

# *Perfection* hurts

Identity formation and body image  
throughout adolescence and emerging adulthood

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Cover by Lisa Palmeroni, my sister

Cover door Lisa Palmeroni, mijn zus

The thing that is really hard, and really amazing,

is giving up on **being perfect** and

beginning the work of **becoming yourself**.

- Anna Quindlen



## SUMMARY

Nina Palmeroni (2021). Perfection hurts: Identity formation and body image throughout adolescence and emerging adulthood

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During adolescence and emerging adulthood, body image becomes a central component of adolescents' self-concept. Together with physical changes during puberty, such a heightened focus on appearance strongly influences body image. The number of young people experiencing their body in a negative way is so high that body image concerns – especially in girls and women – are thought to be the norm rather than the exception. Body dissatisfaction, in turn, is a risk factor for several physical and mental health problems, but especially so for eating disorder symptoms.

Although the role of body dissatisfaction has been widely addressed in sociocultural theories on the onset and course of different pathological behaviors, specific key mechanisms that influence body image throughout adolescence and emerging adulthood have not been dealt with in depth. Identity formation, a key developmental task in these life periods, has been rarely taken into account in body image research. Hence, theorists call for an increasing integration of both research fields. This project introduces identity as a key factor to improve our understanding of body image and how it is related to eating disorder symptoms. The main goal of this project is to assess an integrative perspective on the link between identity and body image throughout adolescence and emerging adulthood, paying close attention to societal influences. In doing so, four objectives will be addressed by using cross-sectional and longitudinal data in community adolescents and emerging adults.

First, we investigated identity problems throughout adolescence and emerging and young adulthood. More specifically, identity distress was addressed by examining prevalence rates, age trends, and associations with exploration and commitment processes. Second, we focused on moderation and indirect effects of identity in the relationship between sociocultural appearance pressures and the internalization of appearance ideals and appearance comparison. In a third objective, we addressed associations between identity and body image cross-sectionally and prospectively over time. In a fourth objective, we explored interrelations between identity formation, body image, and eating disorder symptomatology.

This project can make an innovative contribution to the scientific field and general community by emphasizing that body dissatisfaction should be the exception rather than the norm in adolescents and emerging adults. Furthermore, the present project may inform prevention programs targeting body dissatisfaction and eating disorder symptoms by focusing on the strengthening of one's identity and the promotion of more positive ways of living in the body.



## SAMENVATTING

Nina Palmeroni (2021). Perfectie doet pijn: Identiteitsvorming en lichaamsbeeld doorheen de adolescentie en opkomende volwassenheid

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Lichaamsbeeld speelt een centrale rol in het zelfconcept van adolescenten en opkomende volwassenen. Een combinatie van fysieke veranderingen tijdens de puberteit en een verhoogde focus op het uiterlijk tijdens deze levensfasen heeft een sterke (en vaak negatieve) impact op het lichaamsbeeld. Bijgevolg ervaren zodanig veel jongeren hun lichaam op een negatieve manier dat lichaamsontevredenheid eerder de norm is dan uitzondering (en dat vooral bij meisjes en vrouwen). Daarnaast is lichaamsontevredenheid een risicofactor voor verschillende fysieke en psychische problemen, zoals eetstoornissymptomen.

De rol van lichaamsontevredenheid in de ontwikkeling van verschillende probleemgedragingen is uitgebreid onderzocht in socioculturele modellen. Echter, er is nog veel onduidelijkheid over kernconcepten die lichaamsbeeld doorheen de adolescentie en opkomende volwassenheid beïnvloeden. Identiteitsvorming, een centrale ontwikkelingstaak tijdens deze levensfasen, is zelden aangehaald in onderzoek naar lichaamsbeeld. Het huidige project introduceert identiteit als een kernconcept om de kennis over lichaamsbeeld en de link met eetstoornissymptomen te verbeteren. Het doel van dit onderzoek is om een integratief beeld te krijgen over het verband tussen identiteit en lichaamsbeeld doorheen de adolescentie en opkomende volwassenheid, met aandacht voor socioculturele processen. Dit vertaalt zich in vier centrale onderzoeksvragen die we zowel cross-sectioneel als longitudinaal onderzochten in algemene steekproeven van adolescenten en opkomende volwassenen.

Allereerst onderzochten we identiteitsproblemen doorheen de adolescentie en opkomende en jongvolwassenheid. Meer specifiek onderzochten we de prevalentiecijfers, leeftijdstrends en verbanden met exploratie – en bindingsprocessen. Ten tweede onderzochten we modererende en indirecte effecten van identiteit in het verband tussen socioculturele druk rond schoonheidsidealen en de internalisatie van schoonheidsidealen en sociale vergelijking. Bijkomend onderzochten we het verband tussen identiteit en lichaamsbeeld (cross-sectioneel en longitudinaal). Tenslotte exploreerden we de onderlinge relaties tussen identiteit, lichaamsbeeld en eetstoornissymptomen.

Dit project kan een innovatieve bijdrage leveren aan wetenschappelijk onderzoek, maar ook aan de samenleving door te benadrukken dat lichaamsontevredenheid de uitzondering moet zijn in plaats van de norm. Bijkomend kan dit project preventieve programma's omtrent lichaamsontevredenheid en eetstoornissymptomen informeren door in te zetten op het versterken van identiteitsvorming enerzijds en het promoten van een positief lichaamsbeeld anderzijds.





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## TABLE OF CONTENTS

### **Chapter 1: General introduction**

---

1. Identity formation throughout adolescence and emerging adulthood.....	4
1.1. Identity from a developmental perspective.....	4
1.2. Identity development from a clinical perspective .....	5
2. Body image throughout adolescence and emerging adulthood.....	6
3. Identity formation, body image, and ED symptomatology .....	8
3.1. Identity and sociocultural processes .....	9
3.2. Identity and body image.....	9
3.3. Identity and ED symptomatology .....	11
4. The present doctoral project.....	12

### **Chapter 2: Identity distress throughout adolescence and emerging adulthood: Age trends and associations with exploration and commitment processes**

---

Abstract .....	17
1. Introduction.....	18
1.1. Prevalence in different age groups and gender differences .....	19
1.2. Associations with identity processes .....	21
2. The present study.....	21
3. Methods .....	23
3.1. Participants and procedure .....	23
3.2. Measures.....	23
3.2.1. Identity distress. ....	23
3.2.2. Identity processes.....	24
4. Results.....	25
4.1. Preliminary analyses .....	25
4.2. Prevalence of identity distress.....	28
4.3. Age trends in identity distress .....	28
4.4. Associations between identity distress and identity processes.....	31
5. Discussion .....	33
5.1. Prevalence of identity distress in adolescence and emerging adulthood.....	33
5.2. Age trends in identity distress .....	34
5.3. Associations between identity distress and identity processes.....	35
5.4. Limitations and suggestions for further research .....	36
6. Conclusion .....	37

## **Chapter 3: Internalization of appearance ideals and appearance comparison among adolescent boys and girls: The role of identity formation**

---

Abstract .....	41
1. Introduction.....	42
1.1. Sociocultural pressures .....	42
1.2. Internalization of appearance ideals and appearance comparison.....	43
1.3. Identity formation in adolescence .....	43
1.3.1. Sociocultural pressures and identity.....	44
1.3.2. Identity and the internalization of appearance ideals. ....	45
1.3.3. Identity and appearance comparison.....	45
2. The present study.....	45
3. Materials and methods .....	47
3.1. Participants and procedure .....	47
3.2. Measures.....	47
3.2.1. Sociocultural pressures. ....	47
3.2.2. Internalization of appearance ideals.....	48
3.2.3. Appearance comparison.....	48
3.2.4. Identity formation.....	48
3.3. Primary statistical analyses .....	48
3.3.1. Moderation effects.....	51
3.3.2. Indirect effects.....	51
4. Results.....	52
4.1. Preliminary analyses .....	52
4.2. Moderation analyses.....	53
4.2.1. Identity confusion as a moderator. ....	53
4.2.2. Identity synthesis as a moderator. ....	55
4.3. Indirect effects analysis .....	61
4.3.1. Direct effects.....	61
4.3.2. Indirect effects via identity confusion.....	61
4.3.3. Indirect effects via identity synthesis.....	62
5. Discussion .....	63
5.1. The role of identity formation in the relationship between sociocultural pressures and internalization and appearance comparison.....	64
5.2. Implications.....	66
5.3. Limitations .....	67
6. Conclusion .....	67

## **Chapter 4: Body dissatisfaction as a mediator between identity formation and eating disorder symptomatology in adolescents and emerging adults**

---

Abstract .....	71
1. Introduction.....	72
1.1. Identity formation throughout adolescence and emerging adulthood .....	73
1.2. Identity formation as a predictor of ED symptomatology .....	74
1.3. Body dissatisfaction as a mediator between identity formation and ED symptomatology .....	74
1.3.1. Identity formation as a predictor of body dissatisfaction.....	74
1.3.2. Body dissatisfaction as a predictor of ED symptomatology.....	75
2. The present study.....	76
3. Methods .....	77
3.1. Participants and procedure .....	77
3.2. Measures.....	78
3.2.1. Identity.....	78
3.2.2. Body dissatisfaction.....	78
3.2.3. ED symptomatology.....	79
3.2.4. Body Mass Index (BMI).....	79
3.3. Primary statistical analyses .....	79
4. Results.....	80
4.1. Preliminary analyses .....	80
4.2. Primary analyses: Direct effects models.....	83
4.3. Primary analyses: Mediation models .....	84
5. Discussion .....	86
5.1. Identity formation as a predictor for ED symptomatology.....	86
5.2. Body dissatisfaction as a mediator between identity formation and ED symptomatology .....	87
5.3. Implications.....	88
5.3.1. Theoretical implications.....	88
5.3.2. Practical implications.....	89
5.4. Limitations .....	89
6. Conclusion .....	90

**Chapter 5: Identity formation, body image and eating disorder symptomatology:  
A cross-lagged longitudinal approach**

---

Abstract .....	93
1. Introduction.....	94
1.1. ED symptomatology in adolescents .....	94
1.2. Body image and ED symptomatology .....	95
1.3. Identity formation and ED symptomatology in adolescence .....	96
1.4. Identity and body image.....	97
2. The present study.....	98
3. Methods .....	99
3.1. Participants and procedure .....	99
3.2. Questionnaires.....	100
3.2.1. Identity formation.....	100
3.2.2. Body dissatisfaction. ....	100
3.2.3. Positive body image.....	100
3.2.4. Eating disorder symptomatology.....	100
3.3. Primary statistical analyses .....	101
4. Results.....	102
4.1. Preliminary results .....	102
4.2. Primary results .....	106
4.3. Auxiliary analyses.....	110
5. Discussion .....	112
5.1. Body image and ED symptomatology .....	112
5.2. Identity formation and ED symptomatology .....	114
5.3. Identity formation and body image.....	115
5.4. Gender differences in identity formation, body image, and ED symptoms.....	116
5.5. Practical implications .....	117
5.6. Limitations .....	117
6. Conclusion .....	118



## Chapter 6: General discussion

---

1. Overview and integration of main findings .....	121
1.1. Objective 1: Identity disturbance throughout adolescence, emerging and young adulthood.....	121
1.2. Objective 2: The role of identity formation in sociocultural processes related to body image	123
1.3. Objective 3: The relationship between identity formation and body image .....	125
1.3.1. Identity → body image .....	125
1.3.2. Body image → identity .....	126
1.3.3. Identity ↔ body image .....	126
1.4. Objective 4: The interrelations between identity formation, body image, and ED symptoms .....	128
1.4.1. Body image and ED symptomatology .....	128
1.4.2. Identity formation and ED symptomatology .....	129
1.4.3. Identity formation, body image, and ED symptomatology.....	130
2. Critical reflections on the measurement of the constructs.....	132
2.1. Measurement of identity formation .....	132
2.2. Measurement of body image .....	133
2.3. Gender-specific measures .....	135
2.4. Use of self-report questionnaires .....	136
3. Suggestions for further research.....	137
3.1. Broadening of theoretical frameworks .....	137
3.2. Broadening of the age span .....	138
3.3. Integrating a person-centered approach.....	140
3.4. Pathology and well-being .....	140
3.5. A broader perspective on culture/ethnicity and socioeconomic status .....	141
3.5.1. Identity formation in Western vs. non-Western countries.....	142
3.5.2. Body ideals in Western vs. non-Western countries .....	143
3.6. Athletic/dance identity.....	144
3.7. Gender and sexual identity (LGTBQ+) .....	146
3.8. Trauma .....	147
3.9. COVID-19.....	148
4. Implications .....	148
4.1. Enhancing positive identity formation.....	148
4.2. Resisting negative body image and cultivating positive body image and embodiment	149
5. Conclusion .....	151

**References** **153**

**Publication list** **179**



# chapter **1**

General introduction



During adolescence and emerging adulthood, the importance of the body and appearance strongly increases (Cash & Smolak, 2011). From puberty onwards, the body of adolescents changes rapidly and in a drastic manner (Ricciardelli & McCabe, 2011; Wertheim & Paxton, 2011). At the same time, youngsters are confronted with expectations on how their body and appearance should look like through appearance ideals. The dominant appearance ideals in Western societies are narrowly defined by a flawless overall appearance, with body shapes that are extremely thin and/or muscular (Aniulis et al., 2021; Vandembosch, 2017). However, these appearance ideals are difficult to achieve as most bodies strongly differ from these ideals (Dittmar, 2007). Unfortunately, this discrepancy between how someone actually looks (actual body image) and how someone wants to look (ideal body image) results in body dissatisfaction in many youngsters (Cash et al., 1997; Neumark-Sztainer et al., 2004). For these individuals, an increased risk to develop eating disorder (ED) symptoms exists as they are more vulnerable to engage in behaviors to bring their body closer to appearance ideals. In line with this tenet, body dissatisfaction has been forwarded repeatedly as an important risk factor for several physical and mental health problems, but especially so for ED (symptoms) (Cash & Smolak, 2011; Shagar et al., 2017). Both body dissatisfaction and ED symptoms increase throughout adolescence and emerging adulthood and disrupt normal development in the lives of young individuals (Bucchianeri et al., 2013; Frisén et al., 2015; Shagar et al., 2017; Slane et al., 2014; Stice, 1994, 2002). Hence, there is a need for investigating vulnerability and protective factors in the development of body image and ED symptoms.

Although the role of body dissatisfaction has been widely addressed in sociocultural theories on the onset and the course of ED symptoms, specific key mechanisms that influence body image through adolescence and emerging adulthood have not been dealt with in depth (Dittmar, 2005). Identity formation, a key developmental task in these life periods, has been rarely addressed in body image research. Hence, theorists call for an increasing integration of both research fields (Daniels & Gillen, 2015). This project introduces identity as a key factor to improve our understanding of body image and how it is related to well-being and psychopathology. The main goal of this project is to assess an integrative perspective on the link between identity and body image throughout adolescence and emerging adulthood, paying close attention to societal influences. Figure 1 displays a graphical representation of the theoretical model of the present research project. A total of four objectives will be addressed by using cross-sectional and longitudinal data in community adolescents and emerging adults. In Objective 1, we will investigate identity disturbance throughout adolescence and emerging and young adulthood. More specifically, identity distress will be addressed by examining prevalence rates, age trends, and associations with exploration and commitment processes. In Objective 2, we will address moderation and indirect effects of identity in the relationship between sociocultural appearance pressures and internalization of appearance ideals and

appearance comparison. Objective 3 will focus on cross-sectional and prospective associations between identity and body image. In Objective 4, we will focus on the interrelations between identity, body image, and ED symptoms.

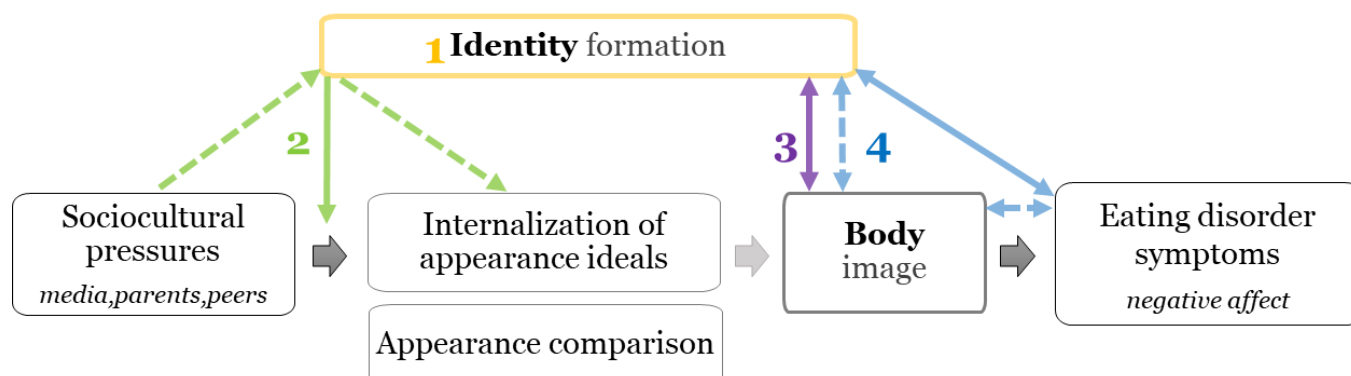


Figure 1. Graphical representation of the key study variables and objectives.

## 1. Identity formation throughout adolescence and emerging adulthood

In this section, we will provide a description of identity from a developmental and clinical approach as theorists increasingly emphasize the need to focus on both normal and disturbed identity development (Kaufman et al., 2014). First, identity development will be addressed from a developmental perspective focusing on identity structure as proposed by Erikson (1968) (i.e., degree of *synthesis and confusion*). Second, a clinical view on more severe identity disturbance will be discussed.

### 1.1. Identity from a developmental perspective

The formation of a personal identity constitutes a lifelong developmental task which is most prominent during adolescence and emerging adulthood (Arnett, 2000; Erikson, 1968). In his lifespan developmental theory, Erikson (1950, 1968) proposed that adolescents need to rework their childhood self-perceptions and are expected to explore their own ideals, values, and life goals. From adolescence onwards, youngsters are inclined to resolve identity questions such as “*Who am I?*” and “*What do I want to achieve in life?*”. Due to the lengthening of education in Western societies, young people have a lot of opportunities to explore their identity and experiment with different roles until their young adult years (Arnett, 2000). As a consequence, long-term commitments, such as parenthood, are delayed in a lot of young people (Arnett, 2000). This life period is also characterized by instability as many emerging adults feel uncertain to make the right decisions and to settle down (Arnett, 2000). When individuals fail to resolve their identity questions, *identity confusion* may unfold as a clear sense of purpose and commitments are lacking.

A certain degree of confusion and inability to form self-identified goals and commitments are considered to be quite normative in the transition to adulthood (Marcia, 2006). For instance, it is normal for young adolescents to experience temporary identity confusion as they are in the midst of figuring out their own identity. Furthermore, for young adolescents who still need to develop mature cognitive abilities and regulatory mechanisms, the identity crisis can be overwhelming (Kroger, 2007). With increasing age, the identities of most late adolescents and emerging adults develop progressively as they usually succeed in taking on more mature roles and are expected to have a clearer sense of who they are (Erikson, 1968; Waterman, 1982). When individuals succeed in forming a strong sense of who they are, they are also able to attain a personal set of self-identified values and goals (Schwartz, 2001). This way, these individuals experience a sense of self-continuity over time, in which they experience themselves as an integrated whole, described as *identity synthesis*. Identity synthesis indicates a successful resolution of the identity crisis and has been associated with positive outcomes (Erikson, 1968). In sum, in the transition to adulthood, the identities of most individuals develop progressively, which is characterized by a transition from identity confusion to increased identity synthesis (Erikson, 1968; Meeus, 2011). Nonetheless, according to Erikson, the formation of an identity is never final and continues to develop in close interaction with one's environment and normative developmental challenges.

### **1.2. *Identity development from a clinical perspective***

A certain amount of confusion and distress related to identity formation is regarded as a normative part of identity development throughout adolescence and emerging adulthood (Berman et al., 2009; Erikson, 1956; Marcia, 2006). Besides temporary concerns in the quest for a personal identity, some people experience identity concerns that are chronic and debilitating causing considerable discomfort and dysfunction in daily life (Adams & Adams, 1989; Berman et al., 2009; Erikson, 1950; Waterman, 1988). Researchers underscored the importance to tackle these difficulties in identity development due to its negative impact on adaptive functioning and psychological well-being (Gfellner & Córdoba, 2020).

A lot of research attention has been devoted to identity models from a developmental perspective, whereas the specific area of more severe identity disturbance has been overlooked by developmental researchers (Bogaerts et al., 2018; Kaufman et al., 2015). In an attempt to integrate developmental and clinical approaches to identity development, a dimensional perspective on identity has been forwarded recently by clinically-oriented researchers, using developmental psychopathology as a guiding framework (Kaufman et al., 2014). According to this framework, identity functioning can be positioned on a continuum ranging from adaptive identity functioning to pathological identity disturbance. This continuum consists of identity

synthesis, normative identity confusion and more severe identity disturbance (Kaufman et al., 2014). In order to assess more severe identity disturbance, several measures have been constructed, such as the *Identity Distress Survey* (IDS; Berman et al., 2004) and the lack of identity subscale of the *Self-Concept and Identity Measure* (SCIM; Kaufman et al., 2015). The IDS measure is modeled after the DSM-III-R and DSM-IV categorization for identity disorder (American Psychiatric Association [APA], 1987) and identity problem (APA, 1994) and assesses the amount of concern and distress individuals experience regarding the (in)ability to resolve identity issues (e.g., long-term goals, career choice, friendships) (Berman et al., 2004). The SCIM captures more severe forms of identity disturbance with the subscale 'lack of identity'. Lack of identity refers to a clinical identity disturbance including individuals who feel broken and empty inside (Kaufman et al., 2015).

Despite the importance of severe identity disturbance in young people's development, a detailed picture of identity distress throughout adolescence and emerging adulthood is largely lacking. Further, it remains unclear how identity distress and identity processes of exploration and commitment are interrelated in adolescence and emerging adulthood. Accordingly, in Objective 1, we will examine (a) the prevalence of identity distress throughout adolescence and emerging adulthood, (b) age trends in identity distress from early adolescence through the late 20s, and (c) the associations between identity distress and identity processes and how these associations differ among these developmental periods.

As identity distress negatively impacts adaptive functioning and psychological well-being (Gfellner & Córdoba, 2020; Verschuere, Claes, Gandhi, et al., 2019), it is important to investigate to what extent adolescents and emerging adults are confronted with identity distress in the first place. Hence, this study will be an important first step to underscore the importance of identity distress in these age groups which, in turn, could highlight the utility of investigating the role of identity formation (from both a developmental and clinical perspective) in body image and ED symptomatology.

## **2. Body image throughout adolescence and emerging adulthood**

Research has demonstrated damaging effects of sociocultural pressures to aspire appearance ideals on adolescents' body image (Grabe et al., 2008; Holland & Tiggemann, 2016). Indeed, contemporary youth are confronted with substantial sociocultural pressures to aspire appearance ideals as standards for one's own appearance (Dittmar, 2007). In Western countries, in general, girls and females are expected to look unrealistically thin; for boys and males, the ideal body is portrayed as being lean and muscular (Vandenbosch, 2017).



As originally described in the tripartite influence model (Thompson et al., 1999) and Stice's (1994) dual-pathway model, appearance ideals are imposed to adolescents on a large scale through (social) media, parents, and peers (i.e., sociocultural pressures) and exert their influence on body image through the mechanisms of internalization of appearance ideals and appearance comparison (Jarman et al., 2021; Stice, 1994; Thompson et al., 1999). People who internalize appearance ideals adopt these ideals as standards for their own appearance which translates in a desire for attaining these ideals and behaviors to achieve them (Schaefer et al., 2015). These individuals tend to place a high value on appearance, check for bodily imperfections, and compare their own appearance to the appearance of others which increases the risk of body dissatisfaction (Keery et al., 2004; Tylka, 2011; van den Berg et al., 2002).

Body dissatisfaction in youth, and especially in girls, is so disturbingly high that it is perceived as the norm rather than the exception (Cash & Smolak, 2011; Rodin et al., 1984). Body dissatisfied individuals experience negative affect and wish to change one or more aspects of their own body and/or appearance (Cash et al., 1997). For the past five decades, research revealed an important role for body dissatisfaction in the onset and course of ED symptoms, such as drive for thinness, bulimia (bingeing, purging), and compulsive exercise (Shagar et al., 2017). In line with this, an individual's relationship to one's own body is central in ED symptoms and body image disturbance also constitutes a core criterium within ED diagnoses (APA, 2013). Furthermore, people who have a negative relationship with their own body are expected to experience the body as an object separate from the self. This body-self disconnection enhances the risk for self-harming behaviors, such as ED symptoms, in the face of negative affect (Brausch & Muehlenkamp, 2007; Muehlenkamp & Brausch, 2012; Orbach & Mikulincer, 1998; Pérez et al., 2018).

Although body image research heavily focused on negative body image and its negative outcomes, the past decade, scholars stressed the importance for a more holistic view on body image, by also focusing on positive body image (Tylka & Piran, 2019). Inspired by positive psychology, it is expected that positive body image might hold unique resources in the protection against psychopathology but also for the optimization of well-being (Tylka & Wood-Barcalow, 2015b). Recent cross-sectional research indeed revealed associations between positive body image and increased regular exercise (Homan & Tylka, 2014), increased intuitive eating (Tylka & Kroon Van Diest, 2013), and decreased dieting and drive for muscularity (Gillen, 2015). Even though these first results are very promising, future research should address these questions longitudinally.

With regard to gender, it has been widely established that especially girls' and females' body image is more often targeted by sociocultural pressures, resulting in higher levels of body

dissatisfaction and ED symptoms in girls/females than in boys/males (Striegel-Moore et al., 2009). Nevertheless, male body dissatisfaction and objectification is increasing and linked to weight-control behaviors in males (Tylka, 2011). Furthermore, it is expected that many male adolescents who suffer from ED symptoms might be overlooked (Goodwin et al., 2014; Kjelsås et al., 2004). Although ED (symptoms) in males are usually detected with measures that are specifically developed for females, researchers and clinicians underscored that ED (symptoms) in males and females are quite different (Stanford & Lemberg, 2012).

In sum, adolescents are susceptible to turn to weight-control behaviors in order to bring their body and appearance closer to appearance ideals in the face of body dissatisfaction. ED symptoms throughout adolescence not only place a large burden on youngsters, but are also important predictors for the development of an ED later in life. Hence, the present dissertation will address subclinical ED symptoms in community adolescents and emerging adults. More specifically, we will focus on drive for thinness, bulimia, and compulsive exercise in order to address ED symptoms that might occur in both girls and boys.

Although body image research and sociocultural thinking generated much research, it remains unclear which individuals are especially vulnerable to internalize appearance ideals in the first place and, subsequently, which individuals will develop body dissatisfaction and ED symptoms (Brausch & Muehlenkamp, 2014; Stice, 1994; Vartanian et al., 2018). Although identity is hypothesized to play an important role in the pathway from body image to psychopathology, little research has been conducted to bridge identity with sociocultural body image literature (Daniels & Gillen, 2015). The aim of this doctoral project is to broaden current knowledge of identity as a crucial factor for understanding how body image evolves over time and how it is related to ED symptomatology.

### **3. Identity formation, body image, and ED symptomatology**

Research has increasingly stressed the importance of identity in the emergence and course of well-being and psychopathology (Klimstra & Denissen, 2017). Despite the increasing interest for body-related disorders (Verschuere, Claes, Gandhi, et al., 2019), few researchers have addressed the link between identity development and body image directly (Daniels & Gillen, 2015). To date, an integrative perspective on the link between identity and body image with input from sociocultural theorizing is largely lacking. Hence, the present project substantially extends this theorizing and research by examining identity as an important mechanism linking body image to ED symptoms.

### **3.1. *Identity and sociocultural processes***

In an attempt to bridge the gap between identity and sociocultural literature, in Objective 2, the role of identity in sociocultural processes will be examined (as indicated by the green arrows in Figure 1).

