



The mediating role of positive body image between friendship qualities, well-being strategies and identity development among adolescents

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Abstract

This study aimed to explore the mediating role of body image in the association between The utilization of strategies aimed at enhancing subjective well-being, friendship qualities, and identity development. The participants consisted of 270 early adolescents, comprising 157 girls (58.15%) and 113 boys (41.85%). Data were collected using several scales, including the “Body Appreciation Scale,” “Subjective Well-Being Increasing Strategies Scale for Adolescents,” “Friendship Qualities Scale,” and “The Dimensions of Identity Development Scale.” Two-stage structural equation modeling was employed to analyze the gathered data. The findings indicated a positive model of identity development in adolescents, highlighting that subjective well-being increasing strategies contribute positively to identity development, and this relationship is mediated by positive body image. Furthermore, the study found that positive body image also mediates the association between adolescents’ identity development and the establishment of quality friendships.

Keywords Positive body image · Friendship qualities · Identity development · Subjective well-being increasing strategies

Introduction

Adolescence represents a critical developmental period in human life, marked by substantial changes. It is acknowledged as a transitional phase, during which individuals undergo a multitude of transformations (Erikson, 1968; Steinberg, 2016). A pivotal aspect of psychosocial development during adolescence is the formation of one’s identity (Erikson, 1968; Steinberg, 2016). The process of acquiring an identity in this stage has been extensively explored in

numerous studies on identity. Furthermore, psycho-social development theory posits that successful identity formation in adolescents fosters a robust sense of self and purpose, thereby facilitating their transition into more independent and confident adults (Erikson, 1968). Establishing a strong identity enhances the likelihood of experiencing positive outcomes in both personal and social spheres (Branje, 2022). Self-categorization theory suggests that achieving a positive identity promotes a profound sense of belonging and positive self-view. Beyond theoretical perspectives, an adolescent’s well-developed identity, shielded from psychopathologies like anxiety and depression, augments motivation for academic pursuits, enriches relationships with peers, parents, and adults, encourages engagement in healthy behaviors (Albareello et al., 2018; Schwartz et al., 2005), fosters openness to career aspirations and informed career choices. Conversely, struggles in identity development are linked to psychological distress (Schwartz et al., 2005), substance abuse (Trujillo & Reitz, 2018), academic challenges, interpersonal difficulties, social isolation, risky behaviors, and delinquency (Erikson, 1968), along with career development hurdles (Steinberg, 2016).

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Throughout adolescence, a myriad of psychological and social factors plays a critical role in nurturing a robust and flourishing identity (Branje, 2022). Factors such as familial support, constructive peer interactions, educational practices, along with individual traits like self-efficacy, self-esteem, and motivation, and cultural dimensions including norms and values, significantly contribute to the development of a healthy identity among adolescents (Koepke & Denissen, 2012; Steinberg, 2016). Therefore, devising a model that examines the mediating role of positive body image in linking the formation of identity in adolescents with the quality of their friendships and strategies to enhance personal well-being could empower teenagers to cultivate a healthy identity and sustain positive development.

Relationships between friendship qualities and identity development

The exploration of identity development encompasses a blend of theoretical insights from leading figures in identity research. Central to this discourse is the quest to answer “Who am I?”, a question pivotal to understanding personal identity (Erikson, 1994; Mowl, 2010). Waterman (1999) suggests that identity formation is a journey of self-discovery and goal setting, where individuals realize their potential through activities linked to their developing identity. Berzonsky (2005) presents a social-cognitive approach to identity, highlighting cognitive processes such as information gathering and self-evaluation as essential to developing one’s identity. He categorizes identity styles into informational, normative, and avoidant, each offering a unique pathway through the identity formation landscape. Erikson (1994) views identity as an evolving principle that grants individuals a sense of continuity and uniqueness, crucial for independent functioning. His theory emphasizes the balance between identity synthesis and confusion, with synthesis leading to a cohesive self-concept and confusion resulting in a lack of functional self-definition. This is particularly significant during adolescence, a vital period for identity formation.

The dual-cycle model further refines our understanding of identity development, outlining a process of exploration and commitment through which adolescents solidify their sense of self (Branje, 2022; Crocetti, 2017). Initially, adolescents explore various self-concepts before committing to those that resonate, gradually enhancing their identity through continuous exploration and reaffirmation of commitments. This model underscores the dynamic nature of identity development, emphasizing continuity and uniqueness as adolescents forge their identities.

Adolescents’ friendship qualities are crucial for their identity development, underpinned by theories such as

Tajfel and Turner’s (1979) social identity theory, which suggests that joining social groups enhances self-esteem and belonging, supported by friends’ acceptance, positively impacting identity. Attachment theory (Bowlby, 1969), highlights the importance of stable interactions and supportive contact, with friendship quality enhancing secure attachments, fostering positive identity development (Steinberg, 2016). Additionally, social-cognitive theory (Bandura, 1986), points out that observing and imitating others, along with understanding societal norms, shapes identity, with friendship qualities playing a key role in this process. These theories collectively emphasize the significant role of friendship qualities in adolescents’ identity formation.

Adolescents’ relationships with their peers are significant for identity acquisition. During the identity acquisition process, the alignment of adolescents with people like family members and friends in terms of sameness and continuity is an important factor (Branje, 2022). The impact of peer relationships on adolescents’ identity development can be both positive and negative. Supportive and responsive friendships help adolescents confidently explore their identity options (Koepke & Denissen, 2012). The positive quality of friendships means that adolescents are supported by their peers in terms of relational and educational aspects of identity (de Moor et al., 2019). Similarly, when adolescents identify with their classmates, their explorations and commitments towards their interpersonal identities are strengthened (Albarello et al., 2018).

In conclusion, personal identity and sense of self develop and shape in conjunction with close relationships with family members and peers (Branje et al., 2021). Adolescents’ identification with their classmates and friend groups over time is associated with stronger interpersonal identity commitment and exploration, as well as lower reassessment (Albarello et al., 2018). Quality peer relationships among adolescents aid in forming norms by modeling their peers (Verhoeven et al., 2019). Friendship qualities, in particular, are highly likely to positively influence this process. Therefore, this study hypothesized that with each unit increase in adolescents’ friendship qualities, their identity development would also positively increase.

Subjective increasing strategies and identity

In the literature, the relationships between identity and well-being have been examined. Achieving a successful identity or exploring identity enhances individuals’ well-being (Eryilmaz & Aypay, 2011; Hofer et al., 2011). However, there are no direct studies explaining the relationship between well-being strategies and identity. Yet, theoretical explanations and empirical studies with related variables indicate the direction of the relationship between the two

variables. Accordingly, strategies to enhance subjective well-being and exploring identity or achieving a successful identity are related psychological patterns. One of the theories explaining well-being is the activity theory. According to this theory, individuals engage in various activities by achieving their goals and satisfying their needs (Newman et al., 2014). Such activities are considered strategies to enhance well-being. Generally, strategies to enhance well-being include responding positively to the environment and receiving positive feedback, fulfilling religious beliefs, satisfying desires, practicing mental control, and engaging in activities that directly increase well-being (Buss, 2000; Eryılmaz, 2010; Fordyce, 1983; Tkach & Lyubomirsky, 2006). As Maslow (1968) indicated, such need and goal-oriented activities mean moving towards self-improvement. One dimension of individuals' self-actualization is owning an identity. In the identity formation process, there are two important dimensions: experimenting and decision-making. Strategies of subjective well-being enhancement, such as receiving and giving positive feedback from/to the environment, satisfying desires, and fulfilling religious beliefs, represent the areas in which individuals experiment. Especially, according to Marcia (1980), experimenting in the areas of ideology and relationships is fundamental in identity structuring. At this point, using strategies like receiving and giving positive feedback and fulfilling religious beliefs can be seen as trial areas for individuals to explore their identities. Experiencing positive outcomes in such areas strengthens identity exploration. Additionally, according to him, identity is the internal, self-created, dynamic organization of instincts, abilities, beliefs, and personal history. In this regard, using strategies to enhance well-being can be said to express the positive aspect of this dynamic organization.

