	Yes	58	14.7
	No	336	85.2
DAP	Yes	225	57.1
	No	169	42.8

Note. *M* = arithmetic mean, *SD* = standard deviation, HAP = history of aesthetic procedures, DAP = desire for aesthetic procedures

The data were collected online via the Google Forms. The participants were not asked to provide any personally identifying information. A clear explanation about purpose of the study, voluntary participation, and freedom to withdraw at any time were involved in the instructions of the data collection form. An informed consent was obtained from all participants before they took part in the study.

Ethical Approval

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of Sinop University (Date: 11.04.2025, No: 2025/167). Informed consent was obtained from all individual participants included in the study.

Measures

Body Image Scale (BIS)

The BIS (by Saylan & Soyyiğit, 2022) consists of 21 items on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) and four subscales (i.e., positive body perception, negative body perception, evaluation sensitivity, and body change). Within the scope of this study, the Negative Body Perception subscale was used. For conceptual clarity and consistency throughout the manuscript, scores from this subscale are referred to as negative body image (NBI) in the manuscript. Higher scores on the BIS indicate a more negative body image. Confirmatory factor analysis (CFA) supported acceptable model fit of the scale (CFI = .95, IFI = .95, NFI = .90, SRMR = .063, RMSEA = .061). Internal consistency and reliability were reported as α = .88 for the total score and as α = .77 for the negative body perception subscale (Saylan & Soyyiğit, 2022). In the present study, reliability coefficients of the BIS were found to be high for the total score (α = .928, ω = .929) and negative body perception subscale (α = .834, ω = .836).

Social Appearance Anxiety Scale (SAAS)

The SAAS (by Hart et al., 2008) includes 16 items rated on a 5-point Likert scale ranging from 1 (not at all true of me) to 5 (extremely true of me). Higher scores indicates greater SAA. Turkish form of the SAAS (Doğan, 2010) demonstrated an acceptable model fit (CFI = .95, IFI = .95, SRMR = .038, RMSEA = .066) and high reliability (α = .93; Doğan, 2010). In this study, reliability of the SAAS was also found to be excellent (α = .952, ω = .953).

Psychological Flexibility Scale (PFS)

The PFS (by Uygur & Karaca, 2020), includes 16 items and five subscales (i.e., acceptance, contact with the present moment, self as context, defusion, and values and committed actions aligned with these values). Responses are rated on a 5-point Likert scale ranging from 1 (does not describe me at all) to 5 (completely describes me). Higher PFS scores mean greater PF. The CFA results indicated an acceptable model fit (CFI = .93, IFI = .93, NFI = .90, SRMR = .05, RMSEA = .05). The reliability coefficients of the PFS was α = .83 (Uygur & Karaca, 2020). In the present study, reliability coefficients exceeded acceptable thresholds (α = .718, ω = .742).

Data Analysis

In the data analysis procedures, descriptive statistics, distributional properties, and internal consistency estimates were first examined. Skewness and kurtosis values within ±1.5 were considered an indicative of approximately normal distribution (Kline, 2015; Tabachnick & Fidell, 2013). The skewness and kurtosis values for all study variables fell within these recommended limits as shown in Table 2. Internal consistency was calculated using Cronbach's alpha and McDonald's omega coefficients. Further, zero-order associations among the study variables were examined using Pearson correlation coefficients.

Preliminary analyses revealed a very strong correlation between the total scores of the BIS and the SAAS (r = .819). Given the conceptual similarity between the Evaluation Sensitivity subscale of the BIS and SAA, this strong association raised the possibility that overlapping item content might have inflated the relationship between the two measures. Accordingly, additional analyses were conducted to evaluate their discriminant validity. The heterotrait-monotrait ratio of correlations (HTMT) between the BIS and SAAS was .90, exceeding the conservative cutoff of .85 and indicating a potential concern regarding the distinctiveness of the two constructs (Henseler et al., 2015).

To minimize potential content overlap, all subsequent analyses were conducted using only the Negative Body Perception subscale of the BIS, which will be hereafter referred to as negative body image (NBI). The results showed that the correlation between NBI and SAA decreased to r = .619 but remained substantial and positive (see Table 2). The HTMT ratio between NBI and SAA was .683, which was below the recommended cutoff of .85 and supported the discriminant validity of the two constructs (Henseler et al., 2015). Consequently, NBI rather than the BIS total score was used in all hypothesis-testing analyses. Potential multicollinearity was calculated using variance inflation factor (VIF) and tolerance statistics, whereas the independence of residuals was calculated using the Durbin-Watson statistic. VIF values were 1.36, tolerance values ranged from .73 to .74, and the Durbin-Watson statistic was found to be 1.96. These values indicated no substantial concerns regarding multicollinearity or residual dependence.