The quest for a personal identity is influenced by one's sociocultural context (Erikson, 1968). In Western societies, youngsters are typically confronted with idealized messages of men and women that are portrayed as crucial to become happy, worthy, and successful (Dittmar, 2007). It has been stated that these idealized messages in media constitute important identity goals, and especially so for adolescents who are searching for their own identity (Dittmar, 2009). People who internalize these appearance ideals, integrate these ideals into one's idealized bodily self (Dittmar, 2009). This way, the internalization of these ideals is dependent on identity as identity confusion might increase the risk to internalize these ideals, whereas healthy identity development might protect against the internalization of these ideals (Vartanian et al., 2018; Verstuyf et al., 2014). Furthermore, identity formation has also been associated with appearance comparison as adolescents tend to compare themselves with others in order to understand and evaluate themselves (Festinger, 1954). Although this process is quite normal, it can produce feelings of self-doubt and identity confusion when youngsters compare themselves to more idealized or physically attractive others (e.g., peers or media images) (Yang et al., 2018). In turn, identity confused adolescents might be more vulnerable to compare themselves to others in order to define their own fragile identity (Shahyad et al., 2018; Vartanian et al., 2018).

In sum, in order to define a sense of identity, identity confused youth might increasingly seek for external sources, such as appearance ideals, which might result in the internalization of these appearance ideals and appearance comparison. Hence, appearance ideals might constitute an identity substitute or a way to avoid identity issues for adolescents who experience identity confusion (Verstuyf et al., 2014). Hence, in Objective 2, moderation and indirect effects of identity in the relationship between sociocultural pressures and the internalization of appearance ideals and appearance comparison will be investigated in adolescents.

### **3.2. *Identity and body image***

Little research has been conducted to bridge identity with body image research (Daniels & Gillen, 2015), despite a growing interest in the relationship between these constructs. Indeed, appearance is a highly significant aspect in the way young individuals form a sense of who they are, and on the other hand, body image is affected by identity (Daniels & Gillen, 2015; Erikson,

1968; Tylka & Wood-Barcalow, 2015b). Hence, in Objective 3, we will examine the associations between identity and body image (as indicated by the purple arrow in Figure 1).

The past decade, researchers and theorists underscored the importance to investigate how identity and body image are related to each other (Daniels & Gillen, 2015). Triggered by biological, social, and emotional changes in early adolescence, body image and identity formation come to the foreground simultaneously in this life stage. For instance, the drastic and rapid changes that the body undergoes in puberty influences the identity formation process (Erikson, 1968; Nelson et al., 2018). In other words, due to the apparent bodily changes, adolescents feel inclined to rethink who they are, or who they will become in their changing (maturing) bodies. During emerging adulthood, romantic and sexual relationships become increasingly important, resulting in a strong focus on the body as a central aspect of young people's sense of identity (Arnett, 2000).

In his early writings, Erikson (1968) already gave a description of the body as the home to one's self which has also been highlighted within the body-self connection dimension of embodiment theory (Piran, 2019). People who experience a connection between self and body describe feelings of bodily comfort and to "feel at home in one's body" (see Erikson, 1968). In contrast, people who experience a body-self disconnection experience the body as separate from the self and they express a desire to change or control the body (Piran, 2019). When body and appearance constitute the most central parts of one's identity, discrepancies between one's actual and ideal bodily self are more likely to emerge (Higgins, 1987). When people fail to reach this self-imposed ideal body, this failure is also related to one's own sense of self, which leads to negative emotions towards both body and self.

A few studies have been conducted to test these theoretical assumptions. For example, Kamps and Berman (2011) demonstrated a positive association between negative body image and identity distress. In line with this finding, late adolescents' identity formation, and more specifically interpersonal identity exploration and commitment, have been associated to body-esteem and the internalization of appearance ideals (Wängqvist & Frisé, 2013). A study by Nelson et al. (2018) revealed that adolescents who experienced declining levels of weight esteem and appearance esteem over time, experienced decreased identity synthesis as emerging adults. Further, a qualitative study extended these findings by indicating that the body can be salient in the identities of young individuals (Kling et al., 2018). For instance, people can identify with their own body as an inseparable part of their own identity, whereas changes in appearance or body can also lead to changes in identity (Kling et al., 2018).

In sum, identity and body image are hypothesized to influence each other and to co-develop in the challenging transition to adulthood. Hence, in Objective 3, we will investigate associations between identity and body image both cross-sectionally and prospectively.

### **3.3. *Identity and ED symptomatology***

Research has increasingly stressed the importance of identity and body image in the emergence and course of ED psychopathology; however, an integrative perspective addressing interrelations between identity, body image, and ED symptoms is largely lacking. In Objective 4, we will address how identity, body image and ED symptoms (i.e., drive for thinness, bulimia, and compulsive exercise) are related to each other.

Different models have focused on self- and identity-related problems as an important factor in the etiology and maintenance of ED symptoms. In highly appearance-based societies, identity problems might predispose adolescents to strive for appearance ideals and to use their own body to define their identity (Casper, 1983; Schupark-Neuberg & Nemeroff, 1993). Youngsters who invest in appearance as a primary part of their identity without integrating other sources of esteem, are at risk for developing a fragile sense of identity (Corning & Heibel, 2016). When one's identity is narrowly defined by one aspect, such as appearance, threats to their ideal body image also threatens their general sense of identity. In societies that highly value appearance, the identities of these individuals are continuously threatened by deviations from the ideal body image through appearance-focused conversations with peers, or appearance comparison with idealized media images. These youngsters are at greater risk to develop ED symptoms as they feel inclined to control their own fragile sense of identity by striving for their ideal body image. These ideas are in line with Fairburn et al. (2003) who described a core low self-esteem and an over-evaluation of appearance and eating behaviors as central components in ED symptoms. Building further on these ideas, ED symptoms are also regarded as a means to escape, avoid or distract from distressing identity-related issues or a fragile sense of identity (Heatherton & Baumeister, 1991; Schupark-Neuberg & Nemeroff, 1993; Wheeler et al., 2001).

The past few years, studies were conducted that showed a clear association between identity and ED symptomatology, in line with the aforementioned theoretical assumptions. Patients with an ED have been found to experience more identity problems in comparison to healthy controls (Verschuere et al., 2017). In community adolescents and emerging adults, identity problems have been related to increased drive for thinness, bulimia (Palmeroni et al., 2020; Vartanian et al., 2018), compulsive exercise (Vartanian et al., 2018), and lowered health-focused eating regulation (Verstuyf et al., 2014). Furthermore, a study by Verschuere, Claes,

et al. (2018) also found bidirectional effects between identity formation and drive for thinness and bulimia.

In sum, although the role of identity formation and body image has been addressed in research on ED symptoms (Brausch & Muehlenkamp, 2014; Shagar et al., 2017; Stice, 2002; Tylka & Piran, 2019; White & Halliwell, 2010), it is not yet fully understood how these factors are interrelated. Hence, in Objective 4, we will investigate interrelations between identity formation, negative and positive body image, and ED symptomatology in adolescents and emerging adults as indicated by the blue arrows in Figure 1.

#### 4. The present doctoral project

Despite the recent interest in the role of identity functioning in well-being and body-related psychopathology (Klimstra & Denissen, 2017; Verschueren, Claes, Gandhi, et al., 2019), important knowledge gaps remain. First, identity distress and identity disturbance, rather than normative identity processes, are constructs that received little attention in empirical research. Hence, in Objective 1, our aim is to broaden our knowledge on identity disturbance by investigating identity distress in adolescents and emerging adults. *Chapter 2* will address this question by investigating the prevalence of identity distress and its association with identity processes throughout adolescence and emerging adulthood (ages 14-30; see Table 1). This will be an important first step to demonstrate the importance of identity disturbance in these age groups before we would investigate the role of (severe) identity disturbance in sociocultural processes related to body image (Objective 2), body image (Objective 3), and ED symptomatology (Objective 4).

Second, although a lot of research attention has been devoted to the detrimental effects of sociocultural pressures to attain appearance ideals, it is not clear how and for whom sociocultural pressures have a negative effect on body image (Dittmar, 2005). Despite the fact that identity is hypothesized to have a meaningful effect in this respect, it remains unclear which role identity might play in this chain of mechanisms linking sociocultural pressures to body image (Daniels & Gillen, 2015; Dittmar, 2009). In an attempt to bridge the gap between identity and sociocultural literature, in Objective 2, the role of identity in sociocultural processes will be examined. *Chapter 3* will focus on moderation and indirect effects of identity in the relationship between sociocultural pressures and the internalization of appearance ideals and appearance comparison in an adolescent sample (ages 13-19; see Table 1).

Third, little research has been conducted to address general identity formation within body image research (Daniels & Gillen, 2015), despite a growing interest in the relationship between these constructs. Hence, in Objective 3, we will examine associations between identity and

body image cross-sectionally and prospectively over time. *Chapters 4 and 5* will address these questions. *Chapter 4* includes a cross-sectional investigation of the predictive role of identity formation towards body dissatisfaction in adolescents and emerging adults (ages 15-30; see Table 1). In order to measure identity formation, we will include healthy identity formation, developmentally appropriate levels of confusion, and severe identity disturbance. In *Chapter 5*, we will examine how identity formation and body image (body dissatisfaction and positive body image) are interrelated over time in adolescents (ages 13-19; see Table 1).

Fourth, it is still not well understood why some individuals are more vulnerable to develop negative body image and/or ED symptoms (Brausch & Muehlenkamp, 2014; Stice, 1994). Most studies have investigated either the role of identity formation or negative body image in ED symptomatology, but an integrative perspective with the inclusion of positive body image has been overlooked. Hence, in Objective 4, we will investigate how identity formation, negative and positive body image, and ED symptomatology are interrelated in adolescents and emerging adults. *Chapter 4* will address the role of identity and body image in the pathway to ED symptoms. More specially, *Chapter 4* includes a cross-sectional investigation of body dissatisfaction as a possible mediator in the relationship between identity formation and drive for thinness and bulimia in adolescents and emerging adults (ages 15-30; see Table 1). *Chapter 5* aims at gaining insight into the temporal associations between identity formation, body dissatisfaction and positive body image, drive for thinness, bulimia, and compulsive exercise in adolescents (ages 13-19; see Table 1).

**Table 1***Overview of the Chapters and Studies of the Present Doctoral Project*

Chapter	Study	Main variables	Sample	Age range	N
Chapter 2	1 (cross-sectional)	Identity distress Identity processes	High school students College students Employed individuals	14-30	2286
Chapter 3	2 (cross-sectional)	Identity confusion Identity synthesis  Sociocultural pressures  Appearance ideals internalization Appearance comparison	High school students	13-19	685
Chapter 4	3 (cross-sectional) 4 (cross-sectional)	Identity consolidation Identity disturbance Lack of identity  Body dissatisfaction Drive for thinness Bulimia	High school students College students Employed individuals	15-30	659
Chapter 5	2 (longitudinal)	Identity confusion Identity synthesis Body dissatisfaction Positive body image Drive for thinness Bulimia Compulsive exercise	High school students	13-19	685



# chapter

# 2

Identity distress throughout adolescence and emerging adulthood:  
Age trends and associations with exploration and commitment processes

Published manuscript:

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## Abstract

**Introduction.** The process of identity formation can cause a considerable amount of distress leading to pathological forms of identity distress.

**Methods.** The present study examined age trends in identity distress and associations with identity exploration and commitment in a sample of 2,286 Flemish adolescents and emerging adults (14-30 years; 55.7% females).

**Results.** Important and theoretically meaningful age trends in identity distress were uncovered. More specifically, identity distress demonstrated a curvilinear trend with the highest levels of distress occurring in emerging adulthood. Concerning the associations between identity distress and identity processes, we found differences among the age periods studied. Identity distress was especially positively related to exploration in breadth and negatively to commitment making in the late 20s, but less so in adolescence and the early 20s.

**Conclusion.** In sum, these results provide important insights into identity distress throughout adolescence and emerging adulthood. Theoretical implications, limitations, and suggestions for future research are discussed.

## 1. Introduction

Identity formation is a key developmental task in adolescence challenging young people to explore different life choices and to achieve a coherent identity (Erikson, 1968). Due to the growing complexity of modern Western societies (Arnett, 2002; Berman & Montgomery, 2014; Jørgensen, 2006), identity formation is prolonged into the late teens and 20s, a period called emerging adulthood (Arnett, 2000). Erikson (1968) suggested that the formation of a coherent identity is typically precipitated by an existential crisis, triggering questions such as “*Who am I?*” and “*What is important in my life?*”. In contemporary Western societies, young people’s lives are characterized by a lengthening of higher education, resulting in a delay in committing to long-term choices, such as marriage and parenthood (Arnett, 2000). As a result, young people have ample opportunities to experiment with different roles until their young adult years (Arnett, 2000). However, this period is also a time of instability and difficulties, because many young people are unsettled and uncertain where their explorations will lead them (Arnett, 2000).

During this period, it is normal for young people to experience a certain amount of *identity distress* (i.e., the experience of uncertainty or distress over one or more identity domains and the experience of discomfort and interference of these identity domains in one’s daily life) (Berman et al., 2004; Berman et al., 2009; Hernandez et al., 2006). Identity distress can be encountered in various *identity domains* (i.e., long-term goals, career choice, friendships, sexual orientation and behavior, religion, values or beliefs, and group loyalties) (Berman et al., 2004). For some people, these identity domains can become overwhelming, causing considerable discomfort and dysfunction in daily life (referred to as *identity impact* in the present article) (Berman et al., 2004; Berman et al., 2009).

To identify people who experience substantial difficulties regarding unresolved identity domains, different diagnostic categories of identity distress were developed, revealing a clinical interest in the concept of identity distress. The first diagnostic category, *identity disorder*, was presented in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III; American Psychiatric Association [APA], 1980) and targets people who experience severe distress due to the inability to integrate different aspects into a coherent sense of self, which interferes with daily functioning (APA, 1980). The diagnostic criteria of identity disorder comprise uncertainty and distress about multiple identity domains, consisting of long-term goals, career choice, friendships, sexual orientation and behavior, religion, values or beliefs, and group loyalties (APA, 1980; Berman et al., 2004).

This categorical diagnosis was changed in DSM-IV (APA, 1994) for two reasons. First, the category of identity disorder was not frequently studied or diagnosed in clinical settings

(Berman et al., 2009; Shaffer et al., 1989). Second, for many individuals, the symptoms of identity disorder could be better explained by either normative identity struggles or by another condition, such as depression (Berman et al., 2009). Therefore, in DSM-IV (APA, 1994), identity disorder was downgraded into a less stringent diagnostic category, *identity problem*, listed under ‘other conditions that may be a focus of clinical attention’ (Berman et al., 2009). The category of identity problem targets people who experience uncertainty about multiple identity domains (APA, 1994). In DSM-5 (APA, 2013), the distinct category of identity problem was removed. Nevertheless, DSM-5 section III (APA, 2013) included identity (impairment) as a possible core diagnostic feature in a new alternative model of personality disorders. Hence, this new model continues to highlight the clinical importance of identity distress (Berman & Montgomery, 2014).

To further testify to the clinical importance of identity distress, recent research uncovered important associations between identity distress and mental health. In community high school and college samples, identity distress has been positively related to internalizing symptoms (Berman et al., 2009), negative affect (Samuolis & Griffin, 2014), posttraumatic stress (Scott et al., 2014; Wiley et al., 2011), negative body image (Kamps & Berman, 2011), impaired psychosocial maturity, and impaired academic functioning (Gfeller & Córdoba, 2011). In at-risk and adolescent outpatients, identity distress has been positively related to internalizing and externalizing symptoms (Hernandez et al., 2006; Wiley & Berman, 2013).

### **1.1. Prevalence in different age groups and gender differences**

A study on identity distress in a high school sample reported a prevalence rate of 14.3% for identity problem and 7.9% for identity disorder (Berman et al., 2009). In college students, a rate of 18.8 % for identity problem was found and prevalence rates for identity disorder ranged between 9.7% and 12% (Berman et al., 2004; Gfeller & Córdoba, 2011). Further analyses showed that especially the identity domains of long-term goals, career choice, and friendships caused the highest levels of distress among college students (Samuolis & Griffin, 2014). In an emerging adult sample, a prevalence rate of 9.6% was found for identity problem (Wängqvist & Frisé, 2011). Even higher rates of identity distress have been reported among clinical populations. In an adolescent outpatient sample, Wiley and Berman (2013) reported a rate of 22.7% for identity problem. Furthermore, among at-risk adolescents, a prevalence rate of 16% for identity disorder and 34% for identity problem was mentioned (Hernandez et al., 2006). These results suggest that identity distress is a common problem for many young people and especially for those with mental health issues (Berman et al., 2009; Samuolis et al., 2015).

Despite this growing interest in identity distress in young people, it remains unclear whether age differences exist herein. Hence, we forward some tentative hypotheses based on

research that has examined age differences in identity processes of exploration and commitment. Forming a coherent identity, which comes into prominence in adolescence, may start with an exploration of identity alternatives (*exploration in breadth*) which may result in an increase of commitments (*commitment making*) from adolescence onwards (Luyckx, Schwartz, Berzonsky, et al., 2008). Subsequently, individuals may evaluate their identity commitments by comparing them to their own identity standards and values (*exploration in depth*), which, in turn, may lead to feelings of confidence and certainty about commitments (*identification with commitment*) (Luyckx, Schwartz, Berzonsky, et al., 2008). However, many youth are uncertain about where their explorations will lead them and might get stuck in this process by repeatedly revisiting the same identity questions (*ruminative exploration*; Luyckx, Schwartz, Berzonsky, et al., 2008).

With regard to age differences in these identity processes, previous research showed that commitment processes increase from adolescence onwards, revealing identity maturation and consolidation (Luyckx et al., 2013; Meeus et al., 2010). Exploration processes also increase from adolescence onwards and reach their highest levels during emerging adulthood. More specifically, both pro-active identity exploration and ruminative exploration tend to be the highest in emerging adulthood (Luyckx et al., 2013). During the late 20s, exploration processes again decrease as an indication of increasing identity commitment and consolidation (Luyckx et al., 2013; Meeus et al., 2010). These results seem to indicate that especially during emerging adulthood, identity confusion and uncertainty can arise, which may go hand in hand with ruminative exploration, possibly leading to higher levels of identity distress during emerging adulthood in comparison to adolescence and the late 20s. Hence, one of the aims of the present study was to provide a systematic inquiry into age differences in identity distress from adolescence through the late 20s.

Additionally, with regard to gender differences in identity distress, there is still considerable ambiguity. Previous studies have found either no gender differences (Berman et al., 2004) or higher scores for women on dimensional identity problem scales (Berman et al., 2009). Research also indicated higher prevalence rates in women for the identity disorder and identity problem diagnoses (Berman et al., 2009; Hernandez et al., 2006). Furthermore, previous studies have also reported that women experience distress in more domains, for a longer period of time, and with greater impact on their daily lives than men do (Berman et al., 2009; Wängqvist & Frisé, 2011). With regard to identity domains, two different studies in college students and at-risk adolescents indicated no gender differences in levels of distress for any of the identity domains (Hernandez et al., 2006; Samuolis & Griffin, 2014). On the contrary, a study on community adolescents found that girls reported more identity distress in identity domains of sexuality and moral values compared to boys (Berman et al., 2009),

whereas a study among emerging adults found that women reported more identity distress in the domains of friendships, group loyalties, and moral values than men (Wängqvist & Frisé, 2011). In sum, current literature on gender differences in identity distress is scarce and results are inconsistent.

### **1.2. Associations with identity processes**

Research has shown that identity exploration is positively related to identity distress, whereas identity commitment is negatively related to identity distress. With respect to identity exploration, the highest amount of identity distress has been found to occur during the active phase of identity exploration, that is, in the moratorium status (i.e., exploration without commitment) (Berman & Montgomery, 2014; Berman et al., 2004; Berman et al., 2009). Nevertheless, Sica et al. (2014) reported that mainly ruminative exploration (and not so much pro-active exploration) was positively associated with identity distress. Moreover, a study on emerging adults indicated that the process of identity exploration was accompanied by increased psychological symptoms, mediated through the experience of identity distress (Wängqvist & Frisé, 2011). With regard to commitment, identity distress has been negatively related to both commitment making and identification with commitment (Sica et al., 2014). Berman and colleagues (2014) also found that identity distress was significantly lower for individuals in foreclosure (i.e., commitment without exploration) as compared to individuals in moratorium and diffusion (i.e., no exploration or commitment). Taken together, these studies indicated clear associations between identity distress and identity processes of exploration and commitment.

## **2. The present study**

Although previous research has demonstrated a detrimental influence of identity-related distress on young people's life, systematic research focusing on identity distress throughout adolescence and emerging adulthood is largely lacking. The aim of our research was to extend current knowledge on identity distress by addressing three main research objectives.

As a first objective, we examined the prevalence of identity distress by using the categorical diagnoses of identity disorder and identity problem according to DSM-III-R and DSM-IV criteria. We expected prevalence rates to range between 7% and 15% for identity disorder and between 14% and 20% for identity problem, as described in previous studies (Berman et al., 2004; 2009; Gfellner & Córdoba, 2011). Research on gender differences in identity distress is scarce and results have been inconsistent. Therefore, we do not formulate specific hypotheses.

As a second objective, we examined age trends in identity distress from adolescence to the late 20s. The identity formation task, which comes into prominence in adolescence, can initiate

distress in certain youngsters. Thus, we expected identity distress to increase throughout the teens. The highest level of identity distress was expected to emerge during emerging adulthood, a life period which is characterized by instability and a wide array of opportunities (Arnett, 2000; Berman et al., 2009; Luyckx et al., 2013; Luyckx, Schwartz, Goossens, et al., 2008). However, with increasing age, the ability to adopt social roles increases, which, in turn, may result in an increase in identity commitments through the late 20s (Luyckx et al., 2013). Consequently, identity distress may decrease during the late 20s as an indication of increasing identity maturation (Luyckx et al., 2013; Meeus et al., 2012). Based on these findings, we expected curvilinear age trends, revealing more identity distress, in more identity domains, and with greater impact from adolescence onwards. The highest levels of identity distress, identity domains, and identity impact were expected to occur during emerging adulthood, followed by a decrease in the late 20s. We explored age trends for different identity domains as well, as some domains become increasingly important during emerging adulthood (Arnett, 2000, 2002). A study in college students reported that the highest levels of distress were related to long-term goals, career choice, and friendships (Samuolis & Griffin, 2014). As such, we expected emerging adults to experience distress in more domains, but maybe and especially so in more age-relevant domains such as long-term goals, career choice, and/or friendships as compared to other, potentially less central domains.

Furthermore, we examined whether these age trends are moderated by gender. With regard to gender differences in identity distress, previous studies reported inconsistent results (Berman & Montgomery, 2014; Berman et al., 2009; Hernandez et al., 2006). Nevertheless, research shows that identity formation may have a different timing for boys and girls. Berman and colleagues (2009) also stated that certain identity domains become more salient at an earlier age in girls. Given that identity formation seems to start earlier in girls (Klimstra et al., 2010), certain girls might experience more identity distress, in more domains, and with higher impact at younger ages compared to boys. However, due to previous inconsistent results, we cannot formulate strong hypotheses in this respect.

As a third objective, we examined how identity distress was related to identity processes of exploration and commitment, and whether these associations differed between different age periods (adolescence, emerging adulthood, and the late 20s). Luyckx and colleagues (2013) reported that exploration processes seemed to become less functional towards the formation of strong identity commitments in the late 20s (Luyckx et al., 2013). Additionally, exploration in breadth and low levels of commitment were more strongly associated with depressive symptoms with increasing age, with the strongest associations occurring in the late 20s (Luyckx et al., 2013). Hence, when people continue to explore in their late 20s without making choices, this may be symptomatic of identity distress. Thus, we expected a positive association



between identity distress and (ruminative) exploration and a negative association between identity distress and commitment processes, with the strongest associations occurring in the late 20s and less so in adolescence and the early 20s.

### 3. Methods

#### 3.1. *Participants and procedure*

We combined seven samples<sup>1</sup>, which were collected between 2005-2010 in Flanders, the Dutch-speaking part of Belgium. The total combined sample size comprised 2,286 participants (55.7% females; 14-30 years;  $M_{age}=18.04$ ;  $SD_{age}=3.55$ ). Table 2 presents an overview of the demographic characteristics of the samples and how they are distributed in terms of age and context (high school students, college students, and employed individuals). The participating high schools were localized in different regions in Flanders. Most of the college students studied at the Faculty of Psychology and Educational Sciences from the University of Leuven, but students from a variety of other majors were also included. The employed individuals were contacted through e-mail and social media, and the questionnaires were distributed in different work contexts, such as schools, hospitals, and private companies. Voluntary participation and anonymity applied to all participants. Permission to participate was given by all participants through informed consent. The different data-collections were approved by the institutional Ethics Committee.

#### 3.2. *Measures*

##### 3.2.1. *Identity distress.*

Participants completed the *Identity Distress Survey* (IDS; Berman et al., 2004), modeled after the DSM-III-R and DSM-IV categorization for identity disorder (APA, 1987) and identity problem (APA, 1994). This 10-item self-report survey measures distress associated with unresolved identity domains. The items are rated on a 5-point Likert scale ranging from '1' (not at all) to '5' (very severely). The first seven items rate the amount of distress experienced in seven different identity domains (long-term goals, career choice, friendships, sexual orientation and behavior, religion, values or beliefs, and group loyalties). Sample items include: "To what degree have you recently been upset, distressed, or worried over the following issues in your life?" Two additional items assess the amount of discomfort experienced and the degree of interference of these identity domains in daily life. The last item gives an indication of the duration of identity-related distress. Accordingly, the items can be used to give an indication of global identity distress (identity distress; items 1-10), but also to

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<sup>1</sup> Some of these samples were used in other papers.

give a more specific indication of distress experienced in different domains (identity domains; items 1-7) and the impairment and duration of identity distress (identity impact; items 8-10). In the present study, Cronbach's alphas were .81 for items 1-10 (identity distress), .69 for items 1-7 (identity domains), and .78 for items 8-10 (identity impact).

This survey can also be administered to assess a categorical diagnosis of either identity disorder or identity problem (Berman et al., 2004; Berman et al., 2009). A diagnosis of identity disorder is derived when the following conditions are met: (a) three or more of the identity domains are rated as *severely* or *very severely* distressful, which corresponds with scores greater than or equal to 4, (b) impairment caused by identity domains is rated as *moderately*, *severely*, *very severely*, which corresponds with scores greater than or equal to 3, and (c) the duration of distress was at least three months. The only difference in obtaining a diagnosis of identity problem is that there is no time frame (criterion c) required.

### 3.2.2. Identity processes.

As displayed in Table 2, five of the seven samples completed the *Dimensions of Identity Development Scale* (DIDS; Luyckx, Schwartz, Berzonsky, et al., 2008). This questionnaire has been shown to be valid and reliable in adolescent and emerging adult samples (Luyckx, Schwartz, Berzonsky, et al., 2008). The DIDS assesses five identity processes with a focus on possible life paths and future plans. The DIDS consists of 25 items, with each identity process measured by five items on a 5-point Likert scale ranging from '1' (*strongly disagree*) to '5' (*strongly agree*). Sample items include: "I think about the direction I want to take in my life" (exploration in breadth), "I decided on the direction I want to follow in my life" (commitment making), "I regularly talk with other people about the plans for the future I have made for myself" (exploration in depth), "Plans for the future offer me a sense of security" (identification with commitment), "It is hard for me to stop thinking about the direction I want to follow in my life" (ruminative exploration). In the present study, Cronbach's alphas (for the combined/entire sample) were .84, .89, .80, .86, and .83, respectively.

**Table 2***Demographic Characteristics of the Seven Samples*

<i>Sample</i>	<i>N</i>	Measures	% females	<i>M (SD) age</i>	Age range	Sample description
1	404	IDS; DIDS	49.3	16.29 (1.04)	14-19	High school students
2	212	IDS; DIDS	80.7	18.54 (1.12)	17-27	College students
3	257	IDS	83.3	19.49 (1.15)	18-30	College students
4	564	IDS; DIDS	61.7	16.14 (1.41)	14-21	High school students
5	243	IDS; DIDS	49.8	15.53 (1.17)	14-19	High school students
6	249	IDS	65.1	18.19 (0.50)	17-20	High school students
7	357	IDS; DIDS	65.0	23.28 (3.21)	17-30	College students (55.7%) Employed individuals (44.3%)

*Note.* *N* = sample size; *M* = mean; *SD* = standard deviation; IDS = Identity Distress Survey; DIDS = Dimensions of Identity Development Scale

#### 4. Results

Due to the large sample size, our analyses attained high power and, therefore, the significance level was set at  $p < .01$  for all analyses. Descriptive statistics (mean scores and standard deviations) for the main variables are presented in Table 3.