Strategies to enhance subjective well-being, like positive environmental responses and feedback, are crucial within social contexts that shape adolescent thoughts and experiences (Buss, 2000; Fordyce, 1983). These strategies, reflecting continuity and consistency in developmental contexts (Côté & Levine, 1988), support identity development by offering positive environments. Adherence to religious beliefs and practices (Eryılmaz, 2010) serves as a strategy enhancing well-being and identity development, especially in the ideological context where adolescents explore and decide on their beliefs. This intentional engagement with religious practices aids in creating supportive settings for identity formation. Drawing from these theories and research, the study hypothesizes that increasing subjective well-being strategies positively affects adolescent identity development. Building upon the aforementioned theories and empirical research, the study put forth a hypothesis suggesting that an incremental increase of one unit in strategies

aimed at increasing subjective well-being would contribute positively to the development of identity among adolescents.

Body image and identity

Substantial and significant connections exist between body image and personal identity, with numerous scholars positing that body image constitutes a fundamental aspect of an individual's sense of self (Dittmar, 2008; Halliwell & Dittmar, 2006). This stems from the understanding that an individual's perception of their physical self is intricately linked to their identity, serving as a vital means of self-expression. Furthermore, the tripartite influence model elucidates that body image formation is influenced by three pivotal social contexts: peers, family, and media (Cash & Pruzinsky, 2002), mirroring the process of identity development where relational contexts provide essential norms.

Adolescents, in particular, navigate their social, sexual, and professional realms within these contexts, establishing patterns of body image that become intertwined with their evolving identities (Dittmar, 2009). The interplay between body image and identity is underscored by the notion that "*Identity formation occurs through bodily experience*" (Pelican et al., 2005, p.61), highlighting the importance of bodily experiences in shaping one's self-concept. These experiences encompass both the physical and physiological upkeep of the body and the expression of psychological wellness through a positive body image (Tylka & Wood-Barcalow, 2015), thereby facilitating identity formation.

Moreover, from a cognitive psychology perspective, the relationship between body image and identity is anchored in the personal perceptions that individuals hold towards themselves, suggesting a symbiotic relationship between a positive body image and a coherent identity (Carlson & Kiemle, 2016). The concept of perceptual integrity suggests that for an individual to maintain a cohesive sense of self, these perceptions must be congruent, as enduring contradictions in self-perception is unsustainable. This synthesis underscores the necessity of a supportive interrelation between body image and identity, highlighting their mutual importance in the formation and maintenance of a healthy self-concept.

In conclusion, theoretical and empirical research underscores the significant link between positive body image and identity formation. Erikson's (1968) concept of identity formation as a unified self-concept aligns with the notion that positive body image, self-esteem, and self-acceptance are crucial for identity development (Tylka & Wood-Barcalow, 2015). The theory of social comparison (Festinger, 1954) highlights how individuals evaluate themselves against peers, suggesting that adolescents with a positive body image are likely to develop a positive identity through

favorable comparisons. Empirical studies, including those by Tiggemann and Slater (2013), provide strong evidence of the relationship between positive body image and enhanced self-esteem, self-efficacy, resilience, and identity achievement, while noting its inverse relation to identity confusion in adolescents. Akhtar and Samuel (1996) also emphasize the role of an authentic body image in forming a coherent identity. This synthesis of theories and studies forms the basis for the hypothesis that improving positive body image will positively affect adolescent identity development.

Mediator role of body image

Research underscores the profound impact of peer groups and friendship quality on adolescents' body image development. The triple effect model by Clark and Tiggemann (2007) identifies peers as crucial influencers, capable of affecting body image positively through supportive friendships or negatively. Consistent with this, empirical evidence, such as studies by LaFontana and Cillessen (2010), highlights that positive friendships play a key role in fostering a positive body image. The quality of adolescent friendships is crucial, with supportive relationships often leading to a healthier body image, as demonstrated by research from Shroff and Thompson (2006) and McCabe and Ricciardelli (2005), which found that peer acceptance and social support significantly contribute to positive body image perceptions among teenagers.

Peer groups significantly impact adolescent identity development, with friendship quality—covering conflict, support, and amity—being essential for companionship and closeness (Bukowski et al., 1994). Body acceptance is vital for healthy identity growth. Cash (2004) views body image as encompassing attitudes, thoughts, and feelings towards one's appearance. Tylka and Wood-Barcalow (2015) describe body image in two dimensions: positive, with aspects like appreciation, and negative.

Subjective well-being improvement strategies, such as mental control, positive feedback, religious engagement, and adaptive responses, can boost happiness and potentially influence body image positively (Tkach & Lyubomirsky, 2006; Fordyce, 1983). Research shows a connection between these well-being strategies and positive body image development, with practices like smiling and avoiding negative feedback playing key roles (Holmqvist & Frisén, 2012; Cash, 2004). A higher power's perception and proactive body appreciation are also linked to improved well-being and body image (Eryılmaz, 2010; Tkach & Lyubomirsky, 2006). Despite the broad application of these strategies across various life aspects (Buss, 2000; Eryılmaz, 2010), their specific impact on body image necessitates further study. Current literature, including recent findings

(Eryılmaz et al., 2023), suggests that employing positive psychology practices can foster a better body image among adolescents, highlighting the need for more research in this area (Tylka & Wood-Barcalow, 2015).

In the scholarly examination of body image literature, it becomes evident that cultural variances significantly influence the anchoring of identity, either in familial, communal, and interpersonal dynamics or within the corporeal and personal self-concept (Becker, 2004). According to the socio-theoretical perspectives on identity formation, identity is fundamentally constructed through interactions with others (Pelican et al., 2005). These theoretical insights underscore the imperative inclusion of social mechanisms, notably friendships, in the exploration and construction of identity. Within the framework of this discourse, the model addressed herein posits that the engagement in friendship relations and the implementation of strategies aimed at augmenting subjective well-being serve as both individual and societal antecedents to identity formation. Body image is posited to occupy a mediatory role between associated variables and identity, encapsulating the concept that identity is intrinsically linked to the physical self and personal identity. The intermediary function of body image is predicated on its capacity to facilitate and enable the influence of antecedent variables pertinent to identity on the construct of identity itself, thereby underpinning the processes of experimentation and decision-making integral to identity development (Branje, 2022; Crocetti, 2017).

Furthermore, friend support and strategies for enhancing subjective well-being are positive psychological attributes. The literature indicates that positive psychological attributes lead to a positive body image (Tylka & Wood-Barcalow, 2015). Positive body image, in turn, offers positive contributions to individuals' identities within the context of body perception. In this aspect, it is considered that body image has a reinforcing effect on individuals' identities. Alongside this, empirical studies in the literature also suggest that body image could mediate the relationship between strategies for enhancing subjective well-being and friendship quality and identity. For example, Pelican and colleagues (2005) highlight this relationship by stating: "*Other people can profoundly influence individuals' feelings about their own body and physical abilities—important dimensions of personal identity*" (p.57).

Consequently, according to the assumptions of social support (Cobb, 1976), social identity theory (Tajfel & Turner, 1979), and empirical research results in the literature (McCabe & Ricciardelli, 2005; Shroff & Thompson, 2006), adolescents' friendship qualities positively affect their body images. Especially, based on the triple effect model (Clark & Tiggemann, 2007), negative messages from peers adversely affect body image. On the flip side of the

coin, positive messages from peers also affirmatively affect adolescents' body images. In addition to all these, the positive quality of friendship relations causes adolescents to accept and approve of themselves as they are. In Tylka and Wood-Barcalow (2015) assert that increasing approval and acceptance contributes significantly to individuals' ability to accept their bodies, consequently leading to an elevation in self-esteem. Positive acceptance and approval of one's own body lead individuals to successfully develop identity (Akhtar & Samuel, 1996; Tiggemann & Slater, 2013). Building upon the theoretical underpinnings and empirical investigations, the hypothesis proposed that positive body image would mediate the relationship between friendship qualities and the developmental processes of identity in adolescents.