Confirmatory factor analysis (CFA) and structural equation modeling (SEM; Kline, 2015) were used to evaluate the measurement and structural models. All models were estimated using the maximum likelihood (ML) method, and missing data were handled using full information maximum likelihood (FIML). Before testing the hypothesized indirect-effect model, a three-factor measurement model, which involve comprising NBI, PF, and SAA, was evaluated. NBI and SAA were each represented by two item parcels, whereas PF was represented by its five established dimensions. The items of the NBI and SAA measures were combined into parcels after their unidimensional structures had been established. Parceling was used to obtain more stable indicators, to reduce model complexity, and to provide a parsimonious representation of the latent constructs (Little et al., 2002, 2013; Yang et al., 2010).

Measurement invariance of the three-factor model across female and male participants was evaluated by sequentially testing configural, metric, scalar, and strict invariance models (Wu et al., 2007). Measurement invariance was considered to be supported when the absolute changes in the comparative fit index and root-mean-square error of approximation remained within the recommended thresholds of $|\Delta CFI| \leq .010$ and $|\Delta RMSEA| \leq .015$ (Chen, 2007).

After the relevant measurement model had been established, the indirect association between NBI and SAA through PF was tested using SEM. Then, a multigroup SEM analysis was conducted to examine whether the estimated direct and indirect associations differed between female and male participants. This analysis was conducted since mixed findings were reported regarding sex- or gender-related differences in SAA (e.g., İnik et al., 2024; Jin et al., 2022; Seki & Dilmaç, 2015; Sunilkumar, 2020; Şimşir et al., 2019).

Model fit was evaluated using the root-mean-square error of approximation (RMSEA), standardized root-mean-square residual (SRMR), goodness-of-fit index (GFI), comparative fit index (CFI), Tucker-Lewis index (TLI), and normed fit index (NFI). RMSEA and SRMR values below .08 and GFI, CFI, TLI, and NFI values above .90 were considered to be an indicative of an acceptable model fit (Hu & Bentler, 1999; Kline, 2015). The statistical significance of the direct, indirect, and total effects was calculated using bias-corrected bootstrapping with 5,000 resamples and 95% confidence intervals (Preacher & Hayes, 2008). Based on this calculation, an effect was considered to be statistically significant when the confidence interval did not include a zero value. All analyses were conducted using IBM SPSS Statistics version 27, JASP version 0.19.3, and IBM SPSS AMOS version 24.

Results

Descriptive Statistics

Descriptive statistics, internal consistency estimates, multicollinearity diagnostics, Pearson correlations, and HTMT ratios are presented in Table 2. Skewness values ranged from −0.092 to 0.725, whereas kurtosis values ranged from −0.492 to −0.006. Because all skewness and kurtosis values were within the acceptable range of ±1.5, the data were considered to be normally distributed (Kline, 2015; Tabachnick & Fidell, 2013). Tolerance values ranged from .734 to .736, and the VIF values were 1.36, indicating no substantial multicollinearity concerns. Internal consistency was good for NBI (α = .834, ω = .836), acceptable for PF (α = .718, ω = .742), and excellent for SAA (α = .952, ω = .953). These results showed that all reliability coefficients exceeded acceptable thresholds, which confirm the internal consistency of the measurement instruments (Tabachnick & Fidell, 2013).

All zero-order correlations were statistically significant at $p < .001$. Specifically, NBI was negatively associated with PF ($r = -.514$) and positively associated with SAA ($r = .619$). PF was also negatively associated with SAA ($r = -.478$). Thus, higher levels of NBI were associated with lower PF and greater SAA, whereas greater PF was associated with lower SAA. Additionally, the HTMT ratios ranged from .539 to .683, with values of .654 for NBI and PF, .683 for NBI and SAA, and .539 for PF and SAA. Because all HTMT values were below the recommended cutoff of .85. These findings supported the discriminant validity of the three constructs as shown in Table 2.