##### 4.1. Preliminary analyses

A multivariate analysis of variance (MANOVA) was conducted to examine gender differences in identity distress. Based on Wilks' Lambda, overall statistically significant gender differences were found [ $F(3, 2223)=16.01, p < .001, \text{partial } \eta^2=.021$ ]. Follow-up univariate ANOVAs indicated that women scored significantly higher on identity distress ( $M_{\text{women}}=2.39, SD_{\text{women}}=0.67; M_{\text{men}}=2.20, SD_{\text{men}}=0.69$ ) [ $F(1, 2225)=44.25, p < .001, \text{partial } \eta^2=.019$ ], experienced distress in more identity domains ( $M_{\text{women}}=2.37, SD_{\text{women}}=0.64; M_{\text{men}}=2.20, SD_{\text{men}}=0.68$ ) [ $F(1, 2225)=32.27, p < .001, \text{partial } \eta^2=.014$ ], and with greater impact ( $M_{\text{women}}=2.44, SD_{\text{women}}=0.96; M_{\text{men}}=2.18, SD_{\text{men}}=0.94$ ) [ $F(1, 2225)=39.83, p < .001, \text{partial } \eta^2=.020$ ] compared to men. With regard to identity domains, women reported higher levels of distress in the domains of long-term goals, career choice, friendships, values or beliefs, and group loyalties, as shown in Table 4.

**Table 3***Descriptive Statistics (M and SD) for the DIDS and the IDS*

	<i>M</i>	<i>SD</i>
<b><i>DIDS</i></b>		
Exploration in breadth	3.50	0.78
Commitment making	3.44	0.88
Exploration in depth	3.17	0.80
Identification with commitment	3.42	0.80
Ruminative exploration	2.70	0.90
<b><i>IDS</i></b>		
Identity distress	2.30	0.68
Identity domains	2.29	0.66
Identity impact	2.33	0.96

*Note.* *M* = mean; *SD* = standard deviation; DIDS = Dimensions of Identity Development Scale; IDS = Identity Distress Survey.

**Table 4***Mean-Level Differences in Identity Domains Based on Analysis of Variance*

Identity domains	Total Sample	Gender Differences			
	<i>M (SD)</i>	Males <i>M (SD)</i>	Females <i>M (SD)</i>	<i>F</i> Ratio (1, 2107)	Partial $\eta^2$
Long-term goals	2.90 (1.23)	2.80 (1.24)	2.97 (1.21)	11.69**	.005
Career choice	3.00 (1.21)	2.83 (1.23)	3.13 (1.18)	34.78**	.015
Friendships	2.91 (1.27)	2.71 (1.26)	3.07 (1.26)	45.75**	.02
Sexual orientation and behavior	1.74 (1.07)	1.74 (1.08)	1.73 (1.06)	0.101	.000
Religion	1.33 (0.74)	1.34 (0.78)	1.32 (0.72)	0.549	.000
Values or beliefs	2.04 (1.09)	1.95 (1.05)	2.10 (1.12)	10.75*	.005
Group loyalties	2.15 (1.14)	2.05 (1.12)	2.23 (1.15)	13.12**	.006

\* $p < .01$ . \*\* $p < .001$ .

#### 4.2. *Prevalence of identity distress*

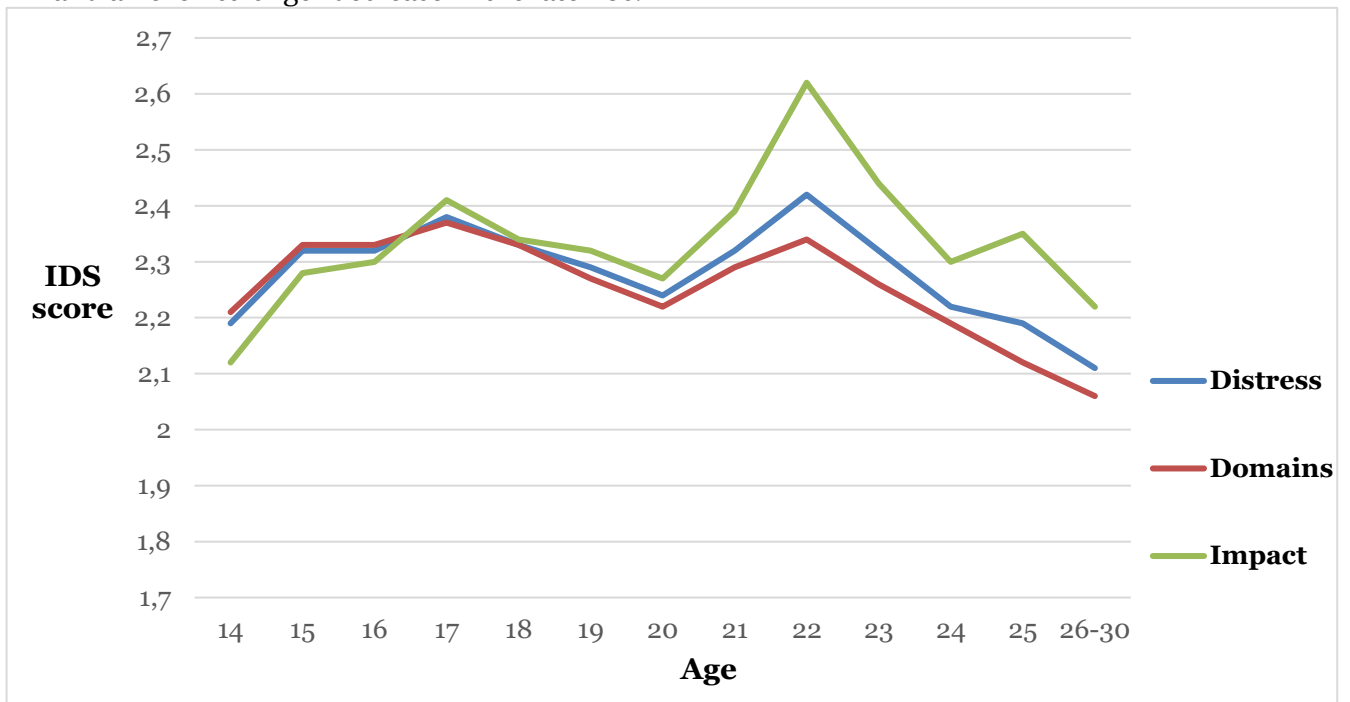
Based on the IDS, 10.3% (Males: 7.6%, Females: 12.5%) of the total sample met the identity disorder diagnosis, according to DSM-III-R criteria. When applying the less strict conditions for identity problem according to DSM-IV, 18.9% (Males: 15.3%, Females: 21.7%) of the total sample met this diagnosis. A chi-square analysis indicated that the differences between men and women were significant for both diagnostic categories. Women seemed to encounter more identity distress, translating in a higher amount of identity disorder [ $\chi^2(1, N=2282)=14.23, p<.001$ ] and identity problem [ $\chi^2(1, N=2282)=15.35, p<.001$ ] than men.

#### 4.3. *Age trends in identity distress*

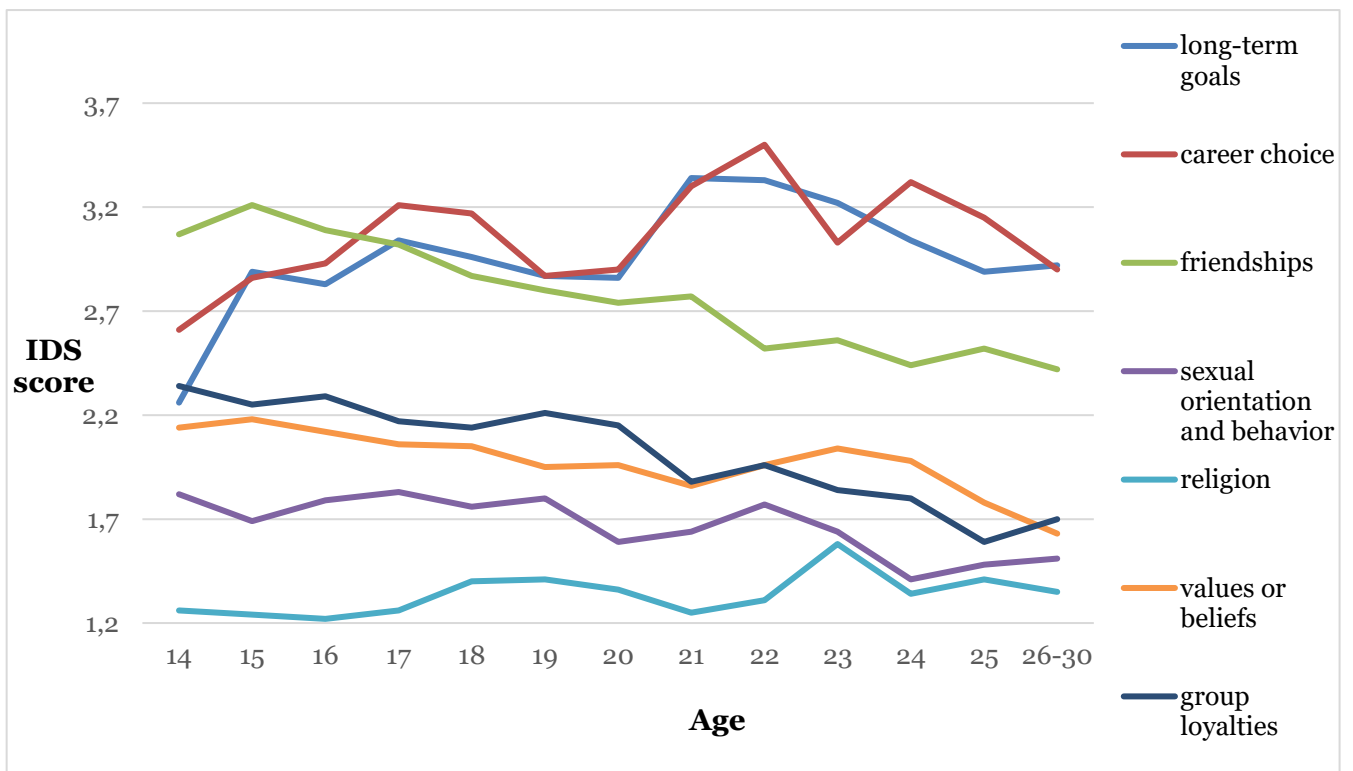
A hierarchical multiple regression analysis was performed to examine (a) whether a linear or quadratic function of age would be the best approximation of the observations, and (b) if these trends would be different for males and females. Given that our findings are based on cross-sectional data, no authoritative claims can be made with regard to developmental changes and, therefore, results need to be interpreted with caution. In a first step, gender was entered as a predictor. In a second step, the centered value and the squared centered value of age (referred to as Age and Age<sup>2</sup>) were entered to examine linear and quadratic trends, respectively. In a final step, interaction terms (referred to as AgeXGender and Age<sup>2</sup>XGender) were entered to examine different age trends for males and females. Beta-coefficients and change in  $R^2$  of subsequent steps had to be significant at  $p<.01$  (Cohen, 1988).

Using these criteria, we found minor linear and quadratic age effects, as can be seen in Figures 2 and 3, and Table 5. Age was a predictor for identity impact and the following identity domains: long-term goals, career choice, friendships, religion, values or beliefs, and group loyalties. Age<sup>2</sup> was a predictor for identity distress, identity impact, and the following identity domains: long-term goals and career choice. In sum, identity distress and identity impact demonstrated quadratic changes with age (coupled with small linear increases for identity impact). Hence, identity distress (and identity impact) seemed to occur already during adolescence, but identity distress reached its highest levels in emerging adulthood, as detailed in Figure 2. With regard to identity domains, long-term goals and career choices were accompanied by the highest levels of distress in emerging adulthood (and to a lesser degree in adolescence and the late 20s), as detailed in Figure 3. In examining different age trends in identity distress for men and women, we found a significant interaction effect of AgeXGender and Age<sup>2</sup>XGender for the identity domain of friendships. Men seemed to experience the highest levels of friendship-related distress during their teens and early 20s and a lower amount during mid-to-late 20s. Women, on the contrary, seemed to experience the highest levels of

friendship-related distress during adolescence, followed by a decrease in emerging adulthood and an even stronger decrease in the late 20s.



*Figure 2.* Observed age differences for the total sample for the total identity distress score, the domain score, and the impact score. The last five age cohorts (ages 26-30) were combined due to the small number of participants belonging to these cohorts. IDS = Identity Distress Survey



*Figure 3.* Observed age differences for the total sample for the seven separate domain items. The last five age cohorts (ages 26-30) were combined due to the small number of participants belonging to these cohorts. IDS = Identity Distress Survey

**Table 5***Standardized Betas from Hierarchical Regression Analyses*

	Distress	Domains	Impact	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7
Step 1										
Gender	.14***	.12***	.14***	.07**	.12***	.14***	-.01	-.02	.07**	.08***
<i>R</i> <sup>2</sup> change	.019***	.014***	.020***	.005**	.015***	.020***	.000	.000	.005*	.006***
Step 2										
Age	.02	-.01	.08**	.17***	.13***	-.17***	-.04	.10***	-.10**	-.12***
Age <sup>2</sup>	-.08**	-.07*	-.08**	-.12***	-.11***	.03	-.02	-.07*	.00	-.01
<i>R</i> <sup>2</sup> change	.005**	.004*	.006**	.015***	.009***	.023***	.003*	.006**	.010***	.016***
Step 3										
AgeXGender	-.08	-.07	-.10*	.06	-.03	-.21***	.09*	.03	-.11*	-.09
Age <sup>2</sup> XGender	.05	.03	.08	-.03	.00	.12**	-.07	-.04	.07	.05
<i>R</i> <sup>2</sup> change	.001	.001	.002	.001	.000	.011***	.002	.000	.002	.002

*Note.* Item 1 = long-term goals; Item 2 = career choice; Item 3 = friendships; Item 4 = sexual orientation and behavior; Item 5 = religion; Item 6 = values or beliefs; Item 7 = group loyalties.

<sup>a</sup>Gender is coded as 0 and 1, with 0 representing male and 1 representing female.

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



Finally, a chi-square analysis was conducted to examine age trends in categorical diagnoses of identity disorder and identity problem. Across the different samples, we delineated three age groups: adolescence (14-17 years), emerging adulthood (18-25 years), and late 20s (26-30 years). No significant differences in identity disorder were observed among age groups [ $\chi^2(2, N=2286)=2.022, p=.364$ ]. However, differences among age groups were significant for identity problem, but only at  $p<.05$  [ $\chi^2(2, N=2286)=6.292, p=.043$ ]. Hence, identity problem seemed to be less prevalent in the oldest age group (late 20s).

#### **4.4. *Associations between identity distress and identity processes***

We examined whether the correlations between identity distress and identity processes would differ in adolescence, emerging adulthood, and the late 20s (see Table 6). We used the z-test for independent correlation coefficients (which had to be significant at  $p<.01$ ). Given that these findings are based on a relatively small number of individuals aged between 26 and 30 years, the results should be interpreted with caution. Identity distress was positively related to exploration processes and negatively related to commitment processes. The positive correlation between identity distress and exploration in breadth and the negative correlation between identity distress and commitment making were significantly higher in the late 20s as compared to adolescence and emerging adulthood.

**Table 6***Correlations Between Identity Distress and Identity Processes*

Association with identity distress	Total	Developmental period			Z-scores		
		(1)	(2)	(3)	1 - 2	1 - 3	2 - 3
		Adolescence: Age 14-17 (N=1,066)	Emerging adulthood: Age 18-25 (N=626)	Late 20s: Age 26-30 (N=88)			
Commitment making	-.16***	-.13***	-.19***	-.44***	1.22	3.03**	2.42*
Identification with commitment	-.24***	-.25***	-.22***	-.39***	0.63	1.39	1.63
Exploration in breadth	.15***	.12***	.14**	.36**	0.40	2.27*	2.04*
Exploration in depth	.14***	.13***	.12**	.24**	0.20	1.01	1.07
Ruminative exploration	.48***	.48***	.48***	.45***	0.00	0.34	0.33

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

## 5. Discussion

The process of identity formation can be accompanied by substantial distress in certain people. Despite the considerable impact of this identity-related distress on young people's development, research on this topic is rather scarce. The aim of this study was to examine identity distress throughout adolescence and emerging adulthood in a large sample comprising 2,286 individuals aged between 14 and 30 years old.

### 5.1. *Prevalence of identity distress in adolescence and emerging adulthood*

With respect to prevalence rates of identity disorder/problem, our results were consistent with previous findings in community samples (Berman et al., 2004; Berman et al., 2009; Gfeller & Córdoba, 2011). When applying DSM-III-R and DSM-IV criteria, 10.3% of the total sample met the identity disorder diagnosis, whereas 18.9% of the total sample met the identity problem diagnosis. Overall, women scored significantly higher on global identity distress, identity domains, and identity impact compared to men, resulting in a higher amount of categorical diagnoses of identity problem and identity disorder as well.

These results confirm previous studies pointing to higher amounts of internalizing symptomatology, higher scores on ruminative exploration, and a higher ruminative response style in women compared to men (Luyckx, Schwartz, Berzonsky, et al., 2008). The results suggest that women may experience more difficulties to integrate new roles and responsibilities (e.g., combining family life with a job) into a coherent identity (Wängqvist & Frisé, 2013). Another possibility is that, during this life period, women experience more time pressure to resolve certain identity questions. For example, women may perceive age deadlines for having children more frequently (Billari et al., 2011), which can also have important implications for other identity domains. In line with these findings, previous research indicated that women experience the identity formation task as more pressing and, consequently, are more intensively involved in the exploration of their own identity. More specifically, research showed that 18-year old women were more involved in identity explorations than men, whereas 25-year old women had made more well-established commitments compared to men (Bergh & Erling, 2005; Frisen & Wängqvist, 2011; Wängqvist & Frisé, 2013). Thus, for women, some important identity questions may need to be answered more quickly as compared to men. As a result, women in the transition to adulthood may generally worry more about different identity domains, resulting in higher levels of identity distress. Overall, these results further provide support for the tenet that many youth struggle

with identity-related questions, resulting in substantial distress. Hence, it is crucial to bring identity distress into attention in order to foster young people's development.

However, when the amount of distress caused by one's identity quest can be considered normative, researchers stress that it should not be treated as pathological. An important reason for downgrading identity disorder (APA, 1987) into identity problem (APA, 1994) was that for many individuals, these symptoms are part of normal identity exploration (Berman et al., 2009). Nonetheless, researchers indicated that, although many young people experience normative concerns in their identity quest, for some people these concerns can become chronic and debilitating (Adams & Adams, 1989; Berman et al., 2009; Erikson, 1950; Waterman, 1988). To gain insight into pathological identity disturbance, Kaufman et al. (2014) forwarded *developmental psychopathology* as a useful framework. The developmental psychopathology framework stresses that knowledge on normal identity development is crucial for understanding pathological identity functioning (Kaufman et al., 2014). Hence, identity functioning can be positioned on a continuum ranging from (adaptive) identity functioning to (pathological) identity disturbance, similar to tenets forwarded in the alternative model of personality functioning in Section III of DSM-5 (APA, 2013). Individuals can move back and forth on this continuum consisting of developmentally appropriate levels of distress (i.e., distress which is viewed as developmentally normal and helpful) to severe disturbance (Kaufman et al., 2014).

### **5.2. Age trends in identity distress**

The present study revealed important age trends in identity distress throughout the teens and 20s. More specifically, we found small linear and quadratic age effects in identity distress, which were similar for men and women (except for the domain of friendships). Hence, although women generally seemed to experience more identity distress compared to men, age trends were rather similar for both, possibly pointing to a 'normative' developmental trajectory of identity distress through the teens and 20s. Future long-term longitudinal research should look into this possibility.

Findings suggest that identity distress already seems to occur during adolescence, but that emerging adults experience significantly higher levels of identity distress than adolescents and young people in their late 20s. First, the observed amount of identity distress during adolescence corroborates the idea that the task of identity formation comes into prominence during adolescence, which may be accompanied by increasing confusion and uncertainty (Erikson, 1968; Luyckx et al., 2013). Second, the fact that the highest levels of identity distress were found during emerging adulthood confirms the idea that emerging adulthood, and especially the college context, is "the age of instability" (Arnett, 2000, p. 10), which allows for

a broad range of explorations and shifting choices across different domains (Arnett, 2000; Luyckx et al., 2006; Munro & Adams, 1977). Accordingly, identity explorations increase and generally reach their highest levels during emerging adulthood (Luyckx et al., 2013; Luyckx, Schwartz, Goossens, et al., 2008). Furthermore, the current findings support the view that specific age-relevant domains (long-term goals and career choice) may cause more distress during emerging adulthood. Third, the lower levels of identity distress in the late 20s are in line with previous findings that identity commitments and identity maturation steadily increase with age (Luyckx et al., 2013; Meeus et al., 2012).

To obtain a detailed perspective on these findings and how they are aligned with identity studies focusing on progressive status transitions and development (Kroger et al., 2010; Meeus et al., 2012), a person-centered perspective is needed in future research. Although most young people show identity progression and strengthening over time, the present findings reveal that certain individuals may experience substantial identity disturbance during their teens and 20s. In particular, the instability and broad range of possibilities during emerging adulthood may induce a greater amount of confusion and uncertainty about future choices in some people, whereas others seem to be able to cope with this instability. For instance, research has shown that some emerging adults in the moratorium status are especially vulnerable to encounter maladjustment and distress (Luyckx, Schwartz, Goossens, et al., 2008). Informative in this respect is the notion of “two faces of moratorium” (Meeus et al., 2012, p. 1018). This notion describes both an optimistic and pessimistic depiction of the extended possibilities during emerging adulthood. The optimistic depiction refers to emerging adults who are indecisive about future choices, but possess the necessary capacities to explore new options and to eventually make well-informed commitments (Meeus et al., 2012). Additionally, these individuals can take advantage of the freedom and many possibilities of the college context (Montgomery & Côté, 2003), resulting in a profound exploration of numerous options which may foster identity development in emerging adults (Arnett, 2000; Luyckx, Schwartz, Goossens, et al., 2008). In contrast, the negative depiction refers to people who exhibit high levels of indecisiveness for a long period of time (Meeus et al., 2012). For these individuals, the broad range of possibilities and uncertainty about different life paths during emerging adulthood can become overwhelming and distressing. The extended period of exploration in these individuals may instead hamper identity development, possibly resulting in substantial identity distress.

### **5.3. *Associations between identity distress and identity processes***

Concerning the associations between identity distress and identity processes, we found differences among different developmental periods. High levels of exploration in breadth and

low levels of commitment making were related to identity distress, especially in the late 20s and somewhat less in adolescence and the early 20s. It seems that these identity processes could signal or are symptomatic for identity distress in this (older) age group, whereas they are considered to be rather normative in adolescence and emerging adulthood. Hence, the current findings further support the idea that exploration and commitment may lose their functionality and become less adaptive in the late 20s (Luyckx et al., 2013). In sum, our research suggests that a prolonged exploration into the late 20s without commitment making (although societal expectations to commit to different social roles increase) may be an indication of identity distress.

#### **5.4. *Limitations and suggestions for further research***

Several limitations of the present study need to be mentioned. First, based on the cross-sectional design of study, no authoritative claims can be made with regard to developmental changes in identity distress. Furthermore, no firm conclusions can be drawn about the directionality of effects obtained. Previous research has already described a reciprocal relationship between identity distress and psychological symptoms. Identity distress has indeed been related to psychological symptoms, such as internalizing and externalizing symptoms. However, it is also possible that people who have been diagnosed with a mental health issue also experience more identity distress (Samuolis et al., 2015; Wiley & Berman, 2013). Similar reciprocal mechanisms may be at work in the association between identity distress and identity processes. To reach definite conclusions, a longitudinal study is needed in which young people are followed from early adolescence until their 20s.

Second, the measures of our constructs were limited to self-report questionnaires. Although these measures are optimal to assess internal constructs such as identity, the inclusion of alternative methods (e.g., interviews or reports by family members) is recommended in future research.

Third, our sample consisted of a substantial proportion of mid- and late- adolescents, a smaller proportion of emerging adults, and only a small proportion of individuals aged between 26 and 30 years. Consequently, the findings concerning people in their late 20s need to be interpreted with caution. Nevertheless, as a consequence of the smaller sample of individuals aged between 26 and 30, the statistical power of analyses comparing age cohorts was reduced. Future studies should further examine possible changes in identity distress or identity processes by targeting a larger group of individuals aged between 26 and 30 years. Furthermore, the majority of emerging adults in our sample were college students, and this specific context of freedom and opportunities (Montgomery & Côté, 2003) may have influenced the results obtained. So far, most of the research on emerging adults comprises

college and university students, while the inclusion of emerging adults who do not attend college remains scarce (Arnett, 2000; Seiffge-Krenke et al., 2013). Future studies on the current topic should therefore target young people who are not attending college or university such as apprentices, working individuals, and unemployed individuals.

Fourth, in order to answer our research questions, we combined seven different samples that contained the variables of interest. As a consequence, we are not able to provide information on socio-economic status (SES) across the different samples, because SES was either not measured in all samples or because SES indicators were not measured in the same manner across samples.

## **6. Conclusion**

The present findings contribute to our knowledge of identity distress, an understudied, yet important concept in young people's development. Theoretically important age trends were uncovered, showing that the highest levels of identity distress generally occurred during emerging adulthood. With regard to identity processes, the strongest associations between identity distress and exploration in breadth and commitment making were found during the late 20s. This indicates that prolonged exploration of different alternatives in the relative absence of identity commitments could be symptomatic of identity distress during this life period. Studies on identity distress are rather scarce, and therefore, future research would benefit from addressing these and similar research questions in a broader age range using a longitudinal design.





# chapter

# 3

Internalization of appearance ideals and appearance comparison among adolescent boys and girls:  
The role of identity formation

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## Abstract

**Introduction.** The detrimental impact of sociocultural pressures on adolescents' body image has been widely established. However, it remains unclear why or for whom such pressures lead to increased appearance ideals internalization and appearance comparison. This cross-sectional study investigated moderating and indirect effects of identity confusion/synthesis in the relationship between (1) sociocultural pressures and (2) appearance ideals internalization and appearance comparison.

**Methods.** The study comprised 685 community adolescents (13–19 years;  $M_{age}=14.80$ ;  $SD_{age}=0.93$ ; 55.2% girls). Participants completed self-report questionnaires on sociocultural pressures (Sociocultural Attitudes Towards Appearance Questionnaire-4; SATAQ-4), identity confusion/synthesis (Erikson Psychosocial Stage Inventory; EPSI), thin-ideal and muscular-ideal internalization (SATAQ-4), and appearance comparison (Physical Appearance Comparison Scale; PACS). Structural equation models with latent variables were estimated.

**Results.** The current results pointed to both moderating and indirect effects of identity formation in the relationship between sociocultural pressures and appearance ideals internalization and appearance comparison in boys and girls. No significant differences were found between boys and girls in the moderating or indirect models.

**Conclusion.** These results highlight the need to integrate identity functioning in sociocultural theories on body image formation, and to address a healthy identity development in prevention and intervention programs targeting appearance ideals internalization and appearance comparison in adolescents.

*Keywords:* identity formation, sociocultural pressures, appearance ideals internalization, appearance comparison

## 1. Introduction

Due to biological, cognitive, and relational changes, adolescents increasingly shift their attention towards their developing bodies. From the onset of puberty, the bodies of adolescents drastically change (Stice & Whitenton, 2002). At the same time, youth living in Western countries, such as Flanders (Belgium), are expected to adhere to appearance ideals that emphasize unrealistically thin or muscular body shapes and a flawless, beautiful overall appearance (Vandenbosch, 2017). According to the tripartite influence model (Thompson et al., 1999), youth experience substantial pressures by powerful social agents, such as media, parents, and/or peers, to attain these elusive appearance ideals (i.e., sociocultural pressures) (Dittmar, 2007).