Adolescents use a number of strategies to increase their well-being (Buss, 2000; Eryilmaz, 2010; Tkach & Lyubomirsky, 2006). In the literature, it is evident that the strategies utilized to foster a positive body image align harmoniously with the strategies employed to promote subjective well-being, as supported by Holmqvist and Frisén's (2012) findings. It is worth highlighting that the strategy of fostering a positive body image, including actions like smiling and hugging, aligns harmoniously with the strategies of positively engaging with the environment and seeking positive responses, which are recognized approaches for increasing subjective well-being (Tkach & Lyubomirsky, 2006). Moreover, it is apparent that keeping a distance from negative reactions and criticisms from the media, peers, and family (Cash, 2004) to create a positive body image is compatible with the mental control strategy (Eryilmaz, 2010). It can be inferred from these associations that the utilization of strategies to enhance subjective well-being contributes positively to the formation of a positive body image (Eryilmaz et al., 2023). Empirical studies show that the positive body image of adolescents positively affects their identity development (Akhtar & Samuel, 1996; Tiggemann & Slater, 2013). Building upon the theoretical underpinnings and empirical investigations, the hypothesis proposed that that a one-unit increase in positive body image could positively affect the identity development of adolescents. The hypothesis posited by the study, derived from the theoretical frameworks and empirical investigations, suggests that positive body image may play a mediating role between the utilization of strategies aimed at enhancing subjective well-being and the development of identity. The study aims to examine whether body image acts as a mediator between the utilization of strategies aimed at enhancing subjective well-being, friendship qualities, and identity development (Fig. 1).

Hypothesis¹ = Friendship qualities is in a meaningful predicts positive body image.

Hypothesis² = Friendship qualities is in a meaningful predicts identity development.

Hypothesis³ = The utilization of strategies aimed at enhancing subjective well-being is in a meaningful predicts positive body image.

Hypothesis⁴ = The utilization of strategies aimed at enhancing subjective well-being is in a meaningful predicts identity development.

Hypothesis⁵ = Positive body image is in a meaningful predicts identity development.

Hypothesis⁶ = The mediating effect of positive body Image is significant between friendship qualities and identity development.

Hypothesis⁷ = The mediating effect of positive body image is significant between the utilization of strategies aimed at enhancing subjective well-being and identity development.

Participants and procedure

The research procedures were carried out as follows: First, for the collection of the data, permission was obtained from the relevant researchers for the measurements to be used in the study and ethics committee approval was obtained from the [Omitted] University Social and Human Sciences Ethics Committee (Meeting No: 20,230,301,997). The study commenced by preparing a consent form, which was presented to the children for their voluntary acceptance. Informed consent was then obtained from the families of the children for their participation. Data collection tools were then administered individually to early adolescents face-to-face in a school setting, following approval from their families. The participants, who were early adolescents, were duly notified about their entitlement to terminate their involvement in the study whenever they desired. Additionally, eight individuals who failed to complete all the scales and nine participants who expressed unwillingness were omitted from the study, yielding a final analysis sample of 270 early adolescents. 270 early adolescents (157 girls (58.15%), 113 boys (41.85%)) selected by criterion sampling method participated in the present study. The study enlisted participants based on predetermined criteria, which entailed not having any psychiatric diagnosis, being an adolescent of Turkish descent, and demonstrating willingness to volunteer. It is noted that the age distribution of the participants is [Age-range = 13–15, AgeMean = 14.12, AgeSd = 1.04].

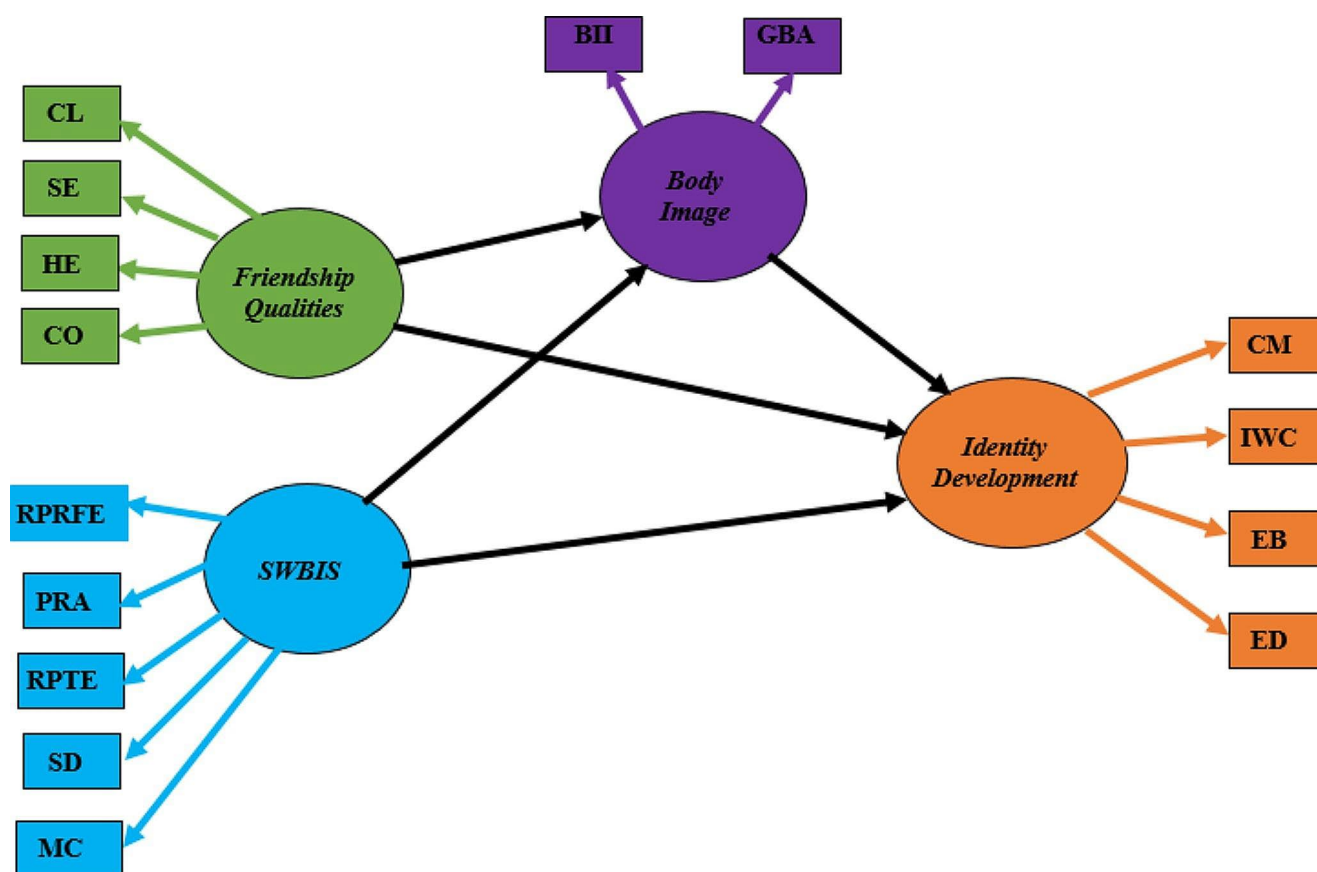


Fig. 1 Hypothetical structural model. Note. BII=Body Image Investment, GBA=General Body Appreciation, CL=Closeness, SE=Security, HE=Help, CO=Companionship, RPRFE=Receiving Positive Reaction from an Environment; PRA=Participating in Religious Activities, RPTE=Reacting Positively to an Environment, SD=Satis-

faction of Desires, MC=Mental Control, CM=Commitment Making, IWC=Identification with Commitment, EB=Exploration in Breadth, ED=Exploration in Depth. SWBIS=Subjective Well-Being Increasing Strategies

Measures

Body Appreciation Scale (BAS) In the Turkish adaptation of the Body Appreciation Scale (BAS) by Avalos et al. (2005), Bakalın and Taşdelen-Karçkay (2016) conducted reliability and validity analyses. Confirmatory factor analysis was employed to evaluate the construct validity of the scale. The findings revealed satisfactory goodness of fit indices: GFI=0.92, CFI=0.93, and RMSEA=0.11 for women, and GFI=0.91, CFI=0.93, and RMSEA=0.11 for men. Internal consistency reliability coefficients were found to be reliable, with a coefficient of 0.92 for the entire BAS in men, and ranging from 0.70 to 0.91 for the sub-dimensions. For women, the internal consistency reliability coefficient was 0.87 for the entire BAS, with sub-dimension values ranging from 0.62 to 0.80.