Table 2. *Descriptive Statistics, Reliability Estimates, Correlations, and HTMT Ratios Among the Study Variables*

Variables	Mean	SD	Skew	Kurt	α	ω	Tolerance	VIF	1	2	3
(1) NBI	12.58	4.44	0.388	−.492	.834	.836	.734	1.36	—	.654	.683
(2) PF	56.90	7.26	−0.092	−.006	.718	.742	.736	1.36	−.514***	—	.539
(3) SAA	36.70	15.40	0.725	−.374	.952	.953	—	—	.619***	−.478***	—

Note. Pearson correlations are presented below the diagonal, and heterotrait–monotrait ratios of correlations (HTMT) are presented above the diagonal. NBI = negative body image; PF = psychological flexibility; SAA = social appearance anxiety; SD = standard deviation; α = Cronbach's alpha; ω = McDonald's omega; VIF = variance inflation factor. * p < .05, ** p < .01, *** p < .001

Measurement Model

Before testing the hypothesized mediation model, the adequacy of the measurement model was evaluated using confirmatory factor analysis (CFA). Preliminary item-level CFAs supported the expected factor structures of the Negative Body Perception subscale of the BIS, the PFS, and the SAAS. Subsequently, the hypothesized three-factor measurement model was tested. The measurement model comprised three correlated latent constructs-negative body image (NBI), psychological flexibility (PF), and social appearance anxiety (SAA)-represented by nine observed indicators. NBI and SAA were each represented by two item parcels, whereas PF was represented by its five established dimensions including acceptance, PM, SC, defusion, and values. Because the Negative Body Perception subscale and the SAAS were treated as unidimensional measures, the items of these scales were involved into parcels to provide more stable indicators and to reduce model complexity (Little et al., 2002, 2013; Yang et al., 2010). The three-factor measurement model demonstrated

an acceptable fit to the data, $\chi^2(24) = 54.03$, $\chi^2/df = 2.25$, GFI = .970, CFI = .983, TLI = .975, NFI = .970, SRMR = .034, and RMSEA = .056, 90% CI [.036, .077]. All standardized factor loadings were found to be statistically significant, which support the adequacy of the indicators in representing their respective latent constructs. These findings provided an relevant basis for testing the hypothesized structural model.

Building on this stage, measurement invariance of the three-factor model across female and male participants was examined at the configural, metric, scalar, and strict levels. As presented in Table 3, the configural model demonstrated an acceptable fit, $\chi^2(48) = 81.74$, CFI = .981, TLI = .972, SRMR = .043, and RMSEA = .060, 90% CI [.036, .081]. This result showed that the same three-factor configuration was supported across both groups. Constraining the factor loadings to equality did not meaningfully reduce model fit (ΔCFI = .001, ΔRMSEA = .003), which supports metric invariance. Scalar invariance was also supported because equality constraints on the item intercepts resulted in only negligible changes in model fit (ΔCFI = .004, ΔRMSEA = .003). Further, constraining the residual variances to equality did not produce a meaningful deterioration in fit (ΔCFI = .002, ΔRMSEA = .006), supporting strict invariance. Across all successive models, the changes were found to remain within the recommended criteria of $|\Delta CFI| \leq .010$ and $|\Delta RMSEA| \leq .015$.

Overall, these results supported configural, metric, scalar, and strict invariance of the NBI-PF-SAA measurement model across female and male participants. Relatedly, three constructs appeared to be measured comparably across sex, which provides a relevant basis for subsequent multigroup comparisons of the structural relations.

Table 3. *Measurement Invariance of the Three-Factor Measurement Model Across Sex*

Model	χ2	df	CFI	TLI	SRMR	RMSEA [90% CI]	ΔCFI	ΔRMSEA
Configural	81.74	48	.981	.972	.043	.060 [.036, .081]	—	—
Metric	89.19	54	.980	.973	.050	.057 [.035, .078]	.001	.003
Scalar	102.79	60	.976	.971	.049	.060 [.040, .080]	.004	.003
Strict	108.55	69	.978	.977	.050	.054 [.033, .073]	.002	.006

Note. CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; CI = confidence interval

Structural Model

Following evaluation of the measurement model, the hypothesized structural model was examined using SEM. The model demonstrated an acceptable-to-good fit to the data, $\chi^2(24) = 54.03$, $\chi^2/df = 2.25$, GFI = .970, CFI = .983, TLI = .975, NFI = .970, SRMR = .034, and RMSEA = .056, 90% CI [.036, .077]. The standardized structural model for the full sample is presented in Figure 1. All hypothesized structural paths were statistically significant and in the expected directions. Specifically, the NBI was negatively associated with PF while PF was negatively associated with SAA NBI was also positively associated with SAA after PF was included in the model. The model accounted for 43% of the variance in PF and 51% of the variance in SAA.