Many studies have been published on the damaging effects of sociocultural pressures on adolescents' mental health, such as a dramatic increase in body dissatisfaction from early adolescence onwards (Bucchianeri et al., 2013; Frisé et al., 2015). Further, research has indicated that sociocultural pressures exert their effect on body dissatisfaction via the internalization of appearance ideals and appearance comparison (Keery et al., 2004). However, it remains unclear which youngsters are especially vulnerable to internalize appearance ideals and to engage in appearance comparison. Hence, researchers stressed the importance of investigating moderators and mediators to grasp how and for whom sociocultural pressures might have a negative impact on body image (Dittmar, 2005). Although identity is hypothesized to play an important role in this chain of mechanisms (Dittmar, 2009), little research has been conducted to bridge the gap between identity and sociocultural literatures and to pinpoint the exact role identity may play in this respect (Daniels & Gillen, 2015). Hence, the current study investigated interaction and indirect effects of identity formation in the relationship between (1) sociocultural pressures and (2) the internalization of appearance ideals and appearance comparison.

### 1.1. *Sociocultural pressures*

As forwarded in the tripartite influence model, important sources of sociocultural pressures to attain appearance ideals are media, parents, and peers (Thompson et al., 1999). With regard to the specific Flemish sample of the present study, appearance ideals are in line with Western-European appearance ideals which refer to thinness and sexual attractiveness for girls and lean muscularity for boys. For instance, in Flemish adolescents, both traditional and social media use are linked to the engagement in appearance-focused behaviors (Trekels et al., 2018). However, as appearance ideals are socially constructed, differences among subgroups (within Flanders) may exist as well (Moradi, 2010).

Youth devote a lot of their time on traditional and social media that strongly promote appearance ideals by frequently showing idealized bodies (Perloff, 2014; Vandebosch, 2017). For instance, Flemish adolescents spend approximately two hours each day on social media (Frison & Eggermont, 2016; Trekels et al., 2018). Importantly, social media not only display pictures of celebrities or fashion models, but also of peers. Indeed, Perloff (2014) has described how peers play a central role in creating social media content by posting (often digitally altered) idealized pictures or videos of themselves. Besides media, expectations regarding appearance are also transmitted through conversations in peer groups which are often appearance-focused and can contain (in)direct messages that one should alter one's body weight and/or shape (Stice et al., 2003). Finally, also parents can subtly or overtly support appearance ideals by modelling appearance concerns and/or behaviors. Parental attitudes towards their offspring's weight and shape can lead to weight-related criticism and encouragement to control weight (Rodgers & Chabrol, 2009).

### **1.2. *Internalization of appearance ideals and appearance comparison***

Pressures to adhere to appearance ideals can result in the internalization of appearance ideals and appearance comparison (Thompson & Stice, 2001). The *internalization of appearance ideals* refers to the process of adopting appearance standards as one's own, guiding how individuals perceive and construe their own appearance (Thompson & Stice, 2001). People who internalize appearance ideals express a desire to attain such ideals and engage in behaviors to achieve them (Schaefer et al., 2015). *Appearance comparison* refers to the comparison of one's own appearance with the appearance of others and is inspired by Festinger's social comparison theory (1954). Internalization and appearance comparison may ultimately lead to body dissatisfaction and eating disorder symptoms (e.g., Keery et al., 2004).

Although sociocultural appearance pressures are highly prevalent, there is variation in the extent to which people internalize appearance ideals or engage in appearance comparison. The consequences of sociocultural pressures may be especially strong in youth, not only because they are highly exposed to idealized content in media, but also because their identity is still developing (American Psychiatric Association [APA], Task Force on the Sexualization of Girls, 2007). In line with this tenet, identity formation has been forwarded as a relevant developmental process affecting the association between sociocultural pressures, appearance ideals internalization, and appearance comparison (Daniels & Gillen, 2015; Dittmar, 2009).

### **1.3. *Identity formation in adolescence***

Identity formation is a lifelong process that comes to the foreground during adolescence (Erikson, 1968). From adolescence onward, youngsters are confronted with identity questions

such as “Who am I?”. Identity questions can be challenging to resolve, possibly resulting in *identity confusion* – an inability to adhere to certain life goals and a general lack of purpose. Although it may be normative for youngsters to experience identity confusion during a limited period of time, most young individuals develop into the direction of a healthy identity characterized by identity synthesis (Erikson, 1968). *Identity synthesis* refers to a sense of self-continuity which is based upon an integrated whole of self-identified goals and values (Erikson, 1968).

During the past decade, there has been a growing interest in the relationship between identity development and body image (Daniels & Gillen, 2015). Erikson (1968) already conceptualized healthy identity development as “feeling of being at home in one’s body” (p. 165). He stated that identity formation is affected by the onset of puberty and rapid bodily changes. The importance of the body in identity is also highlighted within the body connection dimension of embodiment (Tylka & Piran, 2019). When individuals experience body-self connection, they feel at home in their body (see Erikson, 1968), whereas body-self disconnection represents the experience that the body is separate from the self. Furthermore, in line with Higgins’ self-discrepancy theory (1987), the more central body image is in one’s identity, the more likely that discrepancies between actual and ideal bodily self will occur. These individuals relate failures to reach their ideal body with their own sense of self, causing negative emotions about their self and body.

Few studies have been published on the link between identity and body image, however, the results resonate well with the theoretical assumptions on the importance of the body in people’s identities. For instance, Kling et al. (2018) have described how the body can be salient in people’s identities in a negative (Kamps & Berman, 2011; Nelson et al., 2018; Verschueren, Claes, et al., 2018; Wängqvist & Frisé, 2013) and a positive way. Despite this renewed interest, the link between identity and sociocultural processes is still not widely understood (Daniels & Gillen, 2015).

### 1.3.1. *Sociocultural pressures and identity.*

Erikson (1968) described that identity develops in close interaction with the sociocultural context. Youth are continuously exposed to idealized images that inform people how they can pursue worth and success (Dittmar, 2007). For instance, what it means to be a woman is primarily defined by the pursuit of attractiveness, whereas men are expected to emulate physical and instrumental effectiveness (Dittmar, 2007). In line with this, adolescents seem especially vulnerable to turn to these idealized messages portrayed in media as possible identity goals (Dittmar, 2009), given that the pursuit of appearance ideals are highly valued as a central life goal.

### 1.3.2. *Identity and the internalization of appearance ideals.*

The internalization of appearance ideals is related to identity as it represents the extent to which appearance ideals are integrated into one's own ideal bodily self (Dittmar, 2009). Theorists have forwarded that identity confused youth are more susceptible to turn to appearance ideals to derive a sense of identity (Berzonsky & Adams, 1999; Stice, 1994). Research indeed has indicated that youth may be more or less prone to internalize appearance ideals depending on their identity. For instance, low self-concept clarity (resembling identity confusion) predicted greater internalization of appearance ideals (Vartanian et al., 2018). Relatedly, for women, more interpersonal explorations were associated with higher internalization of appearance ideals (Wängqvist & Frisé, 2013). On the other hand, healthy identity development might protect against appearance ideals internalization (Corning & Heibel, 2016; Vartanian et al., 2018). For instance, an information-oriented identity style (i.e., actively exploring personal goals) has been associated with lower levels of internalization of appearance ideals as compared to a normative identity style (i.e., pursuing goals that comply to expectations of others) (Verstuyf et al., 2014).

### 1.3.3. *Identity and appearance comparison.*

Adolescents compare themselves with others as a way to understand and evaluate themselves, or in other words, as a way to construct an identity (Festinger, 1954). However, such a normative process can result in self-doubt when adolescents start evaluating themselves in comparison to more attractive peers or idealized images on media (Yang et al., 2018). Recent findings also indicated that youth experiencing identity problems may be more vulnerable to engage in appearance comparison (Shahyad et al., 2018; Vartanian et al., 2018).

## 2. **The present study**

Research has increasingly investigated how body image is related to identity formation. In this respect, Daniels and Gillen (2015) proposed to explore this link by focusing on identity formation from an Eriksonian perspective (Erikson, 1968; Marcia, 1966). Although some recent studies on body image focused on Erikson's original theory or research paradigms based on this theory (Kling et al., 2018; Nelson et al., 2018; Verschueren, Claes, et al., 2018; Wängqvist & Frisé, 2013), studies examining the link between identity and sociocultural processes related to body image have focused mainly on identity styles (Verstuyf et al., 2014) or self-concept clarity (Vartanian et al., 2018). No study to our knowledge has investigated identity confusion and synthesis directly in combination with sociocultural processes related to body image. Hence, the present study examined the role of identity confusion/synthesis in

the relationship between sociocultural pressures and internalization of appearance ideals and appearance comparison in Flemish adolescent girls and boys.

First, it remains largely unclear why adolescents differ in the degree to which they internalize appearance ideals or engage in appearance comparison. The current study investigated for whom sociocultural pressures leads to such processes by forwarding identity confusion/synthesis as possible moderators. Individuals experiencing identity confusion might increasingly internalize appearance ideals (Stice, 1994) and engage in appearance comparison in an effort to build their identity. Individuals experiencing identity synthesis might be less inclined to turn to appearance ideals or to engage in appearance comparison, as these individuals hold a more diversified sense of self which is less dominated by appearance (Corning & Heibel, 2016).

Second, it is not yet known which mechanisms underly the associations between sociocultural pressures and internalization of appearance ideals and appearance comparison. As an alternative to moderation, identity has been forwarded as a potential mediator in this respect (Dittmar, 2009). The more sociocultural pressures individuals experience, the more likely that deviations from appearance ideals will be noticed (Dittmar, 2007). This constant confrontation with discrepancies between actual and ideal appearance might result in heightened identity confusion (Higgins, 1987). In order to enhance their identity, these individuals may focus on appearance ideals as appropriate standards for their own appearance, and consequently, to internalize appearance ideals and engage in appearance comparison (Vartanian et al., 2018; Verstuyf et al., 2014). Individuals experiencing lower appearance pressures might be less inclined to focus on appearance ideals as possible self-standards. This might give them the opportunity to develop identity synthesis which, in turn, might result in lower appearance ideals internalization and appearance comparison. Important to note is that, in the current study, possible indirect effects between sociocultural pressures and the internalization of appearance ideals and appearance comparison via identity formation were investigated. As statistical mediation can only be inferred from studies with multiple measurement waves (Karazsia & Berlin, 2018), the current study can only provide preliminary information on potential mediation mechanisms.

These complementary research questions were examined in Flemish adolescent boys and girls. First, although most research has been conducted in emerging adult women, it has been recommended to investigate these processes in younger girls as well, as young girls already learn to place appearance at the center of their self (APA, Task Force on the Sexualization of Girls, 2007). Second, although women's body image is more often negatively impacted by sociocultural pressures than men's body image (Striegel-Moore et al., 2009), appearance ideals



and their negative effects are no longer uniquely a female concern (Ricciardelli & McCabe, 2003). In line with this, the tripartite influence model has recently been refined for males which indicated that muscular-ideal internalization predicted dissatisfaction with muscularity/body fat and compensatory behaviors to increase muscle size in men (Tylka, 2011). Accordingly, the present study included both thin-ideal and muscular-ideal internalization in order to capture appearance ideals that are relevant for girls and boys (Schaefer et al., 2015). Additionally, gender differences in the moderation and indirect effects models were investigated in which we expected that the paths to muscular-ideal internalization might be stronger for boys, whereas paths to thin-ideal internalization and appearance comparison might be stronger in girls.

### 3. Materials and methods

#### 3.1. *Participants and procedure*

A total of 2125 high school students from four different high schools in Flanders (the Dutch-speaking part of Belgium) were invited to participate in the study (convenience sampling was used). A total of 685 community adolescents (consent rate: 35%; response rate: 93%) between 13 and 19 years old (55.2% girls;  $M_{age}=14.80$ ;  $SD_{age}=0.93$ ) completed self-report questionnaires in 2019 during school hours (97.7%) or via an online survey (Qualtrics) if they were absent from school at the day of the data-collection (2.3%). Prior to data-collection, all underaged participants received active informed consent from their parents. Participation was voluntary and all participants signed an informed consent form. Anonymity was guaranteed in all stages of the study and the study was approved by the Social and Societal Ethics Committee of the KU Leuven (reference number: G-2018 08 1303).

With regard to nationality, 93% of the sample reported having the Belgian nationality; 3% a dual nationality with the Belgian nationality, and the other 4% had a different nationality (e.g., Turkish, Dutch, Moroccan, Polish). Hence, the population in the participating schools is predominantly Belgian, however, it is important to note that information on race and ethnicity is not provided.

#### 3.2. *Measures*

##### 3.2.1. *Sociocultural pressures.*

All participants filled out the 22-item *Sociocultural Attitudes Towards Appearance Questionnaire-4* (SATAQ-4; Schaefer et al., 2015). The questionnaire has been validated in adolescent girls and boys (Amiri & Navab, 2018; Yamamiya et al., 2016) and has been proven a valid and reliable test. The SATAQ-4 was translated from English to Dutch using the

translation/back-translation procedure to ensure accuracy. Sociocultural pressures were measured by three subscales addressing the perceived appearance pressures from family, parents, and media. Each subscale consists of four items scored on a five-point Likert scale ranging from '1'(*definitely disagree*) to '5'(*definitely agree*). A sample item was: "I feel pressure from the media to improve my appearance". Cronbach's alpha coefficients were .84 for pressures family, .88 for pressures peers, and .95 for pressures media. These subscales will be used to construct one latent variable, representing sociocultural pressures.

### 3.2.2. *Internalization of appearance ideals.*

The internalization of appearance ideals was evaluated by two scales of the SATAQ-4 (Schaefer et al., 2015): *internalization: thin/low body fat*, *internalization: muscular/athletic*. Both scales consist of 5 items to be rated on a five-point Likert scale ranging from '1'(*definitely disagree*) to '5'(*definitely agree*). A sample item was: "I want my body to look very lean" (*internalization: thin/low body Fat*) and "It is important for me to look athletic" (*internalization: muscular/athletic*). Cronbach's alpha coefficients were .90 for *internalization: thin/low body fat* and .91 for *internalization: muscular/athletic*.

### 3.2.3. *Appearance comparison.*

Appearance comparison was evaluated by the five-item *Physical Appearance Comparison Scale* (PACS; Thompson et al., 1991). Items were rated on on a five-point scale ranging from '1'(*never*) to '5'(*always*). In line with recent work (Jackson & Hong, 2008), item 4 was excluded from the analyses due to its low factor loading and low correlations with other PACS items. A sample item was: "At parties or other social events, I compare my physical appearance to the physical appearance of others." Cronbach's alpha coefficient was .79 (after removal of item 4).

### 3.2.4. *Identity formation.*

The *Erikson Psychosocial Stage Inventory* (EPSI; Rosenthal et al., 1981; Schwartz et al., 2009) was used to assess identity synthesis and identity confusion. Both scales consist of 6 items which were rated on a five-point rating scale ranging from '1'(*strongly disagree*) to '5'(*strongly agree*). A sample item was: "I know what kind of person I am" (*identity synthesis*) and "I feel mixed up" (*identity confusion*). Similar to previous studies, Cronbach's alpha coefficients were .75 for *identity synthesis* and .65 for *identity confusion*.

## 3.3. **Primary statistical analyses**

Structural equation modeling with latent variables was used in MPLUS version 8.1 (Muthén & Muthén, 1998-2012). With regard to the measurement models, three parcels were

constructed for each latent variable to reduce model complexity using the item-to-construct method (Little et al., 2002). For sociocultural pressures, we constructed one latent variable representing the three sociocultural pressures-subscales, with each parcel consisting of four items. For thin-ideal and muscular-ideal internalization, two parcels consisted of two items and one parcel consisted of one item. For appearance comparison, two parcels consisted of one item and one parcel consisted of two items. For identity confusion and identity synthesis, each parcel consisted of two items. The measurement models were estimated using the following fit indices (Kline, 2015): Yuan-Bentler scaled  $\chi^2$ , which should be as small as possible; a normed Yuan-Bentler scaled  $\chi^2$  divided by its degrees of freedom, which should be equal or less than 3; Root Mean Square Error of Approximation (RMSEA), which should be less than .08; Standardized Root Mean Square Residual (SRMR), which should be less than .09; and Comparative Fit Index (CFI), which should exceed .95 for adequate fit (Kline, 2005; Shi et al., 2019). Configural and metric invariance was found for the measurement model, indicating that the factor loadings could be set as equal across boys and girls (see Table 7) (Bialosiewicz et al., 2013; Van de Schoot et al., 2012).

All structural models were estimated using a robust maximum likelihood estimation (MLR) to account for non-normality. Identity confusion and synthesis were estimated in separate models in line with previous research (Verschueren, Claes, et al., 2018) due to high inter-correlation [ $r(685)=-.82, p<.001$ ]. We controlled for gender, age, and adjusted BMI<sup>2</sup> by regressing all latent variables on gender (0=boys; 1=girls), age, and adjusted BMI. To increase model parsimony, only significant paths from the control variables to the study variables were retained.

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<sup>2</sup> As our sample consisted mainly of underaged students, we calculated the adjusted BMI [(BMI/Percentile 50 of BMI for age and gender) x 100] which accounts for gender-specific growth charts of a representative Flemish sample (Roelants & Hauspie, 2004).

**Table 7***Fit Indices for Testing Measurement Invariance Across Gender*

Model	$\chi^2(df)$	<i>p</i>	$\Delta\chi^2(df)$	<i>p</i>	CFI	$\Delta$ CFI	RMSEA [90% CI]	$\Delta$ RMSEA
Configural	418.372 (240)	<.001	-	-	.971	-	.047 [.039, .054]	-
Metric	476.617 (258)	<.001	56.56(18)	<.001	.964	.007	.050 [.043, .057]	.003
Scalar	752.170 (276)	<.001	310.09(18)	<.001	.923	.041	.072 [.066, .078]	.022

*Note.*  $\chi^2$  = Yuan-Bentler scaled chi-square; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation.

### 3.3.1. Moderation effects.

Latent moderated structural equation (LMS) models were estimated using a numerical integration algorithm. As model fit statistics and standardized coefficients cannot be calculated, data were standardized and likelihood ratio tests were used (Maslowsky et al., 2015). To estimate latent variable interactions, a two-step procedure was used (Maslowsky et al., 2015). First, a model without interaction terms was estimated in which sociocultural pressures and identity confusion/synthesis predict internalization of appearance ideals and appearance comparison (Model 0). Second, latent variable interaction terms between sociocultural pressures and identity confusion/synthesis in the prediction of internalization of appearance ideals and appearance comparison were added to the model (Model 1). Next, to determine if the fit of the more parsimonious model (Model 0) represented a significant loss in comparison to the fit of the more complex model (Model 1), we investigated log-likelihood difference tests using a chi-square distribution. A significant log-likelihood ratio test means that Model 0 results in a significant loss of model fit relative to the Model 1 (Maslowsky et al., 2015). Interactions were plotted and regions of significance were calculated (Fraley, 2012) – indicating the range of values for sociocultural pressures at which the regression of internalization of appearance ideals and appearance comparison on identity confusion/synthesis is statistically significant. Additionally, gender was tested as an additional moderator by investigating the three-way interaction between sociocultural pressures, identity confusion/synthesis, and gender.

### 3.3.2. Indirect effects.

The following path models were estimated to investigate indirect effects (Holmbeck, 1997): (1) a direct effects model including sociocultural pressures as a predictor for internalization of appearance ideals and appearance comparison; (2) a full indirect effects model in which the effect of sociocultural pressures on internalization of appearance ideals and appearance comparison is indirect and mediated by identity confusion/synthesis; (3) a partial indirect effects model including significant direct paths from sociocultural pressures to outcomes, and indirect paths through identity confusion/synthesis. A full indirect effects model is supported if the addition of the direct paths from sociocultural pressures to outcomes in the model does not improve model fit by checking differences in comparative fit indices. A significantly better fit of the free model (partial indirect effects model) in comparison with the fixed model (full indirect effects model) can be concluded when at least two of the following criteria are satisfied: a significant Yuan-Bentler scaled  $\Delta\chi^2(p < 0.05)$ ,  $\Delta RMSEA \geq 0.015$ , and  $\Delta CFI \geq .010$ .

Additionally, gender differences were investigated with multi-group analyses. We investigated if the measurement and structural model could be set equal across girls/boys. We compared the fit of the fixed model with constrained coefficients (coefficients were constrained as equal across gender) to the fit of the free model with unconstrained coefficients (coefficients could be different across gender).

#### 4. Results<sup>3</sup>

##### 4.1. Preliminary analyses

Gender differences were investigated using multivariate analyses of variance (MANOVA), pointing to significant differences based on Wilks'  $\lambda=.71$ ,  $F(6, 655)=44.66$ ,  $p=.000$ , partial  $\eta^2=.290$ ]. Follow-up univariate analyses showed that girls scored significantly higher on identity confusion, thin-ideal internalization, appearance comparison, and sociocultural pressures than boys. Boys scored significantly higher on identity synthesis and muscular-ideal internalization as compared to girls (Table 8).

**Table 8**

*Descriptive Statistics and Mean-Level Differences Based on Analysis of Variance*

	Total Sample <i>M (SD)</i>	Gender Differences			
		Males <i>M (SD)</i>	Females <i>M (SD)</i>	<i>F</i> Ratio	Partial $\eta^2$
Sociocultural pressures	1.91 (0.94)	1.65 (0.82)	2.11 (0.99)	41.21***	.059
Identity confusion	2.70 (0.68)	2.56 (0.64)	2.79 (0.69)	20.18***	.030
Identity synthesis	3.63 (0.66)	3.76 (0.66)	3.53 (0.64)	20.43***	.030
Thin-ideal internalization	2.78 (1.35)	2.27 (1.04)	3.19 (1.43)	86.88***	.116
Muscular-ideal internalization	2.93 (1.25)	3.19 (1.29)	2.70 (1.15)	26.56***	.039
Appearance comparison	10.58 (3.70)	8.96 (3.29)	11.85 (3.49)	117.81***	.151

*Note.* *M*=mean; *SD*=standard deviation; *F*=*F*-value; partial  $\eta^2$ =partial eta squared.

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

<sup>3</sup> Clustering the responses by school in the primary models resulted in virtually identical results. Hence, only the results without clustering per school were provided in the current manuscript.

With regard to age, Pearson correlations indicated that age was positively correlated with sociocultural pressures ( $r=.12, p<.01$ ), and adjusted BMI was positively associated with sociocultural pressures ( $r=.31, p<.001$ ) and thin-ideal internalization ( $r=.16, p<.001$ ). Table 9 presents the correlations among all study variables. Sociocultural pressures were positively related to thin-ideal internalization, muscular-ideal internalization, appearance comparison, identity confusion and negatively to identity synthesis. Identity confusion was positively related to thin-ideal internalization, muscular-ideal internalization, appearance comparison, and negatively to identity synthesis. Reverse associations were found with identity synthesis, while no significant correlation emerged between identity synthesis and muscular-ideal internalization. Thin-ideal internalization, muscular-ideal internalization, and appearance comparison were positively interrelated. All correlations were similar across gender, however, a significant correlation between identity synthesis and muscular-ideal internalization emerged for girls.

**Table 9**

*Pearson Correlations Between Latent Variables*

	1	2	3	4	5	6
1. Sociocultural pressures	1					
2. Identity confusion	.45***	1				
3. Identity synthesis	-.33***	-.82***	1			
4. Thin-ideal internalization	.59***	.46***	-.32***	1		
5. Muscular-ideal internalization	.22***	.17**	-.03	.36***	1	
6. Appearance comparison	.51***	.64***	-.44***	.60***	.18***	1

\*\*\* $p<.001$

## 4.2. Moderation analyses<sup>4</sup>

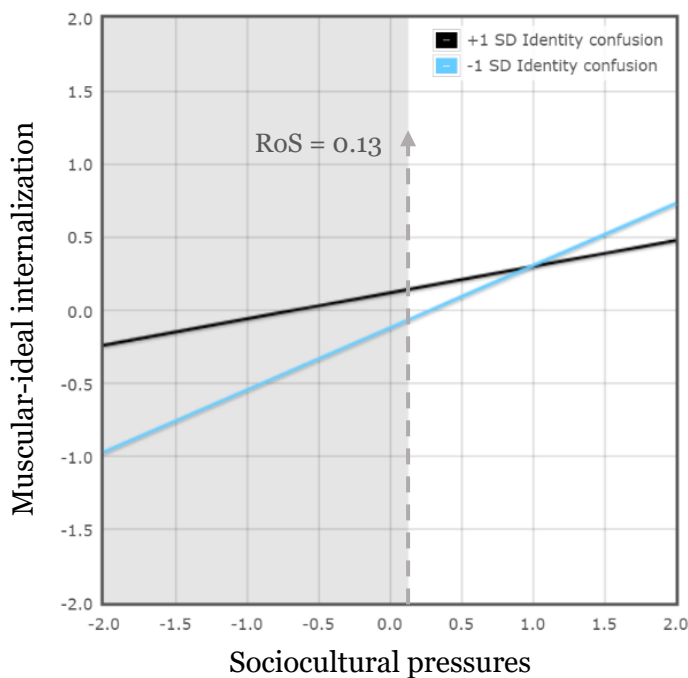
### 4.2.1. Identity confusion as a moderator.

The measurement model obtained good fit [ $\chi^2(80)=211.709, p<.001; \chi^2/df=2.65; CFI=.98; RMSEA=.049; SRMR=.038$ ] with standardized factor loadings for the different parcels ranging from .62 to .96 (all  $ps<.001$ ). Results indicated that Model o provided adequate fit to the data [ $\chi^2(115)=302.458, p<.001; \chi^2/df=2.63; CFI=.969; RMSEA=.050; SRMR=.039$ ].

<sup>4</sup> Both univariate and multivariate analyses were conducted. As the results were virtually identical, only the results of the multivariate analyses are reported.

Sociocultural pressures and identity confusion positively predicted thin-ideal internalization, muscular-ideal internalization, and appearance comparison (Model 0, Table 10)

Next, when including the latent interaction term between sociocultural pressures and identity confusion as a predictor (Model 1, Table 10), this latent interaction was only significant in the prediction of muscular-ideal internalization. A log-likelihood ratio test indicated that Model 0 resulted in a significant loss of fit relative to Model 1. A univariate analysis (involving only muscular-ideal internalization as dependent variable) revealed similar results ( $\beta = -.19$ ,  $p < .01$ ;  $\chi^2\Delta(1) = 9.86$ ,  $p < .01$ ). To interpret the results, we plotted the interaction and calculated the regions of significance which indicated that the interaction was only significant for low to average levels of sociocultural pressures (Figure 4). More specifically, lower scores on sociocultural pressures were related to relatively lower muscular-ideal internalization, especially for adolescents scoring low on identity confusion. Next, including gender as an additional moderator, no significant results were found for the three-way interaction (Table 11).



*Figure 4.* Moderation plot describing the interaction between sociocultural pressures and identity confusion in their influence on muscular-ideal internalization. Simple slopes are presented for high (1 *SD* above the mean) and low levels (1 *SD* below the mean) of identity confusion. The grey area represents the region of significance (RoS) (the region where the two regression lines differ significantly). The endpoint of the RoS on the X-axis is indicated by a dotted line.



#### 4.2.2. Identity synthesis as a moderator.

The measurement model provided an adequate fit to the data [ $\chi^2(80)=212.316$ ,  $p<.001$ ;  $\chi^2/df=2.65$ ; CFI=.98; RMSEA=.049; SRMR=.0451] and standardized factor loadings for the different parcels ranged from .65 to .96 (all  $ps<.001$ ). Results indicated that Model 0 provided an adequate fit to the data [ $\chi^2(116)=296.455$ ,  $p<.001$ ;  $\chi^2/df=2.56$ ; CFI=.970; RMSEA=.049; SRMR=.042]. Sociocultural pressures significantly and positively predicted thin-ideal internalization, muscular-ideal internalization, and appearance comparison. Identity synthesis significantly and negatively predicted thin-ideal internalization and appearance comparison (Model 0, Table 12).