The Friendship Qualities Scale Atik et al. (2014) conducted validity and reliability studies on the Turkish adaptation of the Friendship Qualities Scale (FQS) developed by

Bukowski et al. (1994). The FQS encompasses five dimensions: companionship, help, security, closeness, and conflict (with conflict excluded from the analysis due to its negative connotation). To establish construct validity, Atik et al. (2014) employed confirmatory factor analysis, which yielded acceptable goodness of fit values: GFI=0.88, NNFI=0.96, CFI=0.97, and RMSEA=0.063. Internal consistency reliability coefficients were reported to range from 0.66 to 0.86, according to Atik et al. (2014).

The Subjective Well-Being Increasing Strategies Scale for Adolescents (SWBIS) Eryılmaz (2010) developed the SWBIS for Adolescents (SWBIS) and subsequently conducted validity and reliability assessments. The scale encompasses five dimensions: mental control, receiving positive reactions from the environment, satisfaction of desires, participation in religious activities, and reacting positively to the environment. Eryılmaz (2010) employed exploratory factor analysis to evaluate the construct validity of the scale, finding that it accounted for 59.86% of the total

variance. Additionally, internal consistency reliability analysis indicated a reliability coefficient of 0.89 for the entire scale, with the sub-dimensions ranging from 0.68 to 0.92, as reported by Eryılmaz (2010).

The Dimensions of Identity Development Scale (DIDS) Morsünbül and Çok (2014) conducted validity and reliability analyses on the Turkish version of the DIDS developed by Luyckx et al. (2008). The DIDS comprises five dimensions: Commitment making, exploration in depth, identification with commitment, exploration in breadth, and ruminative exploration (which was not considered in this study, focusing on positive variables). Both exploratory and confirmatory factor analyses were employed to assess the construct validity of the DIDS. The exploratory factor analysis accounted for 57.43% of the explained variance, while the confirmatory factor analysis yielded good fit indices: GFI=0.95, NFI=0.98, CFI=0.92, and RMSEA=0.062. Moreover, Morsünbül and Çok (2014) reported internal consistency reliability coefficients ranging from 0.78 to 0.88 for the sub-dimensions of the DIDS.

Data analysis

The initial phase of data analysis in this study involved conducting preliminary assessments of skewness, kurtosis, multicollinearity, and correlations, following the procedures outlined by Kline (2015). Subsequently, a two-stage structural equation modeling approach was employed to evaluate the data. Maximum likelihood estimation was chosen as the preferred probability method, as suggested by Kline (2015). The fit of the model to the data was evaluated using various goodness-of-fit indices, such as χ^2/df , GFI, AGFI, NFI, RMSEA, and CFI. Furthermore, the AIC and ECVI model comparison indices were utilized to determine the most appropriate model, following the guidelines put forth by Schermelleh-Engel et al. (2003). Bootstrapping analysis was conducted to examine the significance of indirect effects, involving 1000 resamples and the creation of upper and lower confidence intervals. Effects were considered significant if the confidence intervals did not include zero, as recommended by Shrout and Bolger (2002).

Results

Preliminary analysis

Based on the preliminary analysis, the researchers evaluated the normality assumption and the assumption of multicollinearity in their study. The skewness and kurtosis

values were used to assess normality. The skewness value ranged from -1.44 to 0.08 , and the kurtosis value ranged from -1.13 to 1.85 . These values fall within the acceptable range of normality, as suggested by Kline (2015), which is between -2 and $+2$. Therefore, the data can be considered to meet the normality assumption. The researchers used VIF (Variance Inflation Factor) and tolerance values to investigate multicollinearity. The VIF value ranged from 1.18 to 1.26 , and the tolerance value ranged from 0.79 to 0.83 . These results indicate that there is no multicollinearity problem in the present study. Since the VIF value is less than 5 and the tolerance value is greater than 0.10 , the assumption of no multicollinearity is met (Kline, 2015). In summary, the preliminary analysis suggests that the data in the study meet the assumptions of normality and no multicollinearity. This provides a solid foundation for further statistical analyses and interpretations of the study's findings (Table 1).

Testing structural equation modeling

Stage 1: Measurement model

In this study, there are four latent variables and 15 observed variables. After conducting an analysis of the measurement model, the researchers examined various goodness-of-fit indices, including χ^2/df ($167.433/84$)= 1.99 , GFI= 0.93 , AGFI= 0.89 , NFI= 0.92 , CFI= 0.96 , and RMSEA= 0.06 (with a 90% confidence interval for RMSEA as $[0.04, 0.07]$). The results indicated that the measurement model achieved an acceptable level of goodness-of-fit, signifying its validity. Additionally, the standardized factor loadings, ranging from 0.53 to 1.00 , were all significant with respective t -values, providing further support for the soundness of the measurement model (refer to Fig. 2). In summary, the measurement model was thoroughly evaluated, and the attained goodness-of-fit indices and significant factor loadings demonstrate the validity of the model in this study.

Stage 2: Structural model

After verifying the measurement model, the researchers tested the structural model to investigate the mediation effect of positive body image on the relationship between friendship qualities, the utilization of strategies aimed at enhancing subjective well-being, and identity development. They removed specific paths between friendship qualities and the utilization of strategies aimed at enhancing subjective well-being, as well as between friendship qualities and identity development, to examine potential mediation. The impact of these path removals on the model's fit was assessed to gain insights into the mediating role of positive body image. First, when the path from friendship qualities

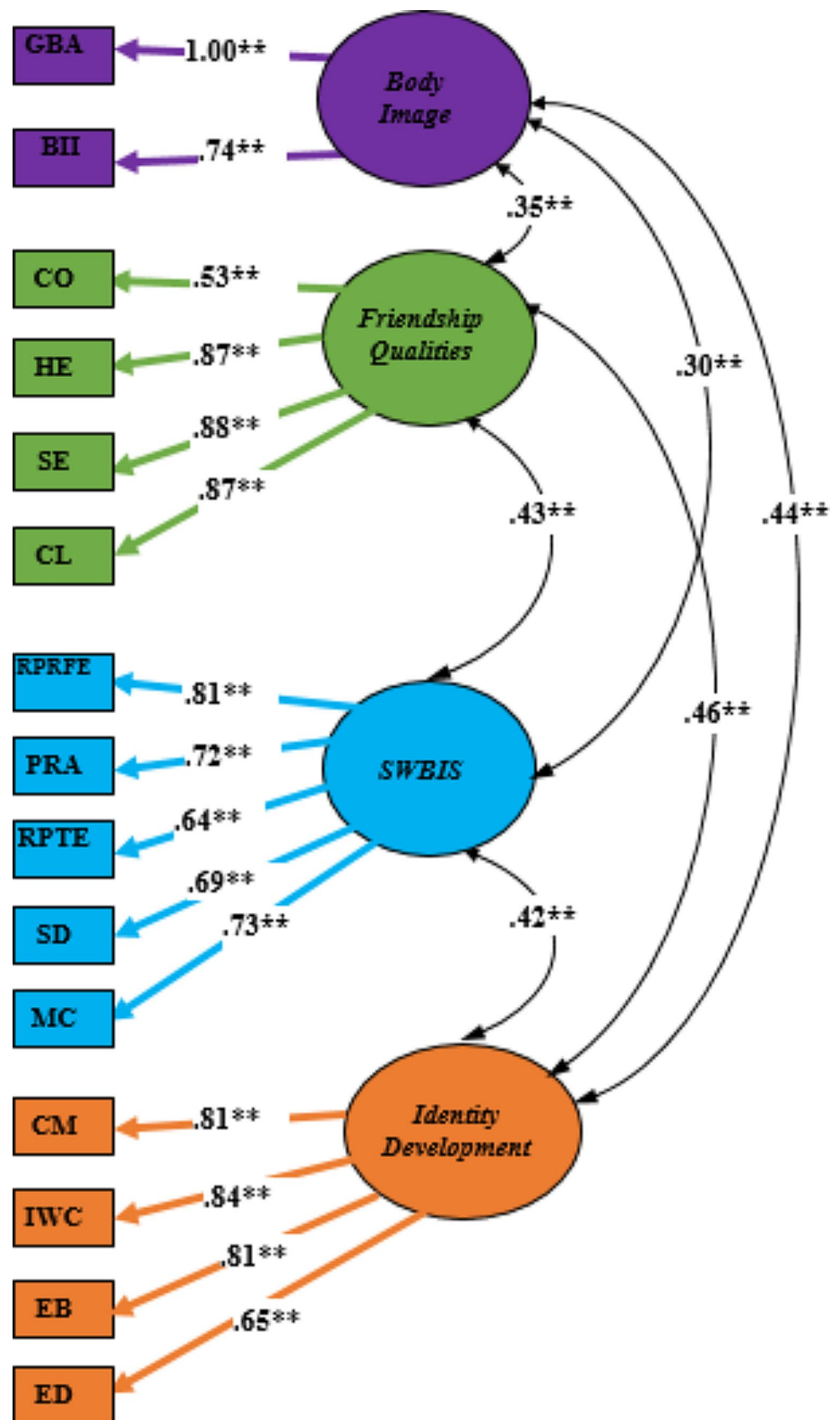
Table 1 Bivariate correlation of observed variables