Bootstrap estimates of the standardized total, direct, and indirect associations for the full sample and the female and male subsamples are presented in Table 4. The total association between NBI and SAA was positive and statistically significant ($\beta = .681$, 95% CI [.605, .746], $p < .001$) in the full sample. The indirect association through PF was also statistically significant ($\beta = .185$, 95% CI [.104, .281], $p = .001$), as the bootstrap confidence interval did not include a zero value. Since the direct association between NBI and SAA also remained statistically significant, PF statistically accounted for only a part, of the NBI–SAA association; but not all.

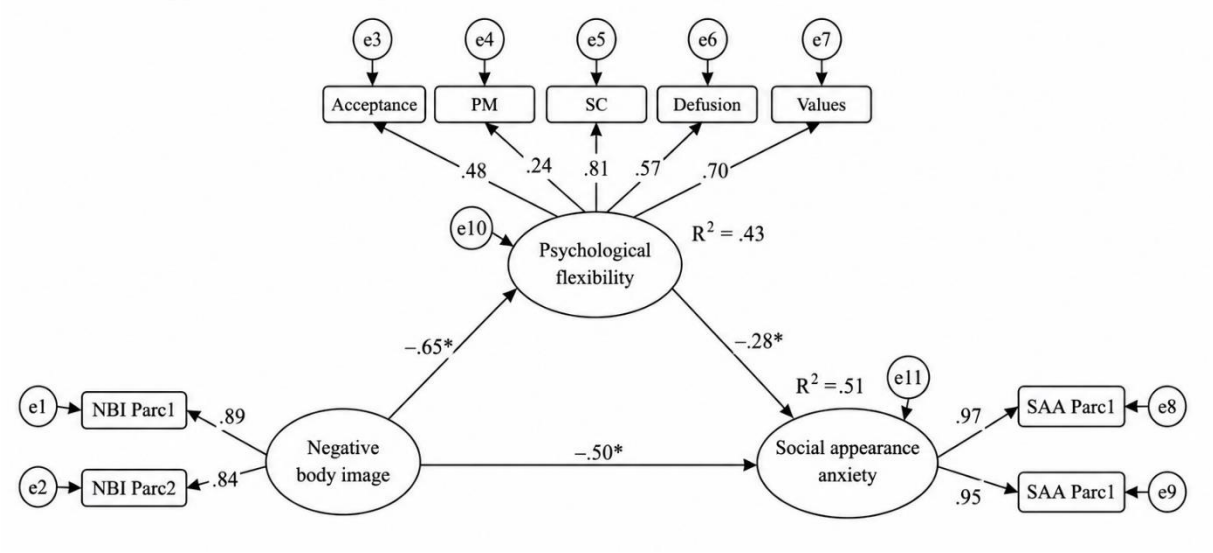

Figure 1. *Mediating Role of Psychological Flexibility in the Association Between Negative Body-Image and Social Appearance Anxiety*

Note. PM = present moment; SC = self-as-context; NBI Parc1 and NBI Parc2 are item parcels representing negative body image; SAA Parc1 and SAA Parc2 are item parcels representing social appearance anxiety. * $p \leq .001$.

A multigroup SEM analysis was subsequently conducted across female and male participants. The multigroup model showed a good fit to the data, $\chi^2(48) = 81.74$, GFI = .956, CFI = .981, TLI = .972, NFI = .956, SRMR = .043, and RMSEA = .060, 90% CI [.037, .081]. The total association between NBI and SAA was found to be statistically significant among female participants (β = .691, 95% CI [.621, .761], p < .001). NBI was negatively associated withPF (β = −.682, 95% CI [−.723, −.541], p < .001), and PF was negatively associated with SAA (β = −.320, 95% CI [−.450, −.190], p < .001). The direct association between NBI and SAA remained significant after PF was included in the model (β = .489, 95% CI [.367, .610], p < .001). The indirect association through PF was also statistically significant (β = .202, 95% CI [.116, .289], p < .001), suggesting that PF statistically accounted for part of the NBI–SAA association among female participants. The total association between NBI and SAA was statistically significant (β = .632, 95% CI [.472, .791], p < .001) among the male participants, and the direct association remained significant after PF was included in the model (β = .581, 95% CI [.202, .860], p = .003). NBI was also negatively associated with PF (β = −.748, 95% CI [−.913, −.532], p < .001). However, PF was not significantly associated with SAA (β = −.068, 95% CI [−.479, .343], p = .746), and the corresponding indirect association was not statistically significant (β = .051, 95% CI [−.255, .356], p = .635) as presented in Table 4.