Results of Model 1 (Table 12) indicated that the interaction term was statistically significant in the prediction of thin-ideal internalization, muscular-ideal internalization, and appearance comparison. Next, log-likelihood ratio tests indicated that Model 0 resulted in a significant loss of fit relative to Model 1. Univariate analyses replicated the significance of the latent interaction in the prediction of thin-ideal internalization ( $\beta=.11$ ,  $p<.05$ ;  $\chi^2\Delta(1)=4.37$ ,  $p<.05$ ), muscular-ideal internalization ( $\beta=.15$ ,  $p<.05$ ;  $\chi^2\Delta(1)=6.60$ ,  $p<.05$ ), and appearance comparison ( $\beta=.12$ ,  $p<.05$ ;  $\chi^2\Delta(1)=4.95$ ,  $p<.05$ ). The interaction between sociocultural pressures and identity synthesis in the prediction of thin-ideal internalization was only significant for low to average levels of sociocultural pressures (Figure 5a). The interaction in the prediction of appearance comparison was significant for low to high levels of sociocultural pressures (Figure 5c). More specifically, lower scores on sociocultural pressures predicted lower levels of thin-ideal internalization and appearance comparison, especially for individuals scoring high on identity synthesis. The interaction in the prediction of muscular-ideal internalization was only significant for very high levels of sociocultural pressures (Figure 5b). Very high scores on sociocultural pressures predicted higher levels of muscular-ideal internalization, especially for individuals scoring high on identity synthesis. Finally, including gender as an additional moderator yielded no significant three-way interactions (Table 13).

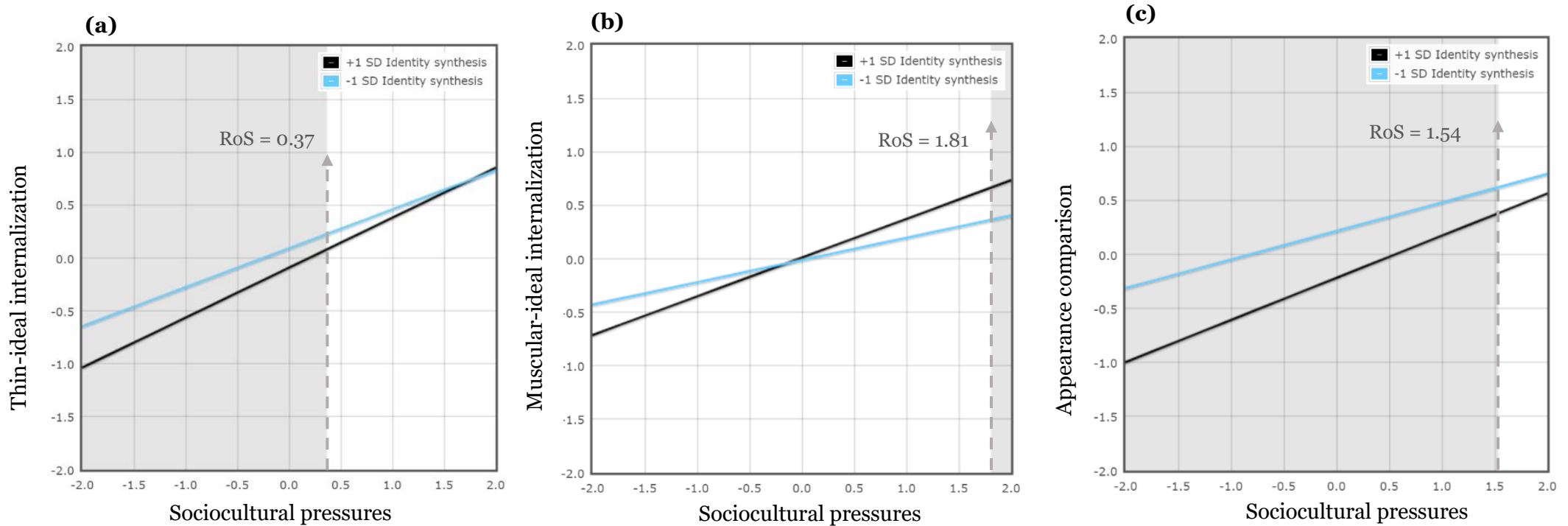


Figure 5. Moderation plot describing the interaction between sociocultural pressures and identity synthesis in their influence on thin-ideal internalization, muscular-ideal internalization, and appearance comparison. Simple slopes are presented for high (1 SD above the mean) and low levels (1 SD below the mean) of identity synthesis. The grey area represents the region of significance (RoS) (the region where the two regression lines differ significantly). The start/endpoint of the RoS on the X-axis is indicated by a dotted line.

**Table 10**

*Model Fit Indices and Latent Regression Coefficients of Main Effects (Sociocultural Pressures and Identity Confusion) and Interaction Effects*

Model	Model fit indices		Latent regression effects on Thin-ideal internalization			Latent regression effects on Muscular-ideal internalization			Latent regression effects on Appearance comparison		
	LL(df)	LL difference test(df)	press	conf	pressXconf	press	conf	pressXconf	press	conf	pressXconf
0	-10363.604(65)		.44***	.26***		.26***	.14*		.25***	.57***	
1	-10357.831(68)	11.546(3)**	.47***	.26***	-.07ns	.33***	.14*	-.17*	.30***	.57***	-.10ns

*Note.* Model 0: a structural model with main effects only. Model 1: structural model with main effects and the latent variable interaction terms.

† LL = log-likelihood; df = degrees of freedom; press = sociocultural pressures; conf = identity confusion.

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

**Table 11**

*Model Fit Indices and Latent Regression Coefficients of Main Effects (Sociocultural Pressures, Identity Confusion, Gender), Two-way Interactions and Three-way Interactions*

Model	Model fit indices		Latent regression effects on Thin-ideal internalization						
	LL		press	conf	gender	pressXconf	pressXgender	confXgender	press XconfX gender
0	-11296.531(67)		.44***	.26***	.18***				
1	-11282.119(76)		.47***	.27***	.18***	-.10*	.02ns	.09ns	
2	-11281.308(79)		.47***	.27***	.19***	-.09*	.03ns	.08ns	-.03ns

Model	Model fit indices		Latent regression effects on Muscular-ideal internalization						
	LL		press	conf	gender	pressXconf	pressXgender	confXgender	press XconfX gender
0	-11296.531(67)		.26***	.14*	-.27***				
1	-11282.119(76)		.32***	.15*	-.29***	-.13*	-.08ns	-.03ns	
2	-11281.308(79)		.32***	.15*	-.29***	-.13*	-.09ns	-.03ns	.01ns

Model	Model fit indices		Latent regression effects on Appearance comparison						
	LL		press	conf	gender	pressXconf	pressXgender	confXgender	press XconfX gender
0	-11296.531(67)		.26***	.56***	.23***				
1	-11282.119(76)		.29***	.57***	.22***	-.08ns	-.05ns	.04ns	
2	-11281.308(79)		.30***	.58***	.24***	-.07ns	-.03ns	.03ns	-.07ns

*Note.* Model 0: a structural model with main effects only. Model 1: structural model with main effects and all two-way interactions. Model 2: structural model including main effects, all two-way interaction terms and a three-way interaction. † LL = log-likelihood; df = degrees of freedom; press = sociocultural pressures; conf = identity confusion.

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

**Table 12**

*Model Fit Indices and Latent Regression Coefficients of Main Effects (Sociocultural Pressures and Identity Synthesis) and Interaction Effects*

Model	Model fit indices		Latent regression effects on Thin-ideal internalization			Latent regression effects on Muscular-ideal internalization			Latent regression effects on Appearance comparison		
	LL	LL difference test(df)	press	syn	pressXsyn	press	syn	pressXsyn	press	syn	pressXsyn
0	-10312.225(64)		.50***	-.14*		.32***	.03ns		.37***	-.33***	
1	-10306.812(67)	10.826(3)*	.52***	-.15**	.10*	.35***	.02ns	.15*	.40***	-.34***	.12*

*Note.* Model 0: a structural model with main effects only. Model 1: structural model with main effects and the latent interaction terms.

† LL = log-likelihood; df = degrees of freedom; press = sociocultural pressures; syn = identity synthesis.

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

**Table 13**

*Model Fit Indices and Latent Regression Coefficients of Main Effects (Sociocultural Pressures, Identity Synthesis, Gender), Two-way Interactions and Three-way Interactions*

Model	Model fit indices		Latent regression effects on Thin-ideal internalization						
	LL(df)		press	syn	gender	pressXsyn	pressXgender	synXgender	press XsynX gender
0	-11243.054(67)		.50***	-.14*	.18***				
1	-11225.572(74)		.53***	-.12**	.21***	.09**	.02ns	-.11**	
2	-11223.837(77)		.52***	-.19**	.20***	.13**	.03ns	-.15**	.07ns
Model	Model fit indices		Latent regression effects on Muscular-ideal internalization						
	LL(df)		press	syn	gender	pressXsyn	pressXgender	synXgender	press XsynX gender
0	-11243.054(67)		.32***	.03 ns	-.26***				
1	-11225.572(74)		.37***	.00 ns	-.32***	.10**	-.13**	-.11*	
2	-11223.837(77)		.35***	.00 ns	-.28***	.13**	-.13**	-.15*	-.03ns
Model	Model fit indices		Latent regression effects on Appearance comparison						
	LL(df)		press	syn	gender	pressXsyn	pressXgender	synXgender	press XsynX gender
0	-11243.054(67)		.37***	-.33***	.24***				
1	-11225.572(74)		.41***	-.35***	.24***	.14**	-.04ns	-.07ns	
2	-11223.837(77)		.42***	-.37***	.25***	.13**	-.03ns	-.07ns	.07ns

*Note.* Model 0: a structural model with main effects only. Model 1: structural model with main effects and all two-way interactions. Model 2: structural model including main effects, all two-way interaction terms and a three-way interaction.

† LL = log-likelihood; df = degrees of freedom; press = sociocultural pressures; syn = identity synthesis.

\*p<.05. \*\*p<.01. \*\*\*p<.001.

### 4.3. Indirect effects analysis

#### 4.3.1. Direct effects.

The measurement model of the direct effects model indicated an adequate fit to the data [ $\chi^2(48)=159.779$ ,  $p<.001$ ;  $\chi^2/df=3.33$ ; CFI=.977; RMSEA=.058; SRMR=.038]. Standardized factor loadings for the different parcels ranged between .71 and .96 (all  $ps<.001$ ). The final direct model obtained an adequate fit [ $\chi^2(76)=232.307$ ,  $p<.001$ ;  $\chi^2/df=3.06$ ; CFI=.971; RMSEA=.056; SRMR=.039]. All directional effects are presented in Figure 6. Sociocultural pressures positively predicted thin-ideal internalization, muscular-ideal internalization, and appearance comparison.

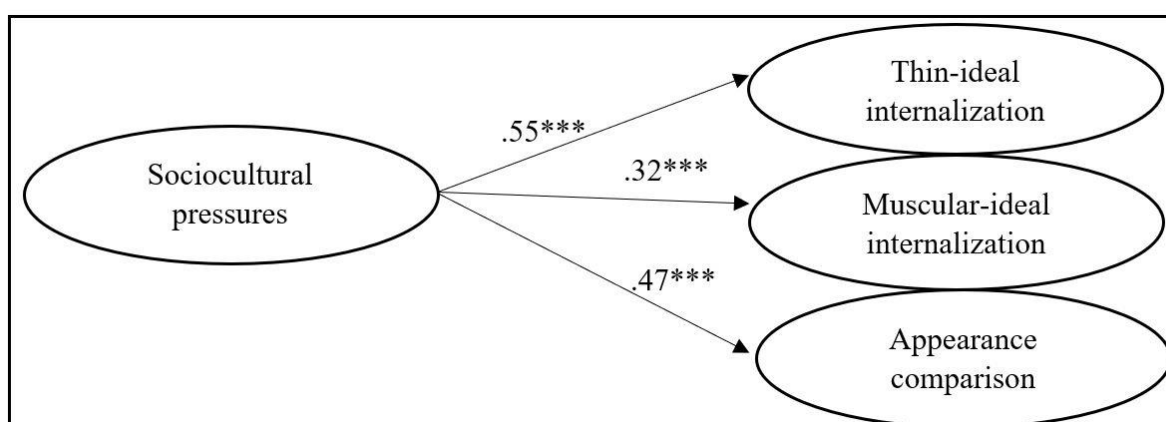


Figure 6. Direct effects model

\*\*\* $p<.001$ .

#### 4.3.2. Indirect effects via identity confusion.

The final full indirect effects model including the measurement and structural model provided an adequate fit to the data [ $\chi^2(118)=389.289$ ,  $p<.001$ ;  $\chi^2/df=3.30$ ; CFI=.954; RMSEA=.059; SRMR=.062]. Next, the original significant direct paths were included which resulted in the partial indirect effects model. Allowing these direct paths significantly improved model fit [ $\Delta\chi^2(3)=105.75$ ,  $p=0.000$ ,  $\Delta RMSEA\geq 0.015$ , and  $\Delta CFI\geq .01$ ], resulting in the final model [ $\chi^2(115)=311.738$ ,  $p<.001$ ;  $\chi^2/df=2.71$ ; CFI=.967; RMSEA=.051; SRMR=.041]. All significant paths are shown in Figure 7a. Sociocultural pressures positively predicted thin-ideal internalization, muscular-ideal internalization, appearance comparison, and identity confusion. Identity confusion, in turn, positively predicted thin-ideal internalization, muscular-ideal internalization, and appearance comparison. The indirect effect linking sociocultural pressures to muscular-ideal internalization via identity confusion was significant at  $p<.05$  and the indirect effects linking sociocultural pressures to thin-ideal internalization (standardized regression coefficient: .104; 95% CI [.061, .147]) and appearance comparison

(standardized regression coefficient: .217; 95% CI [.174, .303]) via identity confusion were both significant at  $p < .001$ .

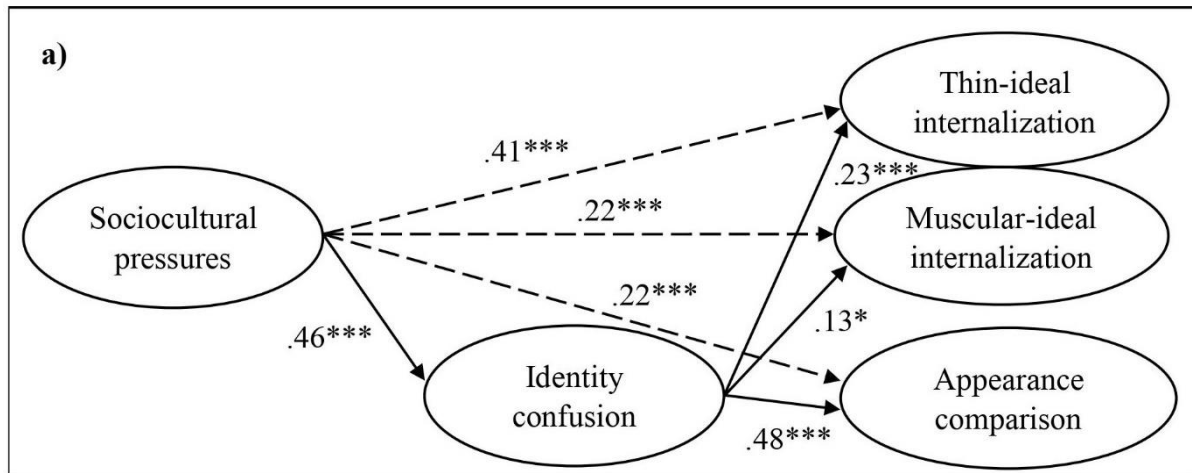


Figure 7a. Partial indirect effects model including identity confusion. All significant directional paths among the study variables are showed.

\* $p < .05$ . \*\*\* $p < .001$

#### 4.3.3. Indirect effects via identity synthesis.

The full indirect effects model provided a less than adequate fit to the data [ $\chi^2(120)=448.176$ ,  $p < .001$ ;  $\chi^2/df=3.73$ ; CFI=.945; RMSEA=.064; SRMR=.10]. When the original significant direct paths were included, model fit improved significantly [ $\Delta\chi^2(3)=185.13$ ,  $p=0.000$ ,  $\Delta RMSEA \geq 0.015$ , and  $\Delta CFI \geq .01$ ] resulting in a partial indirect effects model with good fit [ $\chi^2(117)=311.441$ ,  $p < .001$ ;  $\chi^2/df=2.66$ ; CFI=.968; RMSEA=.050; SRMR=.046]. All significant paths are presented in Figure 7b. Sociocultural pressures positively predicted thin-ideal internalization, muscular-ideal internalization, and appearance comparison, and negatively predicted identity synthesis. Identity synthesis negatively predicted thin-ideal internalization and appearance comparison. The indirect effect linking sociocultural pressures to thin-ideal internalization via identity synthesis was significant at  $p < .01$  (standardized regression coefficient: .043; 95% CI [.015, .071]), whereas the indirect effect linking sociocultural pressures to appearance comparison via identity synthesis was significant at  $p < .001$  (standardized regression coefficient: .097; 95% CI [.052, .135]).



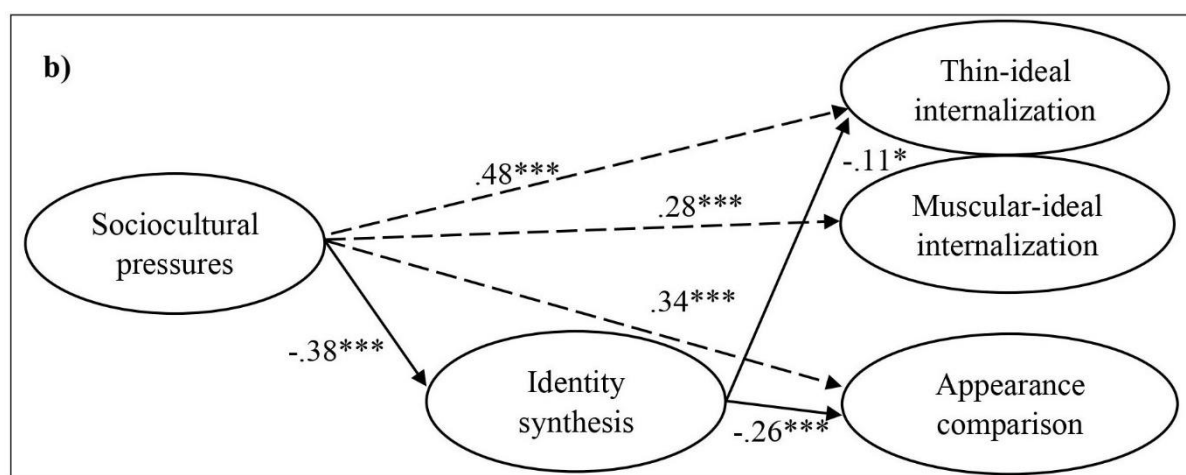


Figure 7b. Partial indirect effects model including identity synthesis. All significant directional paths among the study variables are showed.

\* $p < .05$ . \*\*\* $p < .001$ .

In addition, multigroup analyses for gender indicated that the coefficients could be set equal for boys and girls in the direct effects model [ $\Delta\chi^2(3)=10.52$ ,  $p=0.015$ ;  $\Delta\text{CFI}=.002$ ;  $\Delta\text{RMSEA}=.000$ ], the partial indirect effects model including identity confusion [ $\Delta\chi^2(7)=15.99$ ,  $p=0.025$ ;  $\Delta\text{CFI}=.002$ ;  $\Delta\text{RMSEA}=.000$ ], and the partial indirect effects model including identity synthesis [ $\Delta\chi^2(6)=18.35$ ,  $p=0.005$ ;  $\Delta\text{CFI}=.002$ ;  $\Delta\text{RMSEA}=.001$ ].

## 5. Discussion

The sociocultural context in Western societies, such as Flanders, is infused with idealized representations of how men and women should look. These sociocultural pressures adversely impact mental health in adolescents via the internalization of appearance ideals and appearance comparison (e.g., Keery et al., 2004). The present study investigated moderation and indirect effects of identity confusion/synthesis in the relationship between (1) sociocultural pressures and (2) internalization of appearance ideals and appearance comparison in Flemish adolescent boys and girls. The findings obtained point to both moderation and indirect effects for identity confusion/synthesis. However, moderation effects were less consistent whereas more consistent evidence was found for indirect effects, especially with regard to identity confusion. No significant differences between girls and boys were found for both the moderation and indirect models. As participants of our study were predominantly Flemish, the results can provide information on adolescents living in Flanders, which is a European-Western society. Nonetheless, as appearance ideals are socially constructed, differences in these ideals for instance, might still exist among subgroups (e.g., ethnic and racial groups) in our Flemish sample (Moradi, 2010). However, no information on ethnicity

and race was provided in the current study. Future research should include participants from more diverse ethnicities and cultural contexts.

### **5.1. *The role of identity formation in the relationship between sociocultural pressures and internalization and appearance comparison***

Sociocultural pressures positively predicted appearance comparison and internalization processes in boys and girls. These results are in line with the tripartite influence model which indicated that sociocultural pressures negatively influence both the male and female body image (Schaefer et al., 2015).

First, the current data offer empirical support for the theoretical premise that the relationship between sociocultural pressures and internalization of appearance ideals and appearance comparison is partly dependent on identity formation. In the present study, the interaction between sociocultural pressures and identity confusion significantly predicted muscular-ideal internalization. More specifically, especially for adolescents scoring low on identity confusion, lower scores on sociocultural pressures predicted relatively lower muscular-ideal internalization. On the other hand, the interaction between sociocultural pressures and identity synthesis significantly predicted both internalization processes and appearance comparison. Especially for adolescents scoring high on identity synthesis, lower scores on sociocultural pressures predicted relatively lower thin-ideal internalization and appearance comparison. Contrary to hypotheses, very high scores on sociocultural pressures predicted higher muscular-ideal internalization, especially for adolescents high in identity synthesis. A possible explanation is that, in the face of very high sociocultural pressures, adolescents high in identity synthesis turn to the muscular-ideal, rather than the thin-ideal, as it might be a 'healthier option (Ramme et al., 2016). More specifically, the muscular-ideal (as measured in the present study) might be a healthier option as the subscale also focuses on athleticism, which is less strongly related to physical appearance and more related to physical health than muscularity and thinness (Schaefer et al., 2017). Furthermore, a study by Ramme et al. (2016) indicated that muscular-ideal internalization in women was not significantly associated with sociocultural pressures and body dissatisfaction. However, a note of caution is warranted as we are not able to draw this conclusion based on our research.

Important to note is that having a strong identity seemed to be a protective factor especially in the case of low to average sociocultural pressures, but not for high sociocultural pressures. Furthermore, although we expected that highly identity confused adolescents might increasingly internalize appearance ideals (Stice, 1994) and engage more in appearance comparison when experiencing sociocultural pressures, the current study did not find these

effects. However, as further results revealed, sociocultural pressures might be linked to appearance ideals internalization and appearance comparison through the mechanism of identity confusion/synthesis.

Second, we found partial indirect effects of identity confusion/synthesis in the relationship between sociocultural pressures and appearance ideals internalization and appearance comparison. These findings confirm previous work by Vartanian et al. (2018), who found that lower self-concept clarity predicted increased appearance ideals internalization and appearance comparison. In the present study, sociocultural pressures positively predicted identity confusion and negatively predicted identity synthesis. This pattern of findings emphasizes just how important sociocultural pressures are in the formation of adolescents' identity and support the idea that appearance ideals can partly shape young people's identities. In line with our expectations, identity confusion positively predicted thin-ideal and muscular-ideal internalization, and appearance comparison, whereas identity synthesis negatively predicted thin-ideal internalization and appearance comparison. These results corroborate the idea that individuals who lack a strong identity might invest more in appearance as a primary source of self-worth, whereas identity synthesis might protect youngsters from investing intensively in appearance as a central part of their identity (Corning & Heibel, 2016; Palmeroni et al., 2020; Vartanian et al., 2018).

Our research highlighted the relevance of studying the role of identity formation in sociocultural processes regarding body image development (Daniels & Gillen, 2015). The present study lends support to the hypothesis of meaningful indirect effects of identity confusion in the relationship between sociocultural pressures and appearance ideals internalization and appearance comparison. With regard to identity synthesis, the findings are less consistent in favor of either moderating or indirect effects. Hence, an important question is whether identity can both moderate and mediate this relationship at the same time. Karazsia and Berlin (2018) highlighted that the same construct can operate as a mediator and a moderator at different points in time, but not at the same point in time. Hence, future longitudinal studies are required to investigate the precise role of identity synthesis in this relationship.

Furthermore, the current study found no significant differences between boys and girls in the moderating or indirect effects models. Despite mean gender differences (e.g., higher scores on sociocultural pressures and thin-ideal internalization for girls and higher scores on muscular-ideal internalization for boys), the present study revealed that the effects of sociocultural pressures and identity on appearance ideals internalization and appearance comparison might be the same for adolescent boys and girls. These results are in line with

previous studies (Palmeroni et al., 2020; Verschueren, Claes, et al., 2018). Furthermore, future research should explore appearance ideals for males and females more broadly, as males are pressured to be muscular and lean (Tylka, 2011) and, females are also increasingly confronted with “fitspiration” images which portray less thin, but more muscular bodies (Tiggemann & Zaccardo, 2015).

## 5.2. *Implications*

Provided that the present findings are replicated longitudinally, our research suggests that prevention and intervention programs targeting appearance ideals internalization and appearance comparison in European-Western societies, such as Flanders, might benefit from focusing on both sociocultural pressures and identity formation.

Targeting sociocultural pressures directly by promoting resistance and resilience in the face of such pressures might have positive effects on internalization and appearance comparison (Cash & Smolak, 2011; Tylka & Piran, 2019). Perceived pressures to be thin or muscular are indeed often targeted in programs for disturbed eating (Cash & Smolak, 2011), also in Belgium (Eetexpert, 2021). Interestingly, inspired by the present results, such programs may be effective as they also help individuals in developing a stronger identity, that, in turn, may reduce internalization of appearance ideals and appearance comparison. Furthermore, the present findings indicated that identity confused individuals might increasingly turn to appearance ideals in an effort to strengthen their identity. For individuals with such an overemphasis on appearance in their identity, threats to appearance (e.g., deviances from appearance ideals) also threaten the identity more broadly due to a lack of other sources of self-esteem. In this respect, Corning and Heibel (2016) stressed the importance of promoting positive identity formation by enhancing a more diversified sense of self that is less closely linked to appearance.

Finally, the current study indicated that having a strong identity might act as a buffer against internalization and appearance comparison – especially in the face of low to average sociocultural pressures. The results seemed to indicate that the buffering effect from identity disappears when high sociocultural pressures are experienced. These findings underscore the importance of tackling high sociocultural pressures directly. Unfortunately, exposure to appearance ideals, especially in European-Western societies, are inevitable in this digital age. For instance, social media are central in the lives of Belgian adolescents as they spend a lot of time on several social media platforms on a daily basis (Frison & Eggermont, 2016). Hence, protective factors that reduce sociocultural pressures should be investigated and promoted in adolescents as well (e.g., peer support, self-esteem, body positivity/functionality) (Vandenbosch & Eggermont, 2012).

### 5.3. *Limitations*

First, due to the cross-sectional design, our results should be treated with caution. It is necessary to conduct longitudinal studies to verify the moderation effects over time and to draw conclusions on statistical mediation on top of the conceptual mediation as provided in the current study (Karazsia & Berlin, 2018). Furthermore, we were not able to draw conclusions on development or directionality of effects. As previous research demonstrated a reciprocal relationship between identity formation and eating disorder symptoms (Verschuere, Claes, et al., 2018), it might be possible that internalization of appearance ideals and appearance comparison have an effect on identity formation or sociocultural pressures as well (e.g., Yang et al., 2018).

Second, the present study made exclusive use of self-reported data, and although it is the preferred method to assess subjective processes, a multi-method and multi-informant approach might provide additional information. As indicated, self-reports on perceived sociocultural pressures might be influenced by memory recall, contextual and intrapersonal factors (Tylka, 2011).

Third, the present study solely focused on Erikson's identity model. Future research would benefit from assessing identity content/functions, for instance by addressing identity from a narrative approach (McAdams & McLean, 2013).

Fourth, it would be interesting to explore differences in the influence of sociocultural pressures according to different social agents (media, parents, peers). It is possible that comparing one's own pictures with the pictures of attractive peers has stronger detrimental effects than pictures from traditional media (often from celebrities), which are generally perceived as less similar (Perloff, 2014).