Observed Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
GBA	1														
BII	0.741**	1													
CO	0.286**	0.298**	1												
HE	0.332**	0.280**	0.487**	1											
SE	0.291**	0.243**	0.463**	0.759**	1										
CL	0.288**	0.195**	0.432**	0.745**	0.776**	1									
RPRFE	0.199**	0.168**	0.209**	0.351**	0.327**	0.350**	1								
PRA	0.271**	0.221**	0.117	0.215**	0.189**	0.221**	0.566**	1							
RPTE	0.242**	0.205**	0.128*	0.257**	0.181**	0.226**	0.478**	0.457**	1						
SD	0.236**	0.209**	0.223**	0.314**	0.295**	0.277**	0.588**	0.448**	0.517**	1					
MC	0.186**	0.148*	0.119	0.246**	0.268**	0.257**	0.597**	0.597**	0.444**	0.457**	1				
CM	0.340**	0.210**	0.177**	0.364**	0.267**	0.295**	0.326**	0.219**	0.244**	0.238**	0.192**	1			
IWC	0.323**	0.216**	0.147*	0.387**	0.322**	0.333**	0.285**	0.228**	0.274**	0.154*	0.232**	0.691**	1		
EB	0.327**	0.241**	0.245**	0.313**	0.223**	0.262**	0.286**	0.214**	0.292**	0.241**	0.217**	0.682**	0.667**	1	
ED	0.501**	0.354**	0.219**	0.381**	0.336**	0.398**	0.248**	0.185**	0.257**	0.235**	0.207**	0.436**	0.568**	0.521**	1

BII Body Image Investment, *GBA* General Body Appreciation, *CL* Closeness, *SE* Security, *HE* Help, *CO* Companionship, *RPRFE* Receiving Positive Reaction from an Environment, *PRA* Participating in Religious Activities, *RPTE* Reacting Positively to an Environment, *SD* Satisfaction of Desires, *MC* Mental Control, *CM* Commitment Making, *IWC* Identification with Commitment, *EB* Exploration in Breadth, *ED* Exploration in Depth

** $p < .01$; * $p < .05$

Fig. 2 Standardized Factor Loadings of the Measurement Model. Note. $**p < .001$, BII=Body Image Investment, GBA=General Body Appreciation, CL=Closeness, SE=Security, HE=Help, CO=Companionship, RPRFE=Receiving Positive Reaction from an Environment; PRA=Participating in Religious Activities, RPTE=Reacting Positively to an Environment, SD=Satisfaction of Desires, MC=Mental Control, CM=Commitment Making, IWC=Identification with Commitment, EB=Exploration in Breadth, ED=Exploration in Depth, SWBIS=Subjective Well-Being Increasing Strategies



to identity development was removed from the model and the model was retested, goodness of fit indices (χ^2/df (181.140/85)=2.13; GFI=0.92; AGFI=0.88; NFI=0.91; CFI=0.95; RMSEA=0.06 (90% CI for RMSEA = [0.05, 0.07]) was found to be at an acceptable level. However according to the chi-square difference test finding, removing the path from friendship qualities to identity development caused a significant deterioration in the model ($\Delta\chi^2 = 13.70$, $\text{df} = 1$; $p < .001$). It was understood that this path should not be removed from the model because there is a significant deterioration.

Secondly, the path from the utilization of strategies aimed at enhancing subjective well-being to identity development was excluded from the model. When the model was retested, the goodness of fit indices (χ^2/df (203.874/86)=2.37; GFI=0.91; AGFI=0.87; NFI=0.90; CFI=0.94; RMSEA=0.07 (90% CI for RMSEA = [0.05, 0.08]) was found to be at an acceptable level. However according to the chi-square difference test findings, it was determined that removing the path to identity development from the utilization of strategies aimed at enhancing subjective well-being caused a significant deterioration in the model ($\Delta\chi^2 = 22.73$, $\text{df} = 2$; $p < .001$). Since a significant deterioration was detected, it was decided to include this path in the model.

As a result of chi-square difference tests, it was determined that positive body image partially mediated the relationship between friendship qualities, the utilization of strategies aimed at enhancing subjective well-being and identity development. In addition, it is seen that model comparison goodness of fit indices of the *Partial Mediation Structural Model* (AIC=239.433; ECVI=0.890) are smaller than the model comparison goodness of fit indices of the *Full Mediation Structural Model* (AIC=271.874;

ECVI=1.011). In line with all these results, it was decided that the model in which positive body image partially mediated between friendship qualities, the utilization of strategies aimed at enhancing subjective well-being and identity development was the best model (Table 2).

In Fig. 3 analysis, it was evident that an increase of one unit in friendship qualities showed significant associations with a 0.28 ($t = 3.436$; $p < .001$) unit increase in positive body image and a 0.26 ($t = 3.494$; $p < .001$) unit increase in identity development. Likewise, a one-unit increase in the utilization of strategies aimed at enhancing subjective well-being had a significant relationship with a 0.18 ($t = 2.491$; $p < .05$) unit increase in positive body image and a 0.22 ($t = 3.093$; $p < .01$) unit increase in identity development. Lastly, a one-unit increase in positive body image was significantly associated with a 0.28 ($t = 4.390$; $p < .001$) unit increase in identity development (Table 3).

Bootstrapping analysis (significance of indirect effects)

In the current study, bootstrapping analysis was employed to assess the significance of two indirect effects. The first indirect effect pertained to the relationship between friendship qualities and identity development, with positive body image acting as a partial mediator. The second indirect effect focused on the link between the utilization of strategies aimed at enhancing subjective well-being and identity development, with positive body image also acting as a partial mediator.

According to Table 4, the partial mediation effect of positive body image between friendship qualities and identity development is significant ($\beta = 0.07$, $\text{SE} = 0.03$ [95% CI=0.024, 0.147, $p < .05$]. In addition, the partial mediating role of positive body image was found to be significant between the utilization of strategies aimed at enhancing subjective well-being and identity development ($\beta = 0.05$, $\text{SE} = 0.02$ [95% CI=0.010, 0.105, $p < .05$]. In line with all these results, it has been proven that early adolescents' positive body images have a partial mediating role between friendship qualities, the utilization of strategies aimed at enhancing subjective well-being and identity development.