Table 4. *Bootstrap Estimates of Standardized Total, Direct, and Indirect Associations in the Full Sample and Female and Male Subsamples*

Paths	Total β [95% CI]	*p*	Female β [95% CI]	*p*	Male β [95% CI]	*p*
Total effect						
NBI → SAA	.681 [.605, .746]	< .001	.691 [.621, .761]	< .001	.632 [.472, .791]	< .001
Direct effect						
NBI → PF	−.654 [−.742, −.556]	< .001	−.682 [−.723, −.541]	< .001	−.748 [−.913, −.532]	< .001
NBI → SAA	.496 [.363, .621]	< .001	.489 [.367, .610]	< .001	.581 [.202, .860]	.003
PF → SAA	−.283 [−.409, −.143]	.001	−.320 [−.450, −.190]	< .001	−.068 [−.479, .343	.746
Indirect effect						
NBI → PF → SAA	.185 [.104, .281]	.001	.202 [.116, .289]	< .001	.051 [−.255, .356]	.635

Note. β = standardized effects, CI = confidence interval, NBI = negative body image, PF = psychological flexibility, SAA = social appearance anxiety. Confidence intervals were estimated using 5,000 bootstrap resamples.

Overall, the hypothesized indirect association was statistically supported in the full sample and the female subsample but not in the male subsample. Given the cross-sectional design of this research, these direct and indirect associations should be interpreted as statistical patterns among concurrently measured variables rather than evidence of temporal ordering or causal mediation.

Discussion

This study examined the direct and indirect associations among NBI, PF, and SAA among Turkish adults. The results supported the hypothesized associations: higher NBI was associated with lower general PF and higher SAA, whereas higher general PF was associated with lower SAA. The results showed that higher NBI was indirectly linked to higher SAA through lower general PF. This indirect association was statistically significant in the full sample and among female participants but not among male participants. Nevertheless, this emerging pattern should not be interpreted as evidence of a statistical significance between-group difference without a formal comparison of the estimates.

Consistent with previous research, higher NBI was found to be connected to higher SAA (H1). Earlier studies have shown that dissatisfaction with one's physical appearance is linked to greater self-consciousness, fear of negative evaluation, and avoidance in social contexts (Andini & Hamidah, 2022; Göbel et al., 2023; Liao et al., 2023; Titchener & Wong, 2015). Similarly, research conducted in Türkish context has revealed a significant association between body perception and appearance-related anxiety (Arıkan et al., 2024). These results indicate that negative body evaluations are closely related to concerns about how one's appearance may be perceived by others. In contemporary social media environments, frequent exposure to idealized appearance content and appearance-based comparisons may coincide with higher body dissatisfaction and sensitivity to social evaluation (Hai & Yang, 2022; Seekis et al., 2020).

The present study also found that higher NBI was connected to lower general PF (H2). This finding is consistent with emerging evidence, which link general PF and the related inverse construct of psychological inflexibility with body image-related functioning. To exemplify, Fang et al. (2022), reported an association between higher general PF and lower NBI among Chinese university students. In a recent study, Xu et al. (2026) identified an indirect connection between body image disturbance and depression through psychological inflexibility among young adults with acne. Further, Mendes et al. (2021) reported indirect associations of shame and body image-related shame with disordered eating through psychological inflexibility. Psychological inflexibility is theoretically related to general PF but should not be treated as an identical construct or measurement approach. Taken together, these results show that body image-related distress is associated not only with body-specific responses but also with broader patterns of openness, avoidance, and behavioral flexibility across life domains.