Fifth, we did not capture cultural diversities as our study focused on appearance ideals and pressures that are prominent in Western societies. Furthermore, the present study only provided information on nationality and not on ethnicity and race. Additional research should be more sensitive to cultural/ethnic differences by addressing these research questions from a more diverse cultural perspective as both identity formation and appearance ideals and pressures could be different across cultures (Moradi, 2010; Syed & Fish, 2018).

## 6. **Conclusion**

The findings of this study pointed to both moderating and indirect effects of identity formation in the relationship between sociocultural pressures and appearance ideals internalization and appearance comparison in Flemish boys and girls. Overall, the results were

more consistent in terms of indirect effects (and especially so for identity confusion). Although the results so far are promising, future longitudinal studies are required to confirm these findings.

# chapter

# 4

Body dissatisfaction as a mediator between  
identity formation and eating disorder symptomatology  
in adolescents and emerging adults

Published manuscript:

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## Abstract

**Introduction.** Eating disorder symptomatology generally develops during adolescence and emerging adulthood. Previous research has focused on the role of identity formation or body image in the development of eating disorder symptomatology, but integrative work is lacking. For this reason, the present cross-sectional study examined the mediating role of body dissatisfaction in the relation between identity formation and eating disorder symptomatology.

**Method.** The sample comprised 659 participants between 15 and 30 years old (68.9% females;  $M_{\text{age}}=19.44$ ;  $SD_{\text{age}}=3.99$ ). All participants completed self-report measures on identity (*Self-concept and Identity Measure*), body dissatisfaction (*the body image feelings and attitudes subscale of the Body Investment Scale and the body dissatisfaction subscale of the Eating Disorder Inventory-3*), and eating disorder symptomatology (*Eating Disorder Inventory-3*). Latent variable modeling from a structural equation modeling approach was used.

**Results.** First, identity formation significantly predicted eating disorder symptomatology. Additionally, indirect effects were found linking identity formation to eating disorder symptomatology through the mechanism of body dissatisfaction. No significant differences between males and females or between adolescents and emerging adults on direct or indirect effects were found.

**Conclusion.** The present study indicated that body dissatisfaction mediated the relationship between identity formation and eating disorder symptomatology during mid-to-late adolescence and emerging adulthood. Provided that the present findings can be replicated in a future longitudinal study, they demonstrate that both identity formation and body dissatisfaction should be taken into account in prevention and intervention programs targeting eating disorder symptomatology.

*Keywords:* identity formation, body dissatisfaction, eating disorder symptomatology, mid-to-late adolescence, emerging adulthood

## 1. Introduction

Adolescence and emerging adulthood are challenging periods. From puberty onwards, the body of adolescents undergoes rapid changes (Stice & Whitenton, 2002). The body of female adolescents generally changes in shape and size, and body fat increases (Wertheim & Paxton, 2011), whereas male adolescents generally grow taller, gain muscles, and their shoulder width increases (Ricciardelli & McCabe, 2011). Hence, male adolescents tend to move closer to male appearance ideals, whereas female adolescents experience specific bodily changes that bring them further away from appearance ideals imposed by media, parents, and/or peers. These appearance ideals consist of an unrealistically thin body for girls and a lean, muscular body for boys (Cash & Smolak, 2011). At the same time, opinions of others about their own appearance are highly significant, resulting in a strong focus on body and appearance in young people (Arnett, 2000).

This heightened focus on appearance almost invariably leads to discrepancies between actual and ideal body image, as appearance ideals involve levels of thinness and muscularity that are unattainable for most (Dittmar, 2007). As a result, many youth experience body dissatisfaction. Body dissatisfaction refers to the evaluative dimension of body image in which an individual experiences negative, dysfunctional feelings and beliefs towards one's own body (e.g., weight and body shape) (Cash et al., 1997; Cash & Smolak, 2011). Individuals who experience body dissatisfaction wish to have body characteristics that are different from how they perceive their body, resulting in negative affect (Cash & Smolak, 2011). Body dissatisfaction in adolescents and emerging adults (and especially in females) is so highly prevalent that it is thought to be the norm rather than the exception (Rodin et al., 1984; Shagar et al., 2017).

Considerable research attention has been devoted to the role of body dissatisfaction in the onset and course of eating disorder (ED) symptomatology (Brausch & Muehlenkamp, 2014; Stice, 2002). ED symptomatology generally develops and increases during late adolescence, often persisting or developing into a clinical ED in emerging adulthood (Slane et al., 2014; Stice, 1994, 2002). Although the role of body dissatisfaction has been widely addressed in ED symptomatology, specific key mechanisms that influence body dissatisfaction in adolescents and emerging adults have not been dealt with in depth. Identity formation, a key developmental task in these life periods, has been linked to body dissatisfaction and ED symptomatology (Nelson et al., 2018; Vartanian et al., 2018; Verschueren, Claes, et al., 2018; Verstuyf et al., 2014; Wängqvist & Frisé, 2013). However, no research to date has examined how these factors are interrelated and whether body dissatisfaction may mediate the

relationship between identity formation and ED symptomatology. In this paper we examined this mediation model in a sample of mid-to-late adolescents and emerging adults.

### 1.1. ***Identity formation throughout adolescence and emerging adulthood***

Identity formation constitutes a central developmental task during adolescence and emerging adulthood (Arnett, 2000). According to Erikson (1968), one's identity structure can be defined by a feeling of sameness and continuity across time and contexts. Youth need to resolve an identity crisis triggering questions such as 'Who am I?', 'What do I want in life?' (Erikson, 1968). Confronted with these questions, feelings of *identity confusion* can emerge, in which a clear sense of purpose is lacking. As adolescents grow older, their identity is expected to strengthen progressively. Individuals develop a sense of self-continuity in which different self-identified values and goals fit together in an integrated whole, described as *identity synthesis* (Erikson, 1968).

Due to the growing complexity of Western societies, the identity formation task is prolonged into the late teens and 20s (Arnett, 2000). Education is lengthened and important choices (e.g., parenthood) are delayed in time (Arnett, 2000), providing emerging adults with ample opportunities to explore before long-term commitments are made. However, many young people are uncertain where their explorations will lead them, resulting in insecurity and indecisiveness (Arnett, 2000). Accordingly, identity distress (i.e., feelings of distress over one or more identity choices) increases during emerging adulthood (Palmeroni et al., 2019).

A certain amount of identity confusion and distress is normative. Most young individuals follow a healthy identity formation trajectory in which they move from identity confusion into the direction of identity synthesis (Erikson, 1950, 1968; Meeus, 2011). Researchers indicated that, although many young people experience temporary identity concerns, for some people these concerns can lead to pathological identity disturbance (Erikson, 1950). According to developmental psychopathology, this kind of pathological identity disturbance exceeds normative identity confusion (Kaufman et al., 2014). Hence, identity functioning can be placed on a continuum ranging from healthy identity functioning to clinical identity disturbance (Kaufman et al., 2014). In this study, three aspects of identity will be considered: identity consolidation, identity disturbance, and lack of identity (Kaufman et al., 2015). Identity consolidation refers to healthy identity functioning, whereas identity disturbance refers to normative identity confusion and lack of identity represents clinical identity disturbance.

### 1.2. ***Identity formation as a predictor of ED symptomatology***

Self- and identity-related problems have been forwarded in etiological models as important contributing factors to ED symptomatology. Casper (1983) mentioned that *'the lack of a stable self-concept and secure self-regard predisposes adolescents to use thinness in a misguided strife for individuation'* (p. 388). Schupark-Neuberg and Nemeroff (1993) stated that patients suffering from bulimia nervosa generally lack a clear self, with ED symptomatology (e.g., binge eating) representing avoidance strategies to deal with distressing identity-related issues (Wheeler et al., 2001). More recent studies (Verschueren, Claes, et al., 2018; Verschueren et al., 2017; Verstuyf et al., 2014) highlighted a significant relationship between identity formation and ED symptomatology. Verschueren and colleagues (2017) reported that patients with an ED experienced more identity-related issues than healthy controls. Verschueren and colleagues (2018) extended this finding in community adolescents and found that identity confusion positively predicted bulimia, whereas identity synthesis buffered against bulimia and drive for thinness. Bulimia, in turn, predicted an increase in identity confusion and a decrease in identity synthesis over time. Finally, individuals who avoid dealing with identity issues have been found to report less health-focused eating regulation (Verstuyf et al., 2014).

### 1.3. ***Body dissatisfaction as a mediator between identity formation and ED symptomatology***

Although research has increasingly linked identity formation to ED symptomatology, little is known about intervening mechanisms. The present study investigated the possible mediating role of body dissatisfaction.

#### 1.3.1. ***Identity formation as a predictor of body dissatisfaction.***

In recent years, there has been a growing interest in the relationship between identity formation and body image (Daniels & Gillen, 2015). Erikson (1968) already conceptualized the body as the home to the self. Physical changes and sexual maturation during adolescence and emerging adulthood also spark questions about one's identity (Erikson, 1968). During these life periods, body and appearance are highly significant, resulting in a strong focus on the body as a central identity aspect (Arnett, 2000; Harter, 1999), affecting the way youth perceive their identity in relation to their body (Frisén & Holmqvist, 2010; Nelson et al., 2018).

The importance of the body in identity formation is also highlighted in embodiment theorizing (Piran, 2016). For instance, an important dimension in the embodied experiences of females is the (dis)connection between body and self (Piran, 2016). Individuals that experience a body-self connection feel comfortable in their body and feel at home in their own

body. However, individuals who experience a body-self disconnection feel uncomfortable in their body and experience the body as separate from the self. This results in negative feelings towards the body and desire to control or change their body. In sum, people may convey their identity through their body, and how the body is experienced may impact identity formation.

Despite this theoretical interest, only a few studies directly examined the link between identity formation and body image. Late adolescents' identity exploration and commitment have been linked to body-esteem and appearance ideals internalization (Wängqvist & Frisé, 2013). Kamps and Berman (2011) demonstrated that negative body image and identity distress are related. Similarly, adolescents with decreasing weight/appearance-esteem over time experienced lower identity coherence during emerging adulthood (Nelson et al., 2018). Verschueren and colleagues (2018) found that identity confusion positively predicted body dissatisfaction, whereas identity synthesis buffered against body dissatisfaction over time. In turn, body dissatisfaction positively predicted identity confusion and negatively predicted identity synthesis over time. Furthermore, a recent qualitative study revealed that the body can be salient in one's identity in a negative and positive way (Kling et al., 2018). People can identify with their body as an inseparable part of their identity. When this experience is positive, identity is described as feeling at home in one's body (cf. Erikson, 1968).

This intricate link between identity formation and body image may be partially explained by appearance ideals internalization. Individuals who lack a clear sense of self, seek external sources to define themselves, and appearance ideals are very accessible sources for self-definition (Vartanian et al., 2018). Individuals with higher levels of identity disturbance are especially vulnerable to internalize appearance ideals (Vartanian et al., 2018). Verstuyf and colleagues (2014) also found that one's identity style could render adolescents more or less vulnerable for adopting appearance ideals. An increase in appearance ideals internalization may result in body dissatisfaction, as these appearance ideals are very difficult to achieve (Dittmar, 2007; Stice, 2002).

### *1.3.2. Body dissatisfaction as a predictor of ED symptomatology.*

A recent systematic review by Shagar and colleagues (2017) highlighted that body dissatisfaction is an important risk factor for the development of ED symptomatology in adolescents and emerging adults. Investigating precursors of ED symptomatology is crucial, due to its high prevalence in adolescence and emerging adulthood. Research has indicated that 56-57% of adolescent girls and 28-31% of boys reported one or more weight-control behaviors (e.g., fasting, using laxatives, vomiting; Croll et al., 2002). Similarly, unhealthy weight-control behaviors (e.g., fasting, skipping meals, using a food substitute, cigarette smoking) have been reported by 57% of girls and 33% of boys, whereas extreme weight-control behaviors (e.g.,

using dieting pills, laxatives, vomiting) were reported by 12% of girls and 5% of boys (Neumark-Sztainer et al., 2002). Furthermore, Quick and Byrd-Bredbenner (2013) found that 25% of emerging adults engaged in dietary restraint, 14% reported regular binge eating, and 33% mentioned inappropriate compensatory behaviors. In sum, research has demonstrated that body dissatisfaction plays an important role in ED symptoms, which are alarmingly high in adolescents and emerging adults.

Body dissatisfaction is also a major risk factor for clinical EDs. Body image disturbance constitutes a core diagnostic criterion for anorexia and bulimia nervosa (DSM-5; American Psychiatric Association [APA], 2013). Further, people who regard their body negatively might experience the body as an object separate from the self (Orbach & Mikulincer, 1998), which may give rise to self-destructive behaviors (Brausch & Muehlenkamp, 2007). These individuals may experience lower thresholds to harm their body to cope with distressing feelings (Brausch & Muehlenkamp, 2007; Muehlenkamp & Brausch, 2012). The more body dissatisfaction one experiences, the more likely that one develops ED symptoms as a way to regulate emotions.

In sum, these findings suggest that identity formation and ED symptomatology are significantly related to each other and that body dissatisfaction may constitute a mechanism through which identity formation predicts ED symptomatology.

## 2. The present study

This cross-sectional study examined the mediating role of body dissatisfaction in the relationship between identity formation and ED symptomatology in mid-to-late adolescents and emerging adults. First, we hypothesized that identity disturbance and lack of identity would positively predict ED symptomatology, whereas identity consolidation would buffer against ED symptomatology (Verschuere, Claes, et al., 2018; Verschuere et al., 2017; Verstuyf et al., 2014). Second, we hypothesized that identity disturbance and lack of identity would positively predict body dissatisfaction, whereas identity consolidation would negatively predict body dissatisfaction (Kamps & Berman, 2011; Nelson et al., 2018; Vartanian et al., 2018; Verschuere, Claes, et al., 2018; Verstuyf et al., 2014; Wängqvist & Frisé, 2013). Third, we hypothesized that body dissatisfaction would positively predict ED symptomatology (Brausch & Muehlenkamp, 2014; Shagar et al., 2017; Stice, 2002). Combining our different expectations, we propose that the relationship between identity formation and ED symptomatology would be mediated by body dissatisfaction. We hypothesized that identity disturbance and lack of identity would positively predict body dissatisfaction, which in turn, would predict ED symptomatology. We do not formulate differential hypotheses for identity disturbance and lack of identity as no guiding research is available to formulate such differential hypotheses. We tentatively expect to find similar path coefficients, with possibly

stronger path coefficients for lack of identity because this scale correlated highest with emotion dysregulation and psychopathology (Kaufman et al., 2015).

In addition, the present study also investigated whether the aforementioned mediation model differs across gender (males and females) and age groups (mid-to-late adolescents and emerging adults). First, compared to males, females generally experience more body dissatisfaction, ED symptomatology (Cash & Smolak, 2011), and identity confusion (Verschueren, Rassart, et al., 2018). However, recent evidence revealed that bidirectional effects between identity formation on the one hand and body dissatisfaction and ED symptomatology on the other hand were not significantly different in males and females (Verschueren, Claes, et al., 2018). Although these first results are promising, there is still a need to replicate these results in future research. Therefore, we do not formulate strong hypotheses in this respect. Second, the present study samples mid-to-late adolescents (15-18 years) and emerging adults (18-30 years). An ongoing identity search has been more strongly associated with depressive symptoms and identity distress with increasing age, with the strongest associations occurring in the late 20s as opposed to adolescence and the early 20s (Luyckx et al., 2013; Palmeroni et al., 2019). Accordingly, we expect to find stronger directional paths from identity disturbance and lack of identity to body dissatisfaction in emerging adults as identity problems are assumed to result in higher levels of distress and symptomatology in older individuals (as compared to mid-to-late adolescents).

### 3. Methods

#### 3.1. *Participants and procedure*

We combined two samples which were collected in 2017 in Flanders (the Dutch-speaking part of Belgium). The total sample size comprised 659 participants (68.9% females;  $M_{age}=19.44$ ;  $SD_{age}=3.99$ ). The first sample consisted of 327 adolescents aged 15-18 years (71.38% females;  $M_{age}=15.99$ ;  $SD_{age}=0.96$ ) who filled out self-report questionnaires during school hours in one high school. All participants under the age of 18 years received parental consent and provided informed assent themselves. Participants above the age of 18 provided informed consent themselves. The second sample consisted of 332 emerging adults aged 18-30 years (69% females;  $M_{age}=22.82$ ;  $SD_{age}=2.72$ ) who filled out the questionnaires via an online survey (Limesurvey). All individuals participated voluntarily, signed an informed consent form, and anonymity was guaranteed in this study approved by the Social and Societal Ethics Committee of KU Leuven (reference numbers of approval: G- 2016 09 632, G- 2016 09 626).

### 3.2. **Measures**

#### 3.2.1. *Identity.*

To assess identity along a continuum ranging from healthy identity functioning to clinical identity disturbance, the 27-item Dutch version of the *Self-concept and Identity Measure* (SCIM; Kaufman et al., 2015) was used. The SCIM consists of three subscales: identity consolidation, identity disturbance, and lack of identity. Identity consolidation refers to healthy identity development in which individuals feel certain about who they are and experience themselves as an integrated whole, similar to the notion of identity synthesis Erikson (1968). Identity disturbance assesses identity-related issues such as feelings of discontinuity and confusion, whereas lack of identity refers to pathological identity disturbance including individuals who feel broken and empty inside (Kaufman et al., 2015). The SCIM has been validated in adults from the US and Belgium (Bogaerts et al., 2018; Kaufman et al., 2015). All items were scored on a seven-point Likert scale ranging from '1' (*strongly disagree*) to '7' (*strongly agree*). Sample items include: "I know what I believe or value" (identity consolidation), "I imitate other people instead of being myself" (identity disturbance), and "I feel empty inside, like a person without a soul" (lack of identity). Cronbach's alpha coefficients were .70 for identity consolidation, .79 for identity disturbance, and .90 for lack of identity.

#### 3.2.2. *Body dissatisfaction.*

Body image was evaluated using the body feelings and attitudes subscale of the *Body Investment Scale* (BIS; Orbach & Mikulincer, 1998) and the body dissatisfaction subscale of the *Eating Disorder Inventory-3* (EDI-3; Garner, 2004). The BIS is validated in US community adolescents (Osman et al., 2010). The original English version of the questionnaire was translated into Dutch by using the translation/back-translation procedure. The body feelings and attitudes scale of the BIS measures feelings that individuals experience regarding their own body and is closely related to body (dis)satisfaction (Orbach & Mikulincer, 1998). The scale consists of six items to be rated on a five-point Likert scale ranging from '1' (*I do not agree at all*) to '5' (*Strongly agree*). Sample items include: "I am satisfied with my appearance". Cronbach's alpha coefficient was .92. The body dissatisfaction subscale of the EDI-3 measures the degree to which an individual is convinced that specific body parts (e.g., hips, thighs) are too large and is unsatisfied with his/her shape. Sample items include: "I think that my stomach is too big". The scale consists of 9 items to be rated on a six-point Likert scale ranging from '1' (*Never*) to '6' (*Always*). Cronbach's alpha coefficient was .93. A significant positive correlation was found between the two subscales [ $r(625) = .72, p < .001$ ].



### 3.2.3. *ED symptomatology.*

The *Eating Disorder Inventory-3* (EDI-3; Garner, 2004) is a valid questionnaire to tap into both body dissatisfaction (as mentioned above) and various other ED symptoms (Lehmann et al., 2013; Nyman-Carlsson et al., 2015). The drive for thinness and bulimia scales of the EDI-3 Risk Scales were used. Drive for thinness indicates a strong desire to have a thin body with a low amount of fat, resulting in an overestimation of one's own body weight and size (APA, 2013). Bulimia measures the presence of binge eating episodes (i.e., the consumption of a large amount of food during a limited period of time accompanied by a lack of control) and compensatory behaviors to prevent weight gain (e.g., purging and vomiting; APA, 2013). Both subscales consist of 7 items which were scored on a six-point Likert scale ranging from '1'(never) to '6'(always). Sample items include: "I feel extremely guilty after overeating" (Drive for thinness) and "I eat when I am upset" (Bulimia). Cronbach's alpha coefficients were .91 for drive for thinness and .80 for bulimia.

### 3.2.4. *Body Mass Index (BMI).*

All participants reported their weight and height and BMI was calculated using the following formula (weight in kilogram/height\*height in meters).

## 3.3. **Primary statistical analyses**

Our primary hypotheses were investigated using structural equation modeling within a latent variable framework in MPLUS version 8.1 (Muthén & Muthén, 1998-2012). All models were estimated using robust maximum likelihood estimation (MLR) to account for non-normality (Kline, 2015). Following fit indices were used (Browne & Cudeck, 1993; Hu & Bentler, 1999; Kline, 2015): Yuan-Bentler scaled  $\chi^2$ , which should be as small as possible; a normed Yuan-Bentler scaled  $\chi^2$  divided by its degrees of freedom was also calculated, which should be equal or less than 3; Root Mean Square Error of Approximation (RMSEA), which should be less than .08; Standardized Root Mean Square Residual (SRMR), which should be less than .09; and Comparative Fit Index (CFI), which should exceed .90 for adequate fit.

In order to investigate our primary hypotheses within a latent variable framework, we constructed a measurement model which represents manifest variables (questionnaire items) as indicators of underlying factors. In order to reduce model complexity and the number of indicators for each latent variable to the optimal number of three (Little et al., 2002), parcels consisting of multiple items were used as indicators. Furthermore, item parcels scores are more likely to be more normally distributed in comparison to individual item scores (Little et al., 2002). In creating these parcels, we used the item-to-construct balance parceling method

(Little et al., 2002). For identity consolidation, two parcels consisted of three items and one parcel of four items; for identity disturbance, two parcels consisted of four items and one parcel of three items; and for lack of identity, all three parcels consisted of two items. For body dissatisfaction, the three parcels consisted of five items. Finally, both for drive for thinness and bulimia, two parcels consisted of two items and one parcel of three items.

For the structural part of the model, three primary models were estimated (Holmbeck, 1997): (a) a direct effects model including identity formation as a predictor of drive for thinness and bulimia; (b) a full mediation model in which identity formation is indirectly related to these outcomes through body dissatisfaction; and (c) a partial mediation model including both direct paths from identity formation to outcomes that were significant in the direct effects model, and indirect paths through body dissatisfaction. In all models, apart from these directional paths, all associations among the three identity formation scales and between drive for thinness and bulimia were included. Gender and age were controlled for in all models by regressing all latent variables on gender and age. In an auxiliary analysis, BMI was additionally controlled for. To increase model parsimony, only significant paths from the control variables to the study variables were retained. The Model Indirect command was used to examine the significance of indirect effects.

To examine gender and age differences in the primary models, multi-group analyses were conducted. We investigated if the measurement and structural model (i.e., factor loadings and path coefficients) could be set equal across males/females and across mid-to-late adolescents (15-18 years) and emerging adults (18-30 years). We compared the fit of the fixed model with constrained coefficients (coefficients were constrained as equal across groups) to the fit of the free model with unconstrained coefficients (coefficients could be different across groups) by checking differences in comparative fit indices. A significantly better fit of the free model in comparison with the fixed model can be concluded when at least two of the following criteria were satisfied: a significant Yuan-Bentler scaled  $\Delta\chi^2(p < 0.05)$ ,  $\Delta RMSEA \geq 0.015$ , and  $\Delta CFI \geq 0.01$ .

## 4. Results

### 4.1. Preliminary analyses

Preliminary analyses were conducted in SPSS version 26. Multivariate analyses of variance (MANOVA) indicated gender differences [ $F(6, 593) = 25.614, p = .000$ , partial  $\eta^2 = .199$ ] and differences between age groups (mid-to-late adolescents and emerging adults) [ $F(6, 593) = 6.809, p = .000$ , partial  $\eta^2 = .064$ ] in the study variables (based on Wilks' Lambda). First, follow-up univariate analyses showed that boys scored higher on identity consolidation, whereas girls scored higher on lack of identity, body dissatisfaction, drive for thinness and

bulimia (Table 14). Second, follow-up univariate analyses indicated that emerging adults scored higher on identity consolidation and lack of identity, whereas mid-to-late adolescents scored higher on identity disturbance (Table 14). Table 15 presents Pearson correlations among all study variables. Identity consolidation was negatively related to body dissatisfaction, drive for thinness and bulimia. Both identity disturbance and lack of identity were positively related to body dissatisfaction, drive for thinness, and bulimia.

**Table 14***Descriptive Statistics and Mean-Level Differences Based on Analysis of Variance*

	Total Sample	Gender Differences				Age Group Differences			
		Males	Females		Partial	Mid-to-late adolescents	Emerging adults		Partial
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>F Ratio</i>	$\eta^2$	<i>M (SD)</i>	<i>M (SD)</i>	<i>F Ratio</i>	$\eta^2$
Identity consolidation	5.12 (0.74)	5.22 (0.79)	5.08 (0.71)	4.78*	.008	5.03 (0.86)	5.20 (0.71)	4.01*	.007
Identity disturbance	2.99 (0.89)	2.95 (0.93)	3.01 (0.87)	0.64	.001	3.17 (0.83)	2.84 (0.90)	7.98**	.013
Lack of identity	2.35 (1.26)	2.19 (1.20)	2.43 (1.26)	4.85*	.008	2.31 (1.24)	2.40 (1.30)	4.59*	.008
Body dissatisfaction	3.31 (1.25)	2.48 (1.02)	3.68 (1.16)	161.13***	.198	2.96 (1.10)	2.96 (0.96)	1.38	.002
Drive for thinness	2.69 (1.21)	1.96 (0.96)	3.01 (1.17)	125.15***	.160	2.68 (1.32)	2.72 (1.10)	3.62	.006
Bulimia	2.12 (0.78)	1.89 (0.71)	2.22 (0.79)	26.44***	.039	2.17 (0.80)	2.05 (0.75)	1.323	.002

*Note.* *M* = mean; *SD* = standard deviation; *F* = *F*-value; Partial  $\eta^2$  = partial eta squared.

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

**Table 15***Pearson Correlations Between Study Variables*

	Identity consolidation	Identity disturbance	Lack of identity	Body dissatisfaction	Drive for thinness	Bulimia
Identity consolidation	1					
Identity disturbance	-.60***	1				
Lack of identity	-.65***	.63***	1			
Body dissatisfaction	-.35***	.29***	.47***	1		
Drive for thinness	-.21***	.27***	.34***	.82***	1	
Bulimia	-.30***	.44***	.37***	.51***	.60***	1

\*\*\* $p < .001$ 

#### 4.2. Primary analyses: Direct effects models

For the path analyses, the measurement model provided an adequate fit [ $\chi^2(80)=234.12$ ,  $p < .001$ ;  $\chi^2/df=2.93$ ; CFI=.962; RMSEA=.054; SRMR=.039]. Standardized factor loadings for the different parcels ranged from .51 to .91 (all  $ps < .001$ ).

With respect to the final model including both the measurement and structural part (with non-significant paths from age and gender trimmed), adequate fit was obtained ( $\chi^2(103)=346.094$ ,  $p < .001$ ;  $\chi^2/df=3.36$ ; CFI=.946; RMSEA=.060; SRMR=.043). In this model, gender (dummy coded with 0=boys, 1=girls) positively predicted lack of identity ( $\beta=.09$ ,  $p < .01$ ), drive for thinness ( $\beta=.40$ ,  $p < .001$ ), and bulimia ( $\beta=.17$ ,  $p < .001$ ). Gender negatively predicted identity consolidation ( $\beta=-.11$ ,  $p < .05$ ). Age positively predicted identity consolidation ( $\beta=.23$ ,  $p < .001$ ) and drive for thinness ( $\beta=.10$ ,  $p < .01$ ). All significant directional paths among the study variables are displayed in Figure 8. Identity disturbance positively predicted drive for thinness ( $\beta=.18$ ,  $p < .01$ ) and bulimia ( $\beta=.36$ ,  $p < .001$ ), whereas lack of identity positively predicted drive for thinness ( $\beta=.22$ ,  $p < .01$ ).