Alternative model

The study developed an alternative model to validate the main partial structural model. In this alternative model, positive body image was an exogenous variable, while friendship qualities and the utilization of strategies aimed at enhancing subjective well-being acted as mediator variables, and identity development remained the internal variable. The goodness-of-fit indices for the alternative model

Table 2 Goodness of fit indices of the measurement and partial mediation structural model

Fit measure	Good fit	Acceptable fit	Values of the measurement model	Values of the partial mediation structural model
χ^2/df	$0 \leq \chi^2/\text{df} \leq 2$	$2 \leq \chi^2/\text{df} \leq 3$	1.99	1.99
AGFI	$0.90 \leq \text{AGFI} \leq 1.00$	$0.85 \leq \text{AGFI} \leq 0.90$	0.89	0.89
CFI	$0.97 \leq \text{CFI} \leq 1.00$	$0.95 \leq \text{CFI} \leq 0.97$	0.96	0.95
GFI	$0.95 \leq \text{GFI} \leq 1.00$	$0.90 \leq \text{GFI} \leq 0.95$	0.93	0.92
NFI	$0.95 \leq \text{NFI} \leq 1.00$	$0.90 \leq \text{NFI} \leq 0.95$	0.92	0.92
RMSEA	$0 \leq \text{RMSEA} \leq 0.05$	$0.05 \leq \text{RMSEA} \leq 0.08$	0.06	0.06

Source: Schermelleh-Engel et al. (2003)

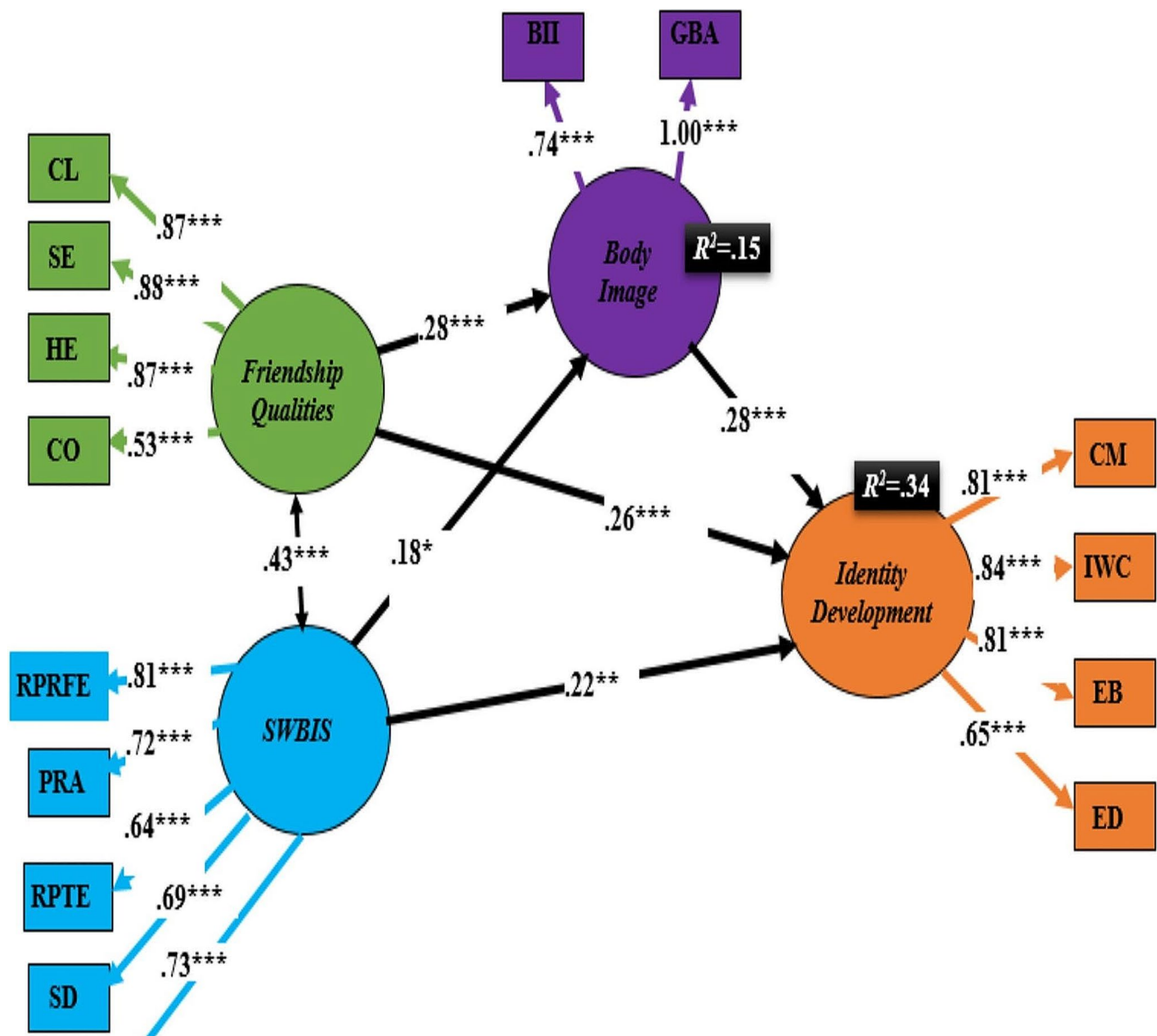


Fig. 3 Standardized regression weights for partial mediation structural model. Note. *** $p < .001$, ** $p < .01$, * $p < .05$, BII=Body Image Investment, GBA=General Body Appreciation, CL=Closeness, SE=Security, HE=Help, CO=Companionship, RPRFE=Receiving Positive Reaction from an Environment; PRA=Participating in Religious

Activities, RPTE=Reacting Positively to an Environment, SD=Satisfaction of Desires, MC=Mental Control, CM=Commitment Making, IWC=Identification with Commitment, EB=Exploration in Breadth, ED=Exploration in Depth, SWBIS=Subjective Well-Being Increasing Strategies

(χ^2/df (194.153/85)=2.28; GFI=0.92; AGFI=0.88; NFI=0.91; CFI=0.95; RMSEA=0.07 with a 90% CI = [0.06, 0.08]) were acceptable, indicating a reasonable fit. Figure 4 illustrates the path diagram of the alternative model. This alternative model further supports the relationships among positive body image, friendship qualities, the utilization of strategies aimed at enhancing subjective well-being, and identity development.

After analyzing Fig. 4, the study revealed the following associations: An increase of one unit in positive body image was significantly related to a 0.38 unit increase ($t=5.012$;

$p < .001$) in friendship qualities. An increase of one unit in friendship qualities was significantly associated with a 0.27 unit increase ($t=3.768$; $p < .001$) in identity development. Moreover, an increase of one unit in positive body image was significantly linked to a 0.33 unit increase ($t=4.676$; $p < .001$) in the utilization of strategies aimed at enhancing subjective well-being. An increase of one unit the utilization of strategies aimed at enhancing subjective well-being was significantly related to a 0.22 unit increase ($t=3.282$; $p < .01$) in identity development. Finally, an increase of one unit in

Table 3 Results of partial mediation structural model

Dependent variable	Independent variable	Unstandardized regression weights	S.E.	t-values	p
Positive Body Image	<--- Friendship Qualities	0.233	0.068	3.436	***
Positive Body Image	<--- SWBIS	0.215	0.086	2.491	0.013*
Identity Development	<--- Positive Body Image	0.608	0.139	4.390	***
Identity Development	<--- Friendship Qualities	0.480	0.137	3.494	***
Identity Development	<--- SWBIS	0.562	0.182	3.093	0.002**
BII	<--- Positive Body Image	1.000			
GBA	<--- Positive Body Image	4.154	0.499	8.320	***
CO	<--- Friendship Qualities	1.000			
HE	<--- Friendship Qualities	2.414	0.264	9.152	***
SE	<--- Friendship Qualities	1.892	0.206	9.195	***
CL	<--- Friendship Qualities	2.191	0.240	9.142	***
MC	<--- SWBIS	1.000			
SD	<--- SWBIS	1.184	0.113	10.521	***
RPTE	<--- SWBIS	0.873	0.090	9.668	***
PRA	<--- SWBIS	1.003	0.093	10.823	***
RPRFE	<--- SWBIS	1.373	0.114	12.054	***
CM	<--- Identity Development	1.000			
IWC	<--- Identity Development	1.031	0.071	14.612	***
EB	<--- Identity Development	0.925	0.066	14.010	***
ED	<--- Identity Development	0.810	0.075	10.848	***