Another prominent result is that general PF was found to be negatively associated with SAA (H3). This result is consistent with studies linking general PF and related ACT processes to lower appearance-related distress. In relevant literature, Karaaziz et al. (2023) conducted an ACT-based group intervention among university students and reported a decrease in SAA alongside an increase in general PF following. In a recent study, Çelikbaş and Akbayrak (2025) documented an indirect connection between cognitive fusion and SAA through experiential avoidance among individuals with acne vulgaris. Experiential avoidance represents a central component of psychological inflexibility but does not encompass the full multidimensional construct of general PF. Similarly, Shepherd et al. (2019) reported supportive evidence concerning ACT-based approaches among individuals with visible differences. Although these studies differ in their populations, designs, and measures, they collectively support the theoretical relevance of general PF and relate processes to appearance-based social-evaluative concerns.

Furthermore, the results of the current study showed that higher NBI was indirectly associated with higher SAA through lower general PF (H4). In literature, body image flexibility was reported to be negatively associated with body dissatisfaction (Webb et al., 2020). Meanwhile, general PF and the theoretically related inverse construct of psychological inflexibility have been linked to body image-related functioning (Fang et al., 2022; Xu et al., 2026). Earlier studies have also presented several psychological variables related to the

association between body image and appearance-related anxiety, including self-esteem (Göbel et al., 2023; Hai & Yang, 2022; Liao et al., 2023), self-compassion (Gao et al., 2023; Polat & Çiftçi, 2021), and self-efficacy (Liao et al., 2023). The current study extends previous research by revealing that general PF is also statistically related to the concurrent association between NBI and SAA. Building on the domain-specific findings of Acar (2022), this study is positioned as among the first to examine an indirect association between NBI and SAA through general PF. This interpretation should be considered along with the distinction between general PF and body image flexibility. Previous research has related body image flexibility to lower body dissatisfaction, dysmorphic concern, eating psychopathology, and appearance-related distress (Brichacek et al., 2024; Linardon et al., 2021; Santos-Pereira et al., 2024; Sandoz et al., 2013; Webb et al., 2020; Zucchelli et al., 2019). These findings provide a conceptually relevant, domain-specific foundation but should not be considered as direct evidence for general PF. While body image flexibility specifically concerns flexible responses to body-related thoughts, emotions, and sensations, general PF reflects a broader capacity in operating across life domains. Relatedly, results of this study showed that this broader form of psychological flexibility is also associated with body-related and social-evaluative experiences.

The sociocultural context of Türkiye should be taken into consideration itn the interpretation of these emerging associations. High levels of social media engagement increase the visibility of idealized appearance content and opportunities for appearance-based comparison (MTI, 2025; TSI, 2024). Appearance-related social expectations may be especially salient among female participants. In the same vein, the indirect NBI–SAA association through general PF and the PF–SAA association were statistically significant among female participants but not among male participants. Nevertheless, the differences between groups in terms of significance of the results do not necessarily mean that the corresponding estimates differ significantly.

ACT- and mindfulness-based approaches may provide theoretically relevant contexts for future investigation because they address acceptance, present-moment awareness, cognitive defusion, and values-guided action. Notably, the results of the current study should not be interpreted as direct evidence for the effectiveness of these approaches in reducing NBI or SAA. Longitudinal and experimental studies are needed to examine whether changes in general or body-image-specific psychological flexibility precede changes in appearance-related distress and whether interventions addressing these processes produce clinically meaningful outcomes. Future research could also examine whether culturally adapted approaches differ in relevance across sex and sociocultural groups.

Conclusion

This study revealed significant concurrent associations among negative body image (NBI), psychological flexibility (PF), and social appearance anxiety (SAA) in adults. As a prominent result, higher NBI was associated with lower PF and higher SAA, whereas PF was negatively associated with SAA. PF statistically accounted for part of the association between NBI and SAA, with the indirect association representing approximately 27% of the overall connection. This indirect association was statistically significant in the full sample and among female participants, but not among male participants. It is worth highlighting that this result should not be interpreted as evidence of a between-group difference without a formal comparison of the estimates. Overall, the results identify PF as a relevant psychological correlate within the NBI–SAA association rather than as an established protective mechanism or intervention target. Since the variables were measured concurrently, the results do not establish a temporal ordering or causality. Longitudinal and experimental research is needed to examine the proposed sequence, evaluate alternative directional relationships, and determine whether changes in PF are connected to subsequent changes in appearance-related distress.