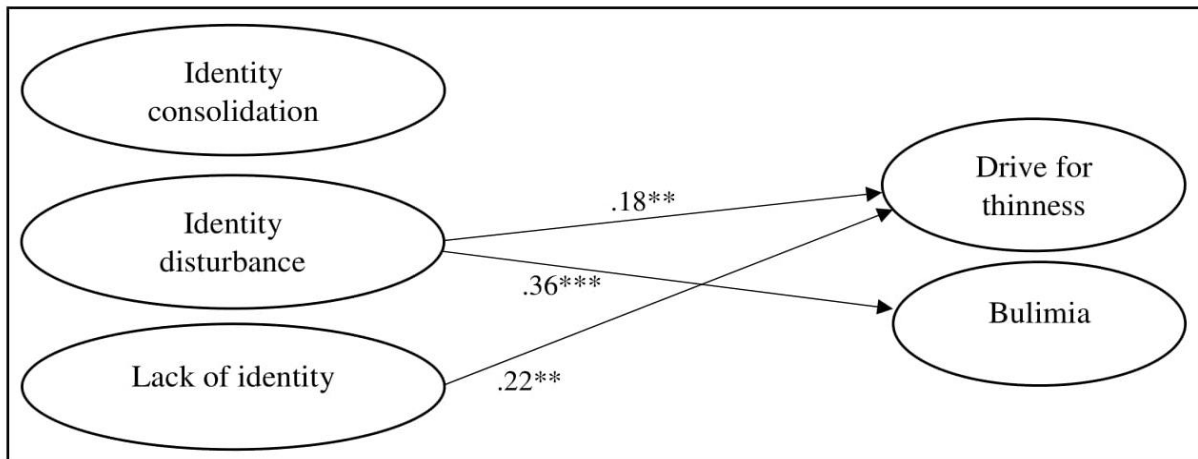


Figure 8. Direct effects model including all significant directional paths among the study variables.

\*\* $p < .01$ . \*\*\* $p < .001$ .

Multi-group analyses for gender and age indicated that the coefficients could be set equal for males and females [ $\Delta$ Yuan-Bentler scaled- $\chi^2(6)=2.19$ ,  $p=0.902$ ;  $\Delta$ CFI=.002;  $\Delta$ RMSEA=.002], as well as for mid-to-late adolescents and emerging adults [ $\Delta$ Yuan-Bentler scaled- $\chi^2(6)=16.55$ ,  $p=0.011$ ;  $\Delta$ CFI=.002;  $\Delta$ RMSEA=.001].

Auxiliary analysis including BMI as an additional control variable [with only significant paths from BMI to the study variables being retained in the model;  $\chi^2(114)=366.33$ ,  $p < .001$ ;  $\chi^2/df=3.21$ ; CFI=.945; RMSEA=.059; SRMR=.043] resulted in virtually identical findings as the model displayed in Figure 8, with all paths displayed remaining significant. Additionally, BMI positively predicted lack of identity ( $\beta=.08$ ,  $p < .05$ ), drive for thinness ( $\beta=.42$ ,  $p < .001$ ), and bulimia ( $\beta=.35$ ,  $p < .001$ ).

#### 4.3. Primary analyses: Mediation models

The measurement model provided an adequate fit to the data [ $\chi^2(120)=311.409$ ,  $p < .001$ ;  $\chi^2/df=2.60$ ; CFI=.970; RMSEA=.049; SRMR=.038]. Standardized factor loadings for the different parcels ranged from .51 to .97 (all  $ps < .001$ ). The final full mediation model including both the measurement and structural part (with non-significant paths from age and gender trimmed) provided an adequate fit to the data [ $\chi^2(155)=492.584$ ,  $p < .001$ ;  $\chi^2/df=3.18$ ; CFI=.951; RMSEA=.058; SRMR=.057]. Next, when including the original significant direct paths, adequate fit was obtained for the final model ( $\chi^2(152)=448.060$ ,  $p < .001$ ;  $\chi^2/df=2.95$ ; CFI=.957; RMSEA=.055; SRMR=.044). Gender (dummy coded with 0= boys, 1=girls) positively predicted lack of identity ( $\beta=.09$ ,  $p < .01$ ), body dissatisfaction ( $\beta=.38$ ,  $p < .001$ ), and drive for thinness ( $\beta=.08$ ,  $p < .01$ ), and negatively predicted identity consolidation ( $\beta=-.11$ ,  $p < .05$ ). Age positively predicted identity consolidation ( $\beta=.24$ ,  $p < .001$ ), and negatively identity

disturbance ( $\beta=-.24, p<.001$ ) and bulimia ( $\beta=-.08, p<.05$ ). All significant directional paths among the study variables are displayed in Figure 9.

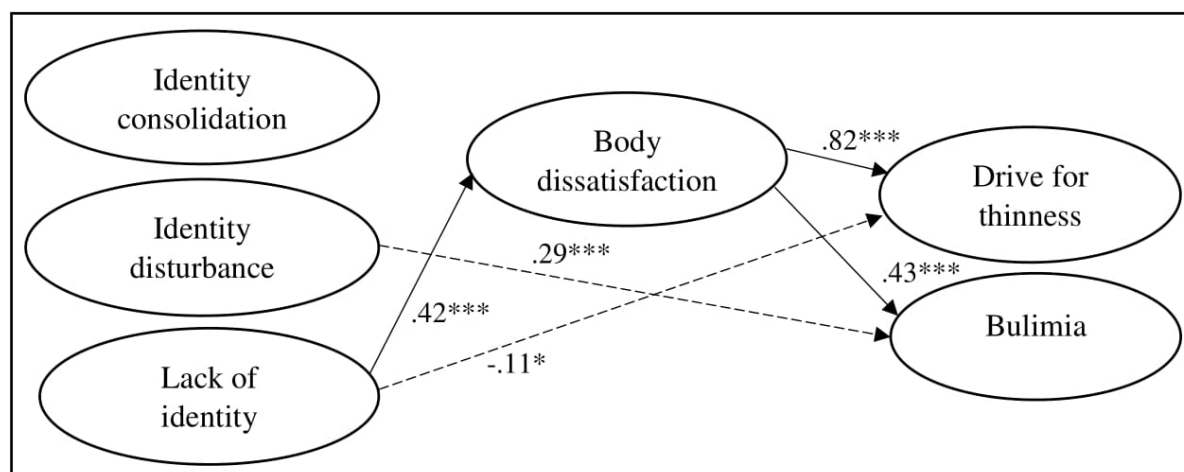


Figure 9. Partial mediation model including all significant directional paths among the study variables.

\* $p<.05$ . \*\*\* $p<.001$ .

Identity disturbance positively predicted bulimia ( $\beta=.29, p<.001$ ) and lack of identity negatively predicted drive for thinness ( $\beta=-.11, p<.05$ ). Lack of identity positively predicted body dissatisfaction ( $\beta=.42, p<.001$ ). Body dissatisfaction, in turn, positively predicted drive for thinness ( $\beta=.82, p<.001$ ) and bulimia ( $\beta=.43, p<.001$ ). Indirect effects linking lack of identity to drive for thinness and bulimia via body dissatisfaction were significant at  $p<.001$ .

Multi-group analyses for gender and age indicated that the coefficients could be set as equal for males and females [ $\Delta$ Yuan-Bentler scaled- $\chi^2(8)=6.26, p=0.618$ ;  $\Delta$ CFI=.001;  $\Delta$ RMSEA=.001], as well as for mid-to-late adolescents and emerging adults [ $\Delta$ Yuan-Bentler scaled- $\chi^2(8)=21.95, p=0.005$ ;  $\Delta$ CFI=.001;  $\Delta$ RMSEA=.002].

Auxiliary analysis including BMI as an additional control variable [with only significant paths from BMI to the study variables being retained in the model; Yuan-Bentler scaled- $\chi^2(165)=472.110, p<.001$ ;  $\chi^2/df=2.86$ ; CFI=.956; RMSEA=.054; SRMR=.043] resulted in virtually identical findings as the model displayed in Figure 9, with all paths displayed remaining significant. Additionally, BMI positively predicted lack of identity ( $\beta=.13, p<.05$ ), drive for thinness ( $\beta=.27, p<.001$ ), and bulimia ( $\beta=.19, p<.01$ ), and negatively predicted body dissatisfaction ( $\beta=-.24, p<.001$ ). Furthermore, drive for thinness was positively predicted by identity disturbance ( $\beta=.11, p<.05$ ) and lack of identity ( $\beta=-.11, p<.05$ ).

## 5. Discussion

The present study examined the mediational role of body dissatisfaction between identity formation and ED symptomatology in mid-to-late adolescents and emerging adults. The present findings indicated that identity formation significantly predicted ED symptomatology directly. Furthermore, indirect effects were also found linking identity formation to ED symptomatology through the mechanism of body dissatisfaction. More specifically, lack of identity predicted both drive for thinness and bulimia through the intervening mechanism of body dissatisfaction. Additional multigroup analyses revealed no significant differences on direct or indirect effects between males and females or between mid-to-late adolescents and emerging adults.

### 5.1. *Identity formation as a predictor for ED symptomatology*

As expected, identity disturbance positively predicted drive for thinness and bulimia, whereas lack of identity only positively predicted drive for thinness. This identity-ED symptomatology pathway did not differ across gender and age groups. These findings are partially in line with Verschueren and colleagues (2018) who found that identity disturbance was a significant predictor for bulimia, but not for drive for thinness in adolescents. The inconsistent results regarding identity disturbance and drive for thinness might be explained by the ambiguous nature of drive for thinness in identity functioning (Bruch, 1981; Casper, 1983; Verschueren, Claes, et al., 2018). It has been suggested that drive for thinness could be possibly related to both identity synthesis and identity disturbance (Verschueren, Claes, et al., 2018). Striving for thinness can become a key identity goal that can provide a stronger sense of identity, while an overvaluation of thinness and eating regulation in identity can also result in a more vulnerable sense of identity (Corning & Heibel, 2016; Verschueren, Claes, et al., 2018). Hence, this rather complicated relationship between drive for thinness and identity might help understanding the conflicting findings in empirical research.

These findings fit well with theories on ED symptomatology development and the role of identity formation. First, bulimia (i.e., binge eating and purging behaviors) have been put forward as maladaptive coping behaviors to regulate identity-related feelings of stress and uncertainty (Wheeler et al., 2001). This theorizing concurs with previous findings indicating that identity problems are associated with emotion dysregulation (Kaufman et al., 2014). Second, concerning drive for thinness, it has been stated that the pursuit of thinness can become a key identity goal in individuals, leading to behaviors such as controlling food intake and body weight. Especially individuals who struggle with their own identity process may strive for thinness as a source of self-definition (Schupark-Neuberg & Nemeroff, 1993), as thinness is portrayed as key towards happiness in Western societies (Dittmar, 2007).



### 5.2. ***Body dissatisfaction as a mediator between identity formation and ED symptomatology***

Apart from direct effects linking identity formation to ED symptomatology, the present study indicated that body dissatisfaction may play a mediating role during mid-to-late adolescence as well as during emerging adulthood. Statistically significant indirect effects were found linking identity formation to ED symptomatology through the intervening mechanism of body dissatisfaction.

First, lack of identity was indirectly related to drive for thinness and bulimia via body dissatisfaction. Research has indicated that especially individuals who lack a clear identity are more susceptible to turn to external standards, such as appearance ideals, to derive a sense of identity (Stice, 1994; Verstuyf et al., 2014). In this regard, one's identity then becomes reduced to the external appearance of one's own body, which almost invariably leads to feelings of body dissatisfaction due to self-ideal discrepancies (Dittmar, 2007). Furthermore, body dissatisfaction positively predicted both drive for thinness and bulimia, in line with previous findings (Muehlenkamp et al., 2012; Stice, 1994).

Another possible explanation is that body image investment, in addition to body dissatisfaction, plays an important role in this relationship. Individuals lacking an identity might counteract the inner emptiness they experience by investing more in appearance as a primary source of self-worth (Corning & Heibel, 2016; Stice, 1994; Vartanian et al., 2018). Body image investment refers to the importance of the body for self-evaluation. We propose that further research should investigate the possible role of body image investment as an additional moderator in the current mediation model. More specifically, the mediating role of body dissatisfaction between identity formation and ED symptomatology may be conditional on one's level of body image investment. It could be possible that lack of identity is significantly related to body dissatisfaction, especially in individuals scoring high on body image investment.

Second, contrary to our hypothesis, no mediating effect of body dissatisfaction was found for identity disturbance. However, the direct effect from identity disturbance to bulimia remained significant in the partial mediation model. These results suggest that this relationship might be explained by other mediators, such as emotion dysregulation. Previous findings indicated that identity problems and emotion dysregulation are associated (Kaufman et al., 2014). ED symptomatology, such as bingeing, purging, and restrictive eating patterns have been forwarded as ways to cope with such negative emotions, as they provide ways to escape, avoid or distract from these emotions (Schupark-Neuberg & Nemeroff, 1993; Wheeler et al., 2001).

Third, the analyses did not show any significant direct or indirect pathways from identity consolidation to body dissatisfaction or ED symptomatology. Although no significant association occurred between identity consolidation and body dissatisfaction, identity consolidation may affect other components of body image, such as positive body image. Positive body image entails favorable opinions towards one's body, body acceptance, competence and respect towards the body and does not represent the absence of body dissatisfaction (Tylka & Wood-Barcalow, 2015b). Research has indicated that individuals with a strong personal identity appear to have stronger self-esteem (Luyckx et al., 2013), which is positively associated with positive body image (Tylka & Wood-Barcalow, 2015b). Hence, future research should assess body image as a multidimensional construct in studying relations with identity formation.

Lastly, the present study found no significant differences between males and females or between mid-to-late adolescents and emerging adults on the pathway from identity formation to ED symptomatology through body dissatisfaction. The presents findings point to the fact that although females score higher on lack of identity, body dissatisfaction and ED symptomatology, both males and females who experience identity problems may be at risk to develop body dissatisfaction and/or ED symptomatology. These results emphasize how important it is to include boys/males in research on body dissatisfaction and ED symptomatology as well. Up till now, males are often underrepresented in research on body dissatisfaction and ED symptomatology. Furthermore, the present findings support the view that body dissatisfaction plays a significant role in the relationship between identity formation and ED symptomatology in both mid-to-late adolescents and emerging adults. This concurs with previous findings on the importance of body dissatisfaction in these life periods. Adolescence and emerging adulthood are characterized by extensive bodily changes (Cash & Smolak, 2011), resulting in a heightened focus on the body (Arnett, 2000). During this life phase, the body can become a purposeful pathway through which distressing emotions can be expressed. This is in line with our results indicating that people experiencing lack of identity, may express feelings of emptiness and insecurity through their own body, by, for instance, focusing on appearance ideals. This heightened focus on the body, or ED symptomatology, can be regarded as means to avoid dealing with profound identity work for both males and females experiencing issues regarding identity formation.

### **5.3. Implications**

#### **5.3.1. Theoretical implications.**

While most theories and studies focus on either the role of identity or body dissatisfaction in ED symptomatology development, current research demonstrated an interplay between

identity and body dissatisfaction in the prediction of ED symptomatology. Although our results are promising, future studies are recommended in order to verify the interrelations between identity formation, body dissatisfaction, and ED symptomatology from a longitudinal perspective.

### *5.3.2. Practical implications.*

There is a clear lack of emphasis on building and strengthening a positive, self-endorsed identity in prevention and intervention programs targeting ED symptomatology (Corning & Heibel, 2016). Provided that the present findings are replicated longitudinally, they demonstrate that identity formation, together with body dissatisfaction, should be taken into account in such programs. First, the promotion of a positive body image may be one avenue to prevent body dissatisfaction and ED symptomatology by increasing favorable opinions towards one's body (Tylka & Wood-Barcalow, 2015b). The current findings indeed indicated that body dissatisfaction may play a significant role in the relationship between identity formation and ED symptomatology in mid-to-late adolescents and emerging adults. However, when positive body image is promoted, the attention is again shifted towards the body as a necessary source of self-esteem. Therefore, attention must be paid to also focus on aspects of the self that are unrelated to body/appearance.

Second, strengthening one's identity may prevent or reduce ED symptomatology through a decrease in body dissatisfaction. Hence, it might be useful to identify individuals experiencing lack of identity, as these individuals might be especially vulnerable to turn to appearance ideals in an effort to build their identity. When identity is narrowly based on one aspect of the self, such as appearance, threats to that aspect also threaten the identity more broadly because other sources of self-esteem are lacking. It is important that young people's identities become less closely linked to appearance by enhancing other identity aspects (as proposed by Corning and Heibel (2016)). This way, individuals can rely on a more diversified sense of self which is shifted away from body and appearance.

## **5.4. Limitations**

First, due to the cross-sectional design, no authoritative claims regarding development or directionality of effects can be made. ED symptomatology may also lead to more body dissatisfaction and identity problems. Although scarce, previous research already revealed a reciprocal relationship between identity formation and ED symptomatology (Verschuere, Claes, et al., 2018). To reach more definite conclusions, a longitudinal study is warranted in which individuals are followed from early adolescence until their late twenties.

Second, we only used self-report questionnaires. Although the use of self-report questionnaires is preferable to assess internal/behavioral constructs, the inclusion of alternative data-collection methods could provide additional information (e.g., interview, significant others reports).

Third, in this study we did not capture the full spectrum of bodily concerns and ED symptomatology in males and females. The focus of our study was mainly on bodily concerns and ED symptomatology which are common in clinical EDs anorexia and bulimia nervosa (as measured by the EDI-3). These bodily concerns and ED symptomatology are encountered more by females than males as women generally experience a higher 'drive for thinness', whereas men are especially vulnerable for 'a drive for muscularity and leanness'. Although the EDI-3 successfully assesses leanness (and low body fat), we did not account for bodily concerns regarding muscularity or eating behaviors aimed at achieving the muscular ideal in this study. Hence, we expect an underestimation of bodily concerns and ED symptomatology in males in our study. Future studies should include additional measurements that can assess the full spectrum of bodily concerns and ED symptomatology in both males and females, such as drive for muscularity, muscularity dissatisfaction, compulsive exercise, the use of protein supplements, and anabolic steroids.

Fourth, regarding body image, our study focused primarily on evaluative body image measurement by assessing body dissatisfaction. However, research would benefit from assessing body image as a broader construct by measuring additional body image dimensions such as positive body image, embodiment, and body image investment.

## 6. Conclusion

The present cross-sectional study indicated that body dissatisfaction plays an important role in the relationship between identity formation and ED symptomatology during mid-to-late adolescence and emerging adulthood. More specifically, lack of identity seems especially important in the prediction of ED symptomatology through the intervening mechanism of body dissatisfaction. Multigroup analyses revealed no significant differences between males and females or between adolescents and emerging adults on direct or indirect effects. The results of the present study are promising and should be validated in future research using a longitudinal design.

# chapter

# 5

Identity formation, body image and eating disorder  
symptomatology:  
A cross-lagged longitudinal approach

Manuscript in preparation:

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## Abstract

**Introduction.** Previous studies have examined the role of identity formation or body dissatisfaction in ED symptomatology, but an integrative perspective with the inclusion of positive body image is lacking. Hence, the main goal of the present longitudinal study was to examine the directionality of effects among identity formation, body dissatisfaction/positive body image, and ED symptomatology in adolescent boys and girls.

**Methods.** A total of 403 students from one school in Flanders (Belgium) participated in this two-wave longitudinal study (at Time 1: mean age=14.85 years;  $SD=0.89$ ; age range: 13-18 years; 53% female). All participants completed self-report questionnaires on identity formation (Erikson Psychosocial Stage Inventory; EPSI), body dissatisfaction (body dissatisfaction subscale of the Eating Disorder Inventory-3; EDI-3), positive body image (Body Appreciation Scale-2; BAS-2), drive for thinness and bulimia (EDI-3) and compulsive exercise (Compulsive Exercise Test; CET). Cross-lagged models were estimated using structural equation modeling.

**Results.** The results indicated that body dissatisfaction and identity synthesis predicted relative increases in drive for thinness over time. Furthermore, body dissatisfaction predicted relative decreases in identity synthesis and positive body image predicted relative increases in identity synthesis over time. Correlated changes were significant between identity confusion/synthesis and body dissatisfaction/positive body image and all ED symptoms. No significant differences were found between boys and girls in the cross-lagged paths or correlated changes, except for the correlated change between positive body image and drive for thinness.

**Conclusion.** The findings of the present study pointed to longitudinal associations between identity formation, body dissatisfaction/positive body image, and ED symptoms in adolescents. The evidence from this study suggests that identity formation and both body dissatisfaction and positive body image should be integrated in the prevention and intervention of ED symptomatology.

## 1. Introduction

Adolescence is a challenging period consisting of social, emotional, and biological changes. During this life phase, youngsters strongly focus on their body and appearance. At the same time, youngsters are triggered to explore who they are and which identity choices they might commit to (Erikson, 1968). This identity quest can be challenging for a lot of youth, leading to feelings of identity confusion in which a clear sense of purpose is lacking. As a way to regulate such identity-related distress, adolescents might turn to maladaptive coping behaviors that target the body, such as eating disorder (ED) symptoms (Brausch & Muehlenkamp, 2014). In adolescence, the body indeed can represent a means through which distressing feelings are expressed. In line with this tenet, body dissatisfaction and ED symptomatology generally increase during adolescence (Bucchianeri et al., 2013; Slane et al., 2014).

Both body dissatisfaction and ED symptoms severely impact healthy development throughout adolescence and young adulthood (Johnson & Wardle, 2005; Moradi & Huang, 2008; Swanson et al., 2011). Therefore, it is needed to investigate contributing and protective factors in the development of body image and ED symptoms. Theorist and clinicians already focused on the predictive role of body image towards ED symptoms (Shagar et al., 2017; Tylka & Piran, 2019) or the predictive role of identity formation towards body image and ED symptoms (Daniels & Gillen, 2015; Verschueren, Claes, et al., 2018). Despite this interest, an integrative perspective is lacking and it is not yet fully understood how these factors are interrelated. Hence, the present study examined how identity formation, body dissatisfaction and positive body image, and ED symptomatology are interrelated over time in adolescents.

### 1.1. *ED symptomatology in adolescents*

Adolescents are susceptible to ED symptoms (Striegel-Moore & Bulik, 2007), comprising a variety of symptoms, such as drive for thinness and bulimia (bingeing, purging). Adolescent boys and girls increasingly turn to weight-control behaviors in order to lose weight and/or increase muscle size. Unhealthy weight control behaviors (e.g., vomiting, fasting, skipping meals, using laxatives, using a food substitute) were reported by 56-57% of adolescent girls and 28-33% of adolescent boys (Croll et al., 2002; Neumark-Sztainer et al., 2002). A total of 12% of adolescent girls and 5% of adolescent boys reported to experiment with extreme weight-control behaviors, such as using dieting pills or laxatives, and vomiting (Neumark-Sztainer et al., 2002).

More recent developments in ED research have led to an interest in compulsive exercise as it is often one of the first symptoms of an emerging ED (Davis et al., 2004; Goodwin et al., 2011). Although adolescence has been forwarded as a crucial period in which exercise attitudes



and commitments are developed and linked to body dissatisfaction and weight-control behaviors (McCabe & Ricciardelli, 2005), relatively few studies have investigated compulsive exercise in adolescents (Goodwin et al., 2011). In adults, however, compulsive exercise has been reported by 12.02% of respondents of which 77.78% could be diagnosed with an ED (Cunningham et al., 2016). Furthermore, in community undergraduate students, compulsive exercise was reported by 18.1% (Guidi et al., 2009).

In sum, ED symptoms are highly prevalent in adolescents and are also linked to the pathogenesis, development, and maintenance of EDs; hence, research investigating risk and protective factors of ED symptomatology in adolescents is needed.

### **1.2. *Body image and ED symptomatology***

With regard to clinical EDs, body image disturbance represents a core diagnostic criterion (American Psychiatric Association [APA], 2013). Furthermore, individuals who disregard their own body tend to objectify their body which increases the risk to inflict harm towards the body (Brausch & Muehlenkamp, 2014). Hence, when experiencing distressing feelings, these individuals might turn to ED symptoms, in order to cope with these feelings.

Accordingly, research has mainly focused on the role of body dissatisfaction in the onset and maintenance of ED symptomatology during adolescence (Davis, 2000; Shagar et al., 2017). Body dissatisfaction drastically increases in adolescence due to a combination of biopsychosocial factors. The body of adolescents changes rapidly and especially girls are confronted with body fat increases (Wertheim & Paxton, 2011). At the same time, adolescents are strongly influenced to aspire appearance ideals which constitute thinness for girls and lean muscularity for boys (Vandenbosch, 2017). It has been widely established that most bodies deviate from these ideals (Dittmar, 2007), which results in body dissatisfaction in many young people. As a result, these individuals prefer to change certain bodily aspects, increasing the risk to engage in ED symptoms to bring the body closer to elusive appearance ideals.

More recently, research has proposed that positive body image may play a protective role against ED symptomatology (Tylka & Piran, 2019). Positive body image represents favorable opinions towards one's body, body acceptance despite deviations from appearance ideals, body competence, and integrity and respect towards the body (Tylka & Wood-Barcalow, 2015b). Positive body image has been associated with increased regular exercise that was not mainly motivated by appearance or weight-control goals (Homan & Tylka, 2014), increased intuitive eating (Tylka & Kroon Van Diest, 2013), and decreased dieting and drive for muscularity (Gillen, 2015). However, although these results are promising, longitudinal research is warranted to support such claims (Tylka & Wood-Barcalow, 2015b).

Further, associations between body image and ED symptomatology have been mainly studied in a unidirectional way (Shagar et al., 2017), and less attention has been paid to the predictive role of ED symptomatology on body image. For instance, one study indicated that self-esteem and the internalization of appearance ideals predicted ED symptomatology over time, whereas ED symptomatology only predicted lower self-esteem over time (Espinoza et al., 2019). As adolescents with an ED are overly concerned about weight and body image (APA, 2013), ED symptoms might influence body image (in a negative way). However, there is still need for more research in this respect.

### **1.3. Identity formation and ED symptomatology in adolescence**

Research has forwarded identity formation as a possible risk and resilience factor in body image development and ED symptoms (Palmeroni et al., 2020; Verschueren, Claes, et al., 2018). Identity formation is a lifelong developmental task which comes to the foreground during adolescence (Erikson, 1968). From adolescence onwards, youngsters are expected to explore their own identity. In this life phase, identity questions, such as “*Who am I?*” and “*Where am I heading in life?*” typically emerge. These identity questions can induce *identity confusion* in youngsters which is characterized by an absence of goals and purpose in life (Erikson, 1968). For most youngsters, feelings of identity confusion are temporary as one’s identity strengthens progressively (Meeus, 2011). Over time, most youngsters manage to develop *identity synthesis* by identifying and integrating personal life goals and values in their sense of self, which leads to feelings of self-continuity (Erikson, 1968). However, for some individuals, identity concerns continue to persist for a longer period of time, resulting in pathological identity disturbance which exceeds normative identity confusion (Erikson, 1950; Kaufman et al., 2014).

Difficulties in identity formation have been forwarded as contributing factors to ED symptoms. Casper (1983) proposed that identity problems might precede ED symptomatology as these adolescents increasingly ‘*use thinness in a misguided strife for individuation*’ (p. 388). As a way to define themselves, these individuals might pursue thinness as a key identity goal (Schupark-Neuberg & Nemeroff, 1993), as the aspiration of appearance ideals is portrayed as a way to pursue happiness and success in life (Dittmar, 2007). Although appearance ideals might be pursued in order to construct an identity, this might result in a more fragile identity as more healthy sources of self-esteem are largely lacking (Corning & Heibel, 2016). This way, when these bodily aspects constitute the most central feature in one’s life, it might lead to the continuation of ED symptoms to maintain their fragile sense of self (Cunningham et al., 2016). Furthermore, ED symptoms are also forwarded as maladaptive coping behaviors to regulate

affect or to escape, avoid or distract from distress and uncertainty with regard to the identity formation process (Wheeler et al., 2001).

More recent empirical studies provide evidence for these theoretical assumptions. Patients diagnosed with an ED have been found to report more identity problems (e.g., identity confusion) than community controls (Verschueren et al., 2017). Studies in community adolescents indicated that identity problems were related to increased drive for thinness, bulimia (Palmeroni et al., 2020; Vartanian et al., 2018), compulsive exercise (Vartanian et al., 2018), and lowered health-focused eating regulation (Verstuyf et al., 2014).