S.E. Standard Error, BII Body Image Investment, GBA General Body Appreciation, CL Closeness, SE Security, HE Help, CO Companionship, RPRFE Receiving Positive Reaction from an Environment, PRA Participating in Religious Activities, RPTE Reacting Positively to an Environment, SD Satisfaction of Desires, MC Mental Control, CM Commitment Making, IWC Identification with Commitment, EB Exploration in Breadth, ED Exploration in Depth, SWBIS Subjective Well-Being Increasing Strategies

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

Table 4 Bootstrapping analysis results of partial mediation structural model

Path	Bootstrap values		95% confidence interval		p
Indirect Effect	β	SE	Lower	Upper	
FQ → PBI → ID	0.07	0.03	0.024	0.147	0.002*
SWBIS → PBI → ID	0.05	0.02	0.010	0.105	0.006*

FQ Friendship Qualities, PBI Positive Body Image, SWBIS Subjective Well-Being Increasing Strategies, ID Identity Development

* $p < .05$

positive body image was significantly associated with a 0.29 unit increase ($t = 4.048$; $p < .001$) in identity development.

Discussion

In this study, a positive identity development model was reached for adolescents. In this direction, while adolescents develop their identities in a positive way by using subjective well-being-increasing strategies, positive body image also mediates this process. Similarly, it was concluded that while adolescents develop their identities by friendships quality, positive body image also mediates this process.

In this study, the hypothesis that the quality of the friendship relationship would positively affect identity development has been confirmed. Thus, the findings of this study confirmed the assumptions of social identity theory (Tajfel & Turner, 1979), attachment theory (Bowlby, 1969), and social-cognitive theory (Bandura, 1986). Moreover, the findings of this study can be considered in terms of cognitive development theory (Piaget, 1968). Cognitive development theory, which explains adolescent development, shows that the quality of friendship relationships is of utmost importance for identity development. Studies conducted in this direction demonstrate that the quality of peer relations supports adolescents' identities by helping them discover options in terms of identity (Steinberg, 2016).

In this study, the hypothesis that the utilization of strategies aimed at enhancing subjective well-being would positively affect identity development has been confirmed. By means of this study that is based on the fact that there are positive relationships between subjective well-being and identity development (Van Hoof & Raaijmakers, 2002), it has been concluded that the utilization of strategies aimed at enhancing subjective well-being have a positive effect on identity development. The findings of this study confirm the assumptions of goal theory explaining subjective well-being. Because, according to the goal theory, individuals

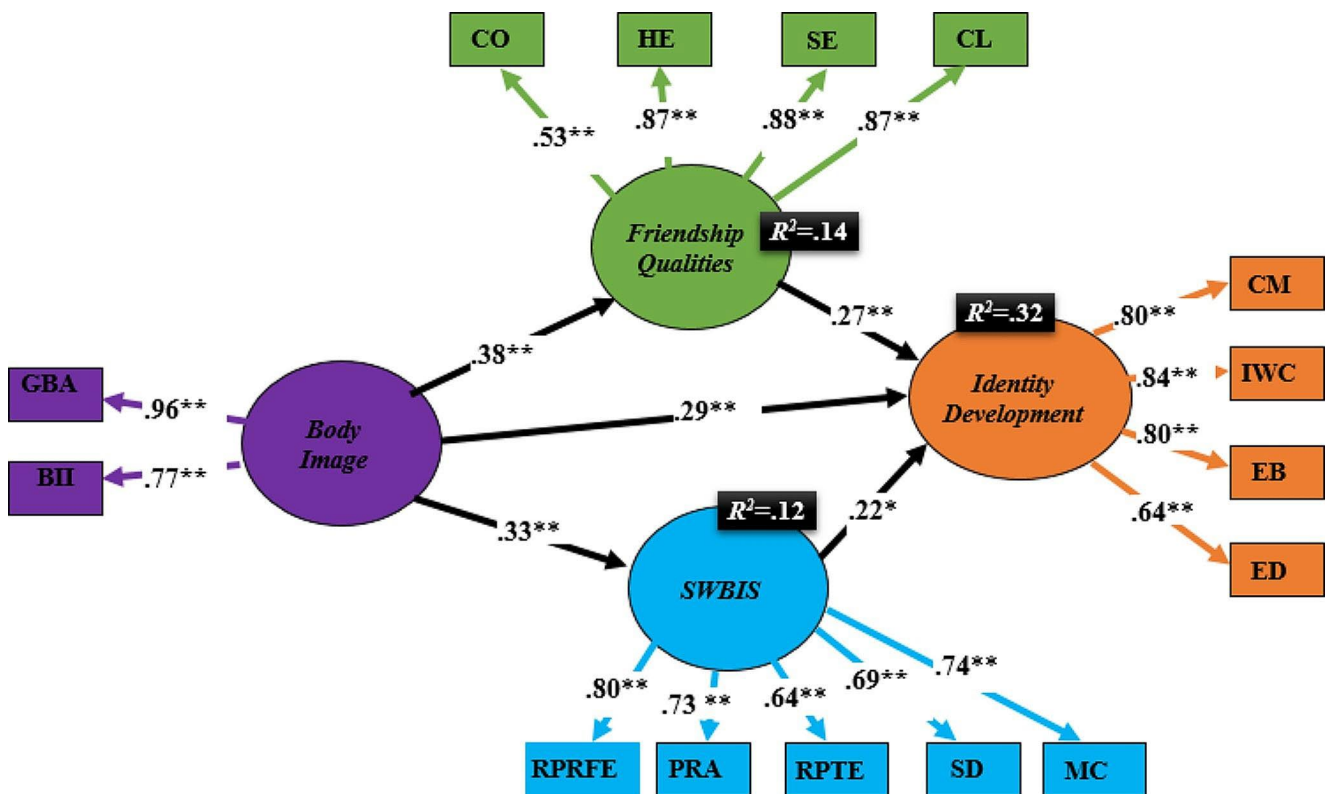


Fig. 4 Standardized regression weights for alternative model. Note. ** $p < .001$, * $p < .01$, BII=Body Image Investment, GBA=General Body Appreciation, CL=Closeness, SE=Security, HE=Help, CO=Companionship, RPRFE=Receiving Positive Reaction from an Environment; PRA=Participating in Religious Activi-

ties, RPTE=Reacting Positively to an Environment, SD=Satisfaction of Desires, MC=Mental Control, CM=Commitment Making, IWC=Identification with Commitment, EB=Exploration in Breadth, ED=Exploration in Depth, SWBIS=Subjective Well-Being Increasing Strategies

realize themselves by setting goals and satisfying their needs (Diener, 1984). Identity development is also a dimension of self-actualization. Furthermore, studies conducted on the basis of self-determination theory show that adolescents will reach a healthy self and identity structure if they satisfy their needs (Deci & Ryan, 2000). It is plausible to argue that individuals discover their own identities by satisfying their aforementioned needs (Eryılmaz, 2012), particularly through strategies to increase subjective well-being.

According to this study, the hypothesis that positive body image can positively affect identity development has been confirmed. The results of this study provide support for Erikson's (1968) psychosocial development theory, as well as Festinger's (1954) social comparison theory. Additionally, the findings align with the principles of self-determination theory proposed by Deci and Ryan (2000). According to self-determination theory, individuals have intrinsic psychological needs, including autonomy, competence, and relatedness, which were also confirmed in this study as posited by Deci and Ryan (2000). Adolescents who exhibit positive body image in this study may have experienced a feeling of autonomy and competence regarding their physical selves,

Table 5 The relationship between using strategies to increase well-being, identity and well-being

Identity development process	Developmental outcome	Outcome of obtaining the product
Using strategies to increase well-being	→ Identity exploration/successful identity	→ Achievement enhancement of well-being

which, in turn, might have played a role in their comprehensive well-being and identity development.