Limitations and Suggestions for Future Research

Although this study makes important contributions to the existing literature, some limitations should be considered when interpreting the results. First, the cross-sectional design does not establish temporal precedence or causality among NBI, PF, and SAA. The ordering of the variables was specified on theoretical grounds, but alternative and reciprocal associations remain plausible. Moreover, estimates of indirect associations revealed from cross-sectional data may differ substantially from those obtained using longitudinal

designs, which may provide a biased representation of the underlying temporal process (Maxwell & Cole, 2007). The indirect connection revealed in this study should therefore be considered as a statistical decomposition of concurrently measured relationships rather than evidence of causal mediation. Thus, longitudinal and experimental studies are needed to examine temporal ordering, reciprocal relationships, and alternative directional models.

Second, all constructs were calculated by using self-report measures administered through an online survey. This approach may have increased the effect of shared method variance, response biases, and sample-selection effects. Future studies could combine self-report instruments with clinician ratings, behavioral measures, ecological momentary assessments, or qualitative interviews. Recruiting participants through more diverse settings and using different sampling strategies would also help identify whether these results generalize beyond online samples of young adults.

Third, the strong association initially observed between the BIS total score and SAA raised concerns about construct overlap. Because the Evaluation Sensitivity subscale of the BIS closely relates to the evaluative concerns revealed by the SAAS. To address this issue, the Evaluation Sensitivity subscale was excluded, and only the Negative Body Perception subscale was retained. The HTMT ratio supported the discriminant validity of NBI and SAA. Nevertheless, both constructs were calculated through self-reported measures that capture related forms of appearance-focused distress. Some residual conceptual overlap and shared method variance therefore cannot be figured out. Future research should further focus on the distinctiveness of these constructs by using alternative measures, multimethod designs, and additional discriminant-validity tests.

Fourth, the internal consistency estimates for PF were found to be acceptable but comparatively modest and lower than those reported in the original validation study. In the revised analyses, PF was modeled as a latent construct represented by its five established dimensions This accounts for measurement error rather than treating an observed composite score as error-free. Even so, the comparatively modest internal consistency should be considered when interpreting the structural estimates. In addition, the PFS reveals general psychological flexibility rather than body-image-specific flexibility. Although these constructs share a common theoretical foundation, they are not interchangeable. More specifically, general PF reflects flexibility across broad life domains, whereas body image flexibility concerns responses specifically to body-related thoughts, emotions, and sensations. Since the present study did not include the BI-AAQ or another domain-specific flexibility measure, the relative associations of general and body-image-specific flexibility with NBI and SAA could not be compared. A general measure may be less sensitive to appearance-specific experiences. Therefore, future studies should include both constructs within the same model to examine their shared and distinct associations with appearance-related outcomes.

Fifth, the number of female and male participants in the sample was imbalanced. Since SAA may vary across sex, the full-sample estimates may have reflected the patterns observed among female participants more strongly. The smaller male subsample may have produced less precise estimates and wider confidence intervals. Although measurement invariance and multigroup SEM analyses were conducted, unequal group sizes are likely to limit the generalizability of the results including sex as a variable. Moreover, a statistically significant indirect association among female participants and a nonsignificant association among male participants do not, by themselves, establish a statistically significant difference between the groups. In future research, more balanced samples should be involved and structural paths and indirect associations across female and male participants should be compared.

Finally, the results do not provide direct evidence that modifying PF would lead to changes in NBI or SAA. Still, PF may be a relevant construct for future intervention studies. Longitudinal and experimental research could examine whether interventions informed by acceptance and commitment therapy are associated with changes in appearance-related distress and possible variations across demographic or clinical groups. Future research involving participants of different ages and sociocultural backgrounds would also be valuable, particularly in contexts where cultural norms, interpersonal evaluation, and media exposure may shape body-related experiences.

Funding: This research did not receive any specific grant from public, commercial, or non-profit funding agencies.

Conflict of Interest: The authors report there are no competing interests to declare.

Data Availability: The data used for present research are available upon request from the corresponding author.

Ethical Approval: This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of Sinop University (Date: 11.04.2025, No: 2025/167). Informed consent was obtained from all individual participants included in the study.

Consent to Participate: Informed consent was obtained from all participants prior to their participation in the study.

Author Contributions: Authors contributed equally.

Declaration of generative AI in scientific writing: During the preparation of this work the authors used ChatGPT in order to proofreading. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

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