Less attention has been paid to the fact that ED symptomatology might also negatively impact identity formation. Corning and Heibel (2016) proposed bidirectional effects between identity formation and ED symptomatology. They stated that adolescents who are predisposed to develop an ED strongly pursue appearance ideals and are overly concerned with their appearance. This way, their identity is primarily defined by appearance which results in a weaker identity as threats to appearance, such as weight gain, threaten the identity of the broader self. In line with this, Verschueren and colleagues (2018) reported bidirectional associations between identity formation and ED symptomatology. More specifically, identity confusion positively predicted bulimia, and identity synthesis negatively predicted bulimia and drive for thinness. Bulimia, in turn, positively predicted identity confusion and negatively predicted identity synthesis.

In sum, identity formation and ED symptomatology are clearly associated to each other. Interestingly, a recent cross-sectional study stated that the relationship between identity formation and ED symptomatology might be mediated by body dissatisfaction (Palmeroni et al., 2020). The authors suggested that individuals that lack an identity might increasingly turn to appearance ideals in order to fill the experienced identity void. As a consequence, their identity coincides almost entirely with one's body and appearance, increasing the risk to experience body dissatisfaction, and ED symptoms.

#### **1.4. Identity and body image**

The past decade, a growing interest emerged in unfolding the relationship between identity formation and body image. However, little research has been conducted to pinpoint the exact relationship between identity formation and body image (Daniels & Gillen, 2015). In his early writings, Erikson (1968) addressed the role of body image in identity formation as bodily changes during puberty influence the process of identity formation in adolescents. According to Erikson, optimal identity formation is characterized by the experience of feeling at home in one's body. These ideas are in line with embodiment theory which states that individuals

experiencing a body-self connection feel at home in their own body, whereas individuals that experience a body-self disconnection experience their body as an object separate from the self (Piran, 2016, 2019).

These theoretical assumptions were empirically validated in a few studies which underscored the salience of the body in people's identities (Kling et al., 2018). For instance, identity distress and negative body image were related to each other (Kamps & Berman, 2011). A study in adolescents revealed that identity exploration and commitment correlated significantly with appearance ideals internalization and body esteem (Wängqvist & Frisé, 2013). Furthermore, decreasing body esteem in adolescence predicted lowered identity coherence in emerging adulthood (Nelson et al., 2018). Research also indicated that identity functioning predicted body dissatisfaction (Palmeroni et al., 2020; Verschueren, Claes, et al., 2018), whereas body dissatisfaction also predicted identity functioning over time (Verschueren, Claes, et al., 2018). Questions concerning direction of effects between identity and body dissatisfaction and positive body image remain largely unanswered, indicating the need to address this topic from a longitudinal perspective (Daniels & Gillen, 2015).

## 2. The present study

The present longitudinal study examined the directionality of effect among identity formation, body image, and ED symptomatology in adolescent boys and girls. First, we hypothesized that bidirectional associations would occur between identity formation, body dissatisfaction and positive body image, and ED symptomatology (Verschueren, Claes, et al., 2018). Identity confusion might predict relative decreases in positive body image, and relative increases in body dissatisfaction and ED symptomatology over time, whereas body dissatisfaction and ED symptomatology might hinder normative identity development as well. Identity synthesis might predict relative increases in positive body image, and is expected to predict relative decreases in body dissatisfaction and ED symptomatology. No research to our knowledge investigated the temporal associations between identity formation and compulsive exercise. Hence, although we might find similar associations across different ED symptoms, we cannot formulate strong hypotheses regarding compulsive exercise. Furthermore, we also predict a significant indirect relationship between identity confusion/synthesis and all ED symptoms via body dissatisfaction (Palmeroni et al., 2020) and positive body image.

The present study investigated these research questions in adolescent girls and boys. It has been widely established by theorists and clinicians that especially girls' and women's body image is negatively impacted (APA, Task Force on the Sexualization of Girls, 2007). For instance, girls generally report more body dissatisfaction and ED symptoms than boys. The past few decades, more research addressed the need to include boys/males in research on body

image and ED symptomatology as male objectification and body dissatisfaction is increasing as well (Tylka, 2011). Furthermore, a large number of adolescent boys with ED symptoms are potentially undiagnosed or overlooked (Goodwin et al., 2014; Kjelsås et al., 2004). Accordingly, we included drive for thinness, bulimia, and compulsive exercise to capture ED symptoms that might be relevant among both girls and boys. The present study investigated gender differences in the aforementioned temporal associations in which we expected no differences between adolescents boys and girls. For instance, previous cross-sectional and longitudinal research indicated no gender differences in the interrelations between identity formation, body dissatisfaction, and ED symptoms (Palmeroni et al., 2020; Verschueren, Claes, et al., 2018).

### 3. Methods

#### 3.1. Participants and procedure

A longitudinal study with two waves (with an interval of 1 year) was used. In February 2019, the first wave was conducted in one high school in Flanders<sup>5</sup>, the Dutch speaking part of Belgium. At Time 1, 762 high school students were contacted for participation, of whom 423 received parental consent (consent rate: 55.51 %) and 403 students agreed to participate (53% female; response rate = 95.27%). Mean age of participants at Time 1 was 14.85 years ( $SD=0.89$ ; range 13-19). At Time 2, 319 students participated (58% female: retention rate=79.15%). Mean age of participants at Time 2 was 15.77 years ( $SD=0.84$ ; range 14-20). At Time 1, as compared to the students that dropped out, these students were younger [ $M_{retention}=14.77$  years ( $SD=0.85$ ),  $M_{drop-out}=15.11$  years ( $SD=0.99$ ),  $F(1, 401)=9.54$   $p<.05$ ], were more likely to be female (%female<sub>retention</sub>=58.00%, %female<sub>drop-out</sub>=29.80%)  $\chi^2(1)=19.07$ ,  $p<.001$ , but did not differ on adjusted BMI [ $F(1, 381)=1.08$ ,  $p=.299$ ], identity formation [ $F(2, 399)=1.00$ ,  $p=.337$ ], body image [ $F(2, 398)=0.87$ ,  $p=.419$ ], and ED symptomatology [ $F(3, 382)=1.00$ ,  $p=.637$ ]. Little's (1988) Missing Completely At Random (MCAR) test indicated that the missing data was not significantly associated with the observed data [ $\chi^2(197)=199.591$ ,  $p=.435$ ].

All participants filled out the questionnaires during school hours when they were present at school at the time of data collection, or via an online survey (Qualtrics) when they were absent from school during that time. All participants under the age of 18 years received active parental consent prior to data collection and all participants signed an informed assent

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<sup>5</sup> Three high schools originally participated in the study, but data from only one school was used as the data-collection of this school was conducted before the corona pandemic, whereas data-collection of the two other high schools were conducted during the corona pandemic. The data of these two schools were excluded from this study as the measures of our study variables might be influenced by the corona pandemic, but also because the methods of data-collection were different as the data-collection during corona was entirely online and at a later point in time.

themselves. In accordance to ethical guidelines, anonymity and confidentiality were guaranteed in all stages of the study which was approved by the Social and Societal Ethics Committee of the KU Leuven (reference number: G-2018 08 1303).

### 3.2. Questionnaires

#### 3.2.1. Identity formation.

Identity formation was measured by identity confusion and identity synthesis, two subscales of the *Erikson Psychosocial Stage Inventory* (EPSI; Rosenthal et al., 1981; Schwartz et al., 2009). Both subscales consist of six items to be rated on a Likert scale ranging from '1' (*strongly disagree*) to '5' (*strongly agree*). Similar to previous studies, at Times 1 and 2 Cronbach's alpha coefficients for identity synthesis were .75 and .71, respectively, and for identity confusion .65 and .70, respectively.

#### 3.2.2. Body dissatisfaction.

Body dissatisfaction was evaluated by the body dissatisfaction subscale of the *Eating Disorder Inventory-3* (EDI-3; Garner, 2004) which gives an indication of the degree to which an individual feels unsatisfied with his/her own body shape and believes that certain body areas (e.g., hips, thighs) are too big. The scale consists of 9 items that were rated on a six-point Likert scale ranging from '1' (Never) to '6' (Always). At Times 1 and 2, Cronbach's alpha coefficients were .90 and .91, respectively.

#### 3.2.3. Positive body image.

The *Body Appreciation Scale-2* (Alleva et al., 2016; Tylka & Wood-Barcalow, 2015a) was used to assess positive body image which entails favorable opinions towards one's body, acceptance of one's body despite incongruences with body perfect ideals, body competence, and integrity and respect towards the body (Tylka & Wood-Barcalow, 2015a). This measure consists of 10 items which were scored on a 5-point Likert-scale ranging from '1' (*Never*) to '5' (*Always*). At Times 1 and 2, Cronbach's alpha coefficients were .92 and .93, respectively.

#### 3.2.4. Eating disorder symptomatology.

With regard to eating disorder symptomatology, drive for thinness and bulimia were assessed by use of the *Eating Disorder Inventory-3* (EDI-3; Garner, 2004), a valid questionnaire which gives an indication of both body dissatisfaction (as mentioned above) and various ED symptoms (Lehmann et al., 2013; Nyman-Carlsson et al., 2015). Drive for thinness measures a strong desire to be thinner and to have a lower amount of body fat which is also characterized by an overestimation of one's own body size and weight (APA, 2013). Bulimia

indicates the occurrence of binge eating episodes (i.e., the consumption of a large amount of food during a limited period of time and a lack of control over this eating episode) which are accompanied by compensatory behaviors, such as vomiting and purging, in order to prevent weight gain (APA, 2013). Both subscales consist of seven items which were rated on a six-point Likert scale ranging from '1'(never) to '6'(always). At Times 1 and 2, Cronbach's alpha coefficients were .91, and .92, respectively, for drive for thinness and .78 for bulimia.

Compulsive exercise was assessed by measuring the primary factors (compulsivity, affect regulation, and weight control exercise) operating in excessive exercise by means of the 24-item *Compulsive exercise test* (CET; Taranis et al., 2011). The total score of this questionnaire was used by calculating the sum of all subscales (avoidance and rule-driven behavior, weight control exercise, mood improvement, lack of exercise enjoyment, exercise rigidity). All items were scored on a Likert scale ranging from '0' (never true) '5' (always true). At Times 1 and 2, Cronbach's alpha coefficients were .91 and .89, respectively.

### 3.3. **Primary statistical analyses**

All models used manifest variables and were estimated using structural equation modeling in MPLUS version 8.1 (Muthén & Muthén, 1998-2012). Model fit was evaluated with the following indices (Hu & Bentler, 1999; Kline, 2015): Yuan-Bentler scaled  $\chi^2$ , which should be as small as possible; a normed Yuan-Bentler scaled  $\chi^2$  divided by its degrees of freedom, which should be equal or less than 3; Root Mean Square Error of Approximation (RMSEA), which should be less than .08; Standardized Root Mean Square Residual (SRMR), which should be less than .09; and Comparative Fit Index (CFI), which should exceed .90 for adequate fit.

Maximum likelihood estimation with robust standard errors (MLR) was used in order to account for non-normality. Due to high within-time correlations between identity confusion and identity synthesis and between body dissatisfaction and positive body image, separate models were estimated as done previously (Luyckx et al., 2015; Verschueren, Claes, et al., 2018). Control variables (gender, age) were included in the models by regressing all study variables (at Time 1 and 2) on the control variables. Non-significant paths linking control to study variables were trimmed to obtain a more parsimonious model. In auxiliary analysis, adjusted BMI was added as an additional control variable.

Cross-lagged panel analysis was used to examine how identity formation, body image, and ED symptoms predicted one another over time. Four cross-lagged models were estimated: (1) identity confusion, body dissatisfaction, and ED symptomatology; (2) identity confusion, positive body image, and ED symptomatology; (3) identity synthesis, body dissatisfaction, and ED symptomatology; and (4) identity synthesis, positive body image, and ED symptomatology.

All cross-lagged models included all cross-lagged effects, stability paths and within-time associations. Cross-lagged effects refer to the prediction of a variable at T2 by another variable at T1. Cross-lagged paths between drive for thinness, bulimia, and compulsive exercise were not included in the main analyses, but were included in auxiliary analyses. Stability paths refer to the prediction of a variable on T2 by itself on T1. Stability paths, or autoregressive effects, give an indication of stability in variables over time. Within-time associations refer to the correlations between variables at one time point. Furthermore, the correlations between the residuals of identity, body image and ED symptoms at Time 2 (which control for all antecedent paths) give an indication of correlated change (e.g., Klimstra et al., 2013). In other words, correlated change reflects the degree to which relative changes in one variable are related to relative changes in another variable (Klimstra et al., 2013). In addition, if applicable, we estimated the strength of indirect effects (e.g., from identity confusion/synthesis at T1 to ED symptomatology at T2 through body dissatisfaction/positive body image at T2) (Palmeroni et al., 2020).

Finally, differences between girls and boys were examined with multigroup analyses. We investigated if the cross-lagged paths and correlated changes could be set equal across boys and girls. The fit of the fixed model with constrained cross-lagged paths and correlated changes across boys and girls was compared with the fit of the free model with unconstrained cross-lagged paths and correlated changes across boys and girls. A significantly better fit of the free model in comparison with the fixed model can be concluded when at least two of the following criteria are satisfied: a significant Yuan-Bentler scaled  $\Delta\chi^2(p < 0.05)$ ,  $\Delta\text{RMSEA} \geq 0.015$ , and  $\Delta\text{CFI} \geq .010$ .

## 4. Results

### 4.1. Preliminary results

Multivariate analyses of variance (MANOVA) pointed to significant gender differences at Times 1 and 2 [Time 1: Wilks'  $\lambda = .838$ ,  $F(7, 374) = 10.302$ ,  $p = .000$ , partial  $\eta^2 = .162$ ; Time 2: Wilks'  $\lambda = .807$ ,  $F(7, 297) = 10.148$ ,  $p = .000$ , partial  $\eta^2 = .193$ ]. Follow-up univariate analyses (Table 16) indicated that boys scored significantly higher on identity synthesis and positive body image; whereas girls scored significantly higher on identity confusion, body dissatisfaction, drive for thinness, and bulimia. No gender differences were found for compulsive exercise. Within-time correlations among the study variables were consistent over time (Table 17). Identity confusion was positively correlated with body dissatisfaction, drive for thinness, bulimia, compulsive exercise, and negatively correlated with positive body image. Reverse correlations were found for identity synthesis with the exception that no significant correlation emerged with compulsive exercise (at Times 1 and 2). Body dissatisfaction was



positively correlated with drive for thinness, bulimia, and compulsive exercise. Reverse correlations were found for positive body image. Positive correlations emerged between drive for thinness, bulimia, and compulsive exercise.

**Table 16***Descriptive Statistics and Mean-Level Differences Based on Analysis of Variance*

Variables	Time 1				Time 2			
	Males <i>M (SD)</i>	Females <i>M (SD)</i>	<i>F(1,291)</i>	Partial $\eta^2$	Males <i>M (SD)</i>	Females <i>M (SD)</i>	<i>F(1,291)</i>	Partial $\eta^2$
Identity Formation								
Identity Synthesis	3.74 (0.61)	3.51 (0.65)	5.94*	.020	3.76 (0.56)	3.50 (0.61)	13.30***	.044
Identity Confusion	2.58 (0.65)	2.81 (0.68)	8.68**	.029	2.59 (0.72)	2.83 (0.71)	8.67**	.029
Body Image								
Body dissatisfaction	2.57 (1.10)	3.44 (1.20)	39.64***	.120	2.55 (1.06)	3.43 (1.13)	44.95***	.134
Positive Body Image	3.72 (0.65)	3.27 (0.89)	16.40***	.053	3.81 (0.69)	3.32 (0.87)	27.34***	.086
ED Symptomatology								
Drive for Thinness	1.99 (0.98)	2.81 (1.32)	30.78***	.096	1.84 (0.90)	2.83 (1.35)	47.89***	.141
Bulimia	1.75 (0.66)	2.16 (0.87)	19.77***	.064	1.86 (0.68)	2.24 (0.93)	13.99***	.046
Compulsive Exercise	10.17 (4.33)	10.45 (3.85)	.28	.001	10.13 (3.57)	10.51 (3.63)	.50	.002

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

**Table 17***Pearson Correlations Between the Study Variables*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
Identity Formation														
1. Identity Synthesis T1	1													
2. Identity Synthesis T2	.52***	1												
3. Identity Confusion T1	-.56***	-.34**	1											
4. Identity Confusion T2	-.44***	-.60***	.55***	1										
Body Image														
5. Body dissatisfaction T1	-.41***	-.27***	.37***	.29***	1									
6. Body dissatisfaction T2	-.30***	-.38***	.33***	.39***	.80***	1								
7. Positive Body Image T1	.60***	.38***	-.45***	-.33***	-.72***	-.61***	1							
8. Positive Body Image T2	.39***	.56***	-.32***	-.43***	-.58***	-.73***	.72***	1						
ED Symptomatology														
9. Drive for Thinness T1	-.26***	-.14*	.33***	.23***	.78***	.66***	-.60***	-.47***	1					
10. Drive for Thinness T2	-.17**	-.21***	.30***	.28***	.69***	.78***	-.50***	-.58***	.80***	1				
11. Bulimia T1	-.31***	-.20***	.39***	.28***	.36***	.37***	-.37***	-.35***	.41***	.39***	1			
12. Bulimia T2	-.22***	-.21***	.34***	.32***	.35***	.42***	-.33***	-.39***	.44***	.49***	.69***	1		
13. Compulsive Exercise T1	-.04ns	-.05ns	.19***	.16**	.33***	.29***	-.21***	-.17**	.54***	.45***	.24***	.23***	1	
14. Compulsive exercise T2	-.13*	-.09ns	.17**	.25***	.28***	.30***	-.24***	-.25***	.40***	.49***	.25***	.31***	.70***	1

\*\* $p < .01$ . \*\*\* $p < .001$ .

#### 4.2. *Primary results*

With regard to identity confusion, Model 1 with a good fit to the data [ $\chi^2(18)=24.136$ ,  $p=.151$ ;  $\chi^2/df=1.34$ ; CFI=.997; RMSEA=.029; SRMR=.033] indicated that body dissatisfaction predicted relative increases in drive for thinness over time (Figure 10). Model 2, again with a good fit to the data [ $\chi^2(17)=19.755$ ,  $p=.287$ ;  $\chi^2/df=1.16$ ; CFI=.998; RMSEA=.020; SRMR=.031], revealed no significant cross-lagged paths between the study variables (Figure 11). Furthermore, correlated changes were significant between identity confusion and body image and ED symptoms (Figures 10 and 11). Relative changes in identity confusion were positively correlated with relative changes in body dissatisfaction, drive for thinness, bulimia, and compulsive exercise, and negatively with relative changes in positive body image.

Multi-group analyses for gender revealed that cross-lagged paths and correlated change could be set as equal across girls and boys for Model 1 [ $\Delta\chi^2(21)=34.54$ ,  $p<0.05$ ,  $\Delta CFI=.008$ ,  $\Delta RMSEA=.012$ ], but not for Model 2 [ $\Delta\chi^2(21)=37.52$ ,  $p<0.05$ ,  $\Delta CFI=.012$ ,  $\Delta RMSEA=.027$ ]. Hence, for Model 2, gender differences were investigated by conducting multigroup analyses for cross-lagged paths and correlated change separately. Cross-lagged paths could be constrained to equal across girls and boys [ $\Delta\chi^2(14)=19.44$ ,  $p=0.149$ ,  $\Delta CFI=.004$ ,  $\Delta RMSEA=.013$ ], whereas correlated change could not be constrained to equal across girls and boys [ $\Delta\chi^2(7)=17.64$ ,  $p<0.05$ ,  $\Delta CFI=.008$ ,  $\Delta RMSEA=.027$ ]. In addition, multi-group analyses were conducted separately for all correlated changes which indicated that all correlated changes could be constrained to equal across girls and boys, except for the correlated change between positive body image and drive for thinness [ $\Delta\chi^2(1)=12.60$ ,  $p<.001$ ,  $\Delta CFI=.009$ ,  $\Delta RMSEA=.019$ ]. Hence, the correlated change between positive body and drive for thinness was reported for boys and girls separately (Figure 11). More specifically, correlated change between positive body image and drive for thinness was significant for both boys and girls, however, the effect was larger in girls than in boys.

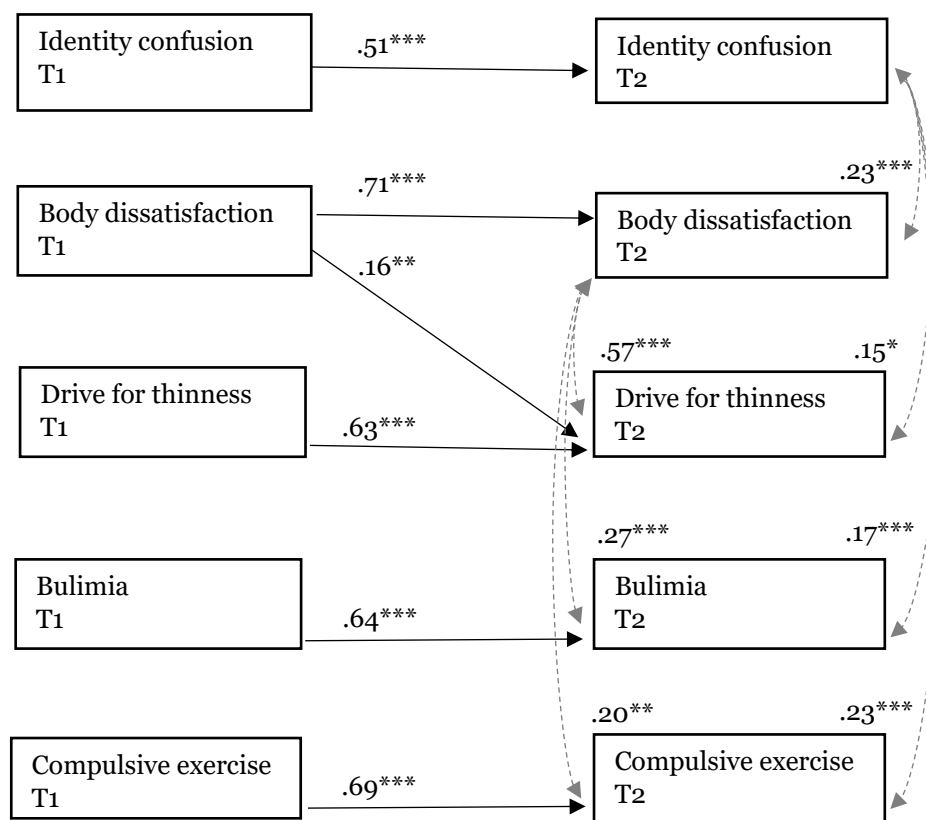


Figure 10. Cross-lagged models linking identity confusion to body dissatisfaction and ED symptoms (Model 1). Stability paths and cross-lagged paths are shown in full lines and correlated changes in dashed lines. Within-time associations and associations with age and gender are not shown for reasons of clarity. In both models we controlled for gender and age and all path coefficients were standardized.

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

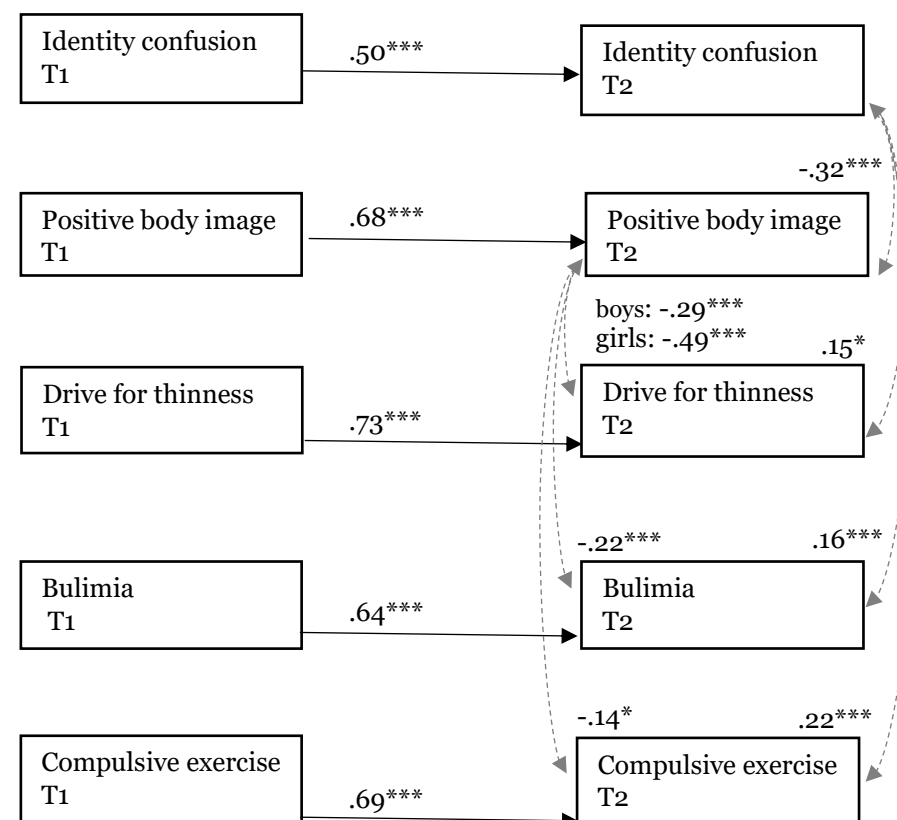


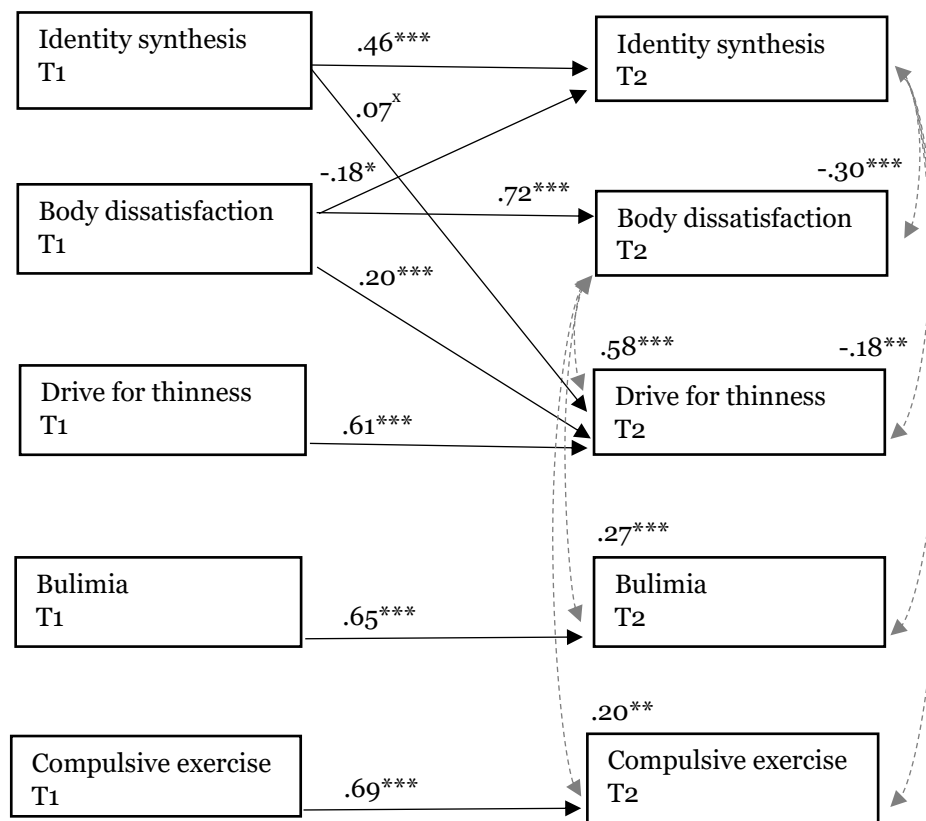
Figure 11. Cross-lagged models linking identity confusion to positive body image and ED symptoms (Model 2). Stability paths and cross-lagged paths are shown in full lines and correlated changes in dashed lines. Within-time associations and associations with age and gender are not shown for reasons of clarity