The findings of this study support bio-psycho-social models for human development in general, especially considering the mediation relations in the study (Miller, 2011). The positive body image variable employed in this research encompasses elements of somatic development, peer relationship quality, and strategies to promote subjective well-being, incorporating both physical (gratifying desires and mental regulation) and social (positive environmental responses and receiving positive feedback) aspects. It can be speculated that identity development represents other dimensions besides the psychological dimension. Herein, we may assert that this study has presented a comprehensive identity development model (Table 5).

The research findings can be interpreted as follows. Subjective well-being enhancement strategies can be considered in relation to the connections between identity exploration or achieving a successful identity and well-being as a whole (Table 5). During the identity development process, individuals utilize subjective well-being enhancement strategies. As a result of this process, they encounter a developmental outcome. This developmental outcome can be interpreted as either identity exploration or achieving a successful identity. As individuals explore their identities, their levels of well-being increase.

The findings related to the significance of body image in the study can be interpreted as follows. Human beings are bio-psycho-social entities. The psychological and social reality of humans cannot be realized without their bodily reality. The use of friendship relations and subjective well-being enhancement strategies by adolescents can be considered psycho-social variables that affect their identities. For these variables to impact individuals' identities, it is necessary for individuals to possess a bodily reality and a positive body image. At this point, bodily reality is a very important mediator for both psychological and social factors to become active (Fig. 5). The perception of one's body is also influenced by this mediating relationship in the process. This is because studies in the literature have shown that body image is a very important condition for both physical and mental health (Cash & Pruzinsky, 2002; Grogan, 2008; Thompson, 2004). A positive body image leads individuals to achieve a successful identity and to explore their identities (Carlson & Kiemele, 2016; Harter, 1999; Levine-Rasky, 2011; Pelican et al., 2005).

Besides all these, the findings of the study also support the positive youth development theory. According to this theory, adolescents' positive development is linked to their ability to develop positive relationships, engage in meaningful activities, and achieve a sense of purpose. This

model considers well-being as a positive youth development product (Lerner et al., 2009). Studies in the literature demonstrate that positive youth development models are constantly renewed and developed. This study, on the other hand, took the assumptions of this theory one step further and discussed identity development by bringing together the factors that provide positive youth development (the utilization of strategies aimed at enhancing subjective well-being, friendship quality, and positive body image) in a relational structure. Herein, it is revealed that identity development can be an important element of positive development.

An alternative model is also presented in this study. As seen in the findings of the study, it was concluded that the current model had a higher level of explained variance than the alternative model. The theoretical explanations and empirical studies discussed above explain the underlying reason for addressing this result.

A summary of the theoretical contributions of the current study

This study has made several significant theoretical contributions to understanding identity development. First, by confirming Tajfel and Turner's (1979) social identity theory, Bowlby's (1969) attachment theory, and Bandura's (1986) social-cognitive theory, it shows that high-quality friendships are crucial for adolescent identity development. It also aligns with Piaget's (1968) theory of cognitive development by showing that these relationships provide vital support for adolescents to explore identity options, as indicated in Steinberg's (2016) recent research. Furthermore, this study supports goal theory's (Diener, 1984) idea that using strategies to enhance subjective well-being positively affects identity development, which is intertwined with self-actualization. This is also supported by self-determination theory (Deci & Ryan, 2000), which suggests that meeting autonomy needs leads to a healthy identity structure. Finally, the study supports Erikson's psychosocial development theory (1968) and Festinger's social comparison theory (1954), showing that adolescents positively develop their identities by using strategies that enhance subjective well-being; positive body image mediates this process.

A summary of the current study's practical contributions and implications

This study underscores friendship qualities, subjective well-being strategies, and positive body image development in supporting adolescents' identity development. Evidence suggests that improving the quality of friendships can lead to significant gains in adolescents' body image and self-identity. School psychologists and counselors should



Fig. 5 Mediator role of body and body image

consider developing peer support programs promoting positive student interactions and relationships. Furthermore, the positive impact of subjective well-being strategies on body image and identity development highlights the need for well-being programs that teach students effective coping mechanisms and goal-setting techniques. Workshops or regular classes could be integrated into school curricula to increase subjective well-being strategies. Finally, given the strong relationship between positive body image and identity development, school psychologists and counselors should implement positive body image programs to help students develop a healthy and accepting attitude toward their physical selves. By focusing on these strategic areas, school professionals can create a supportive environment that contributes significantly to the holistic development of adolescents.

Suggestions for educators and policymakers regarding the development of support programs

The study reveals the positive effects of friendship qualities, subjective well-being strategies, and positive body image on identity development. Educators and policymakers should focus on these areas to design and implement support programs in educational settings. Schools and universities can implement peer mentoring programs that encourage the development of high-quality friendships and thus directly enhance students' body image and identity formation. Furthermore, including educational sessions that teach students strategies to improve their subjective well-being can further support their psychological and emotional development. Promoting positive body image through campaigns and workshops that address body positivity and media literacy is also essential and helps students develop a healthier relationship with their physical selves. These combined efforts can create a supportive educational environment that meets students' immediate needs and fosters long-term well-being and personal growth.

Generalizability of the findings from this study beyond the current sample to the population

The sample consisted only of early adolescents of Turkish origin without any psychiatric diagnosis, which may limit the broader applicability of the results to other demographic or cultural groups. Age range and cultural context are particularly critical; developmental stages differ, and cultural factors profoundly influence social relationships and self-perception. Therefore, while this study provides valuable insights into the dynamics of identity development among Turkish adolescents, the results must be validated in other cultural and age contexts to confirm their universality.

Further research involving diverse demographic groups would help determine whether these findings hold in different societies or whether modifications are necessary to accommodate other cultural or developmental nuances. Such research could provide a more comprehensive understanding of the factors of global identity development.

Limitations and future research

One of the critical limitations of this study is that it was conducted on adolescents without a psychiatric diagnosis. In addition, the study is a cross-sectional study. Performing longitudinal studies with similar variables can contribute to the literature. Based on the findings of this study, specific recommendations can be developed. Primarily, this study has presented a model for positive identity development. Based on this model, programs can be prepared to support adolescents' identity development. Furthermore, the model in this study can be used as a protective factor against identity disruption. The identity disruption model suggests that adverse experiences in early life can heighten the likelihood of developing body dissatisfaction and disordered eating habits. This model asserts that adverse experiences can interrupt normal identity development and make individuals more vulnerable to sociocultural risk factors such as internalizing social beauty standards and comparing oneself based on appearance. The dimensions discussed in the study can each be seen as protective factors against these risks.

Conclusion

Based on the findings of this study, it is clear that friendship qualities, subjective well-being strategies, and positive body image significantly influence early adolescents' identity development. Significant increases in identity development and positive body image were associated with enhanced friendship qualities and well-being strategies, highlighting the profound influence of interpersonal connections and personal satisfaction on adolescents' psychological development.

This emphasizes developing positive relationships among young people and promoting mental health and self-care practices. The results of this study provide strong empirical support for existing theories. The association between increased friendship qualities and improvements in body image and identity suggests that social interactions are beneficial and necessary for developing a healthy sense of self during adolescence. This may be because peer acceptance and belongingness in adolescents' lives influence their identity, body image, and well-being. Equipped with strategies

to manage their emotions and maintain a positive outlook, adolescents may be better positioned to navigate the challenges of this critical developmental stage, leading to more robust identity formation. Overall, this study enriches our understanding of how friendship qualities, subjective well-being, and body image contribute to adolescents' identity development. It calls for continued research in different populations to further explore these dynamics and develop targeted interventions to enhance these adolescent life aspects.

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Data availability The data set is available upon request.

Declarations

Ethics approval To collect the data, permissions were obtained from the relevant researchers for the measures to be used in the study and ethical committee approval was also obtained from [Omitted] University Social and Human Sciences Ethical Committee (Meeting No: 20230301997). All stages of the study were conducted according to Helsinki Declaration.

Consent to participate and for publication All participants provided informed consent for the data to be published and to participate in the present study.

Conflict of interest The authors declare that they have no conflict of interest.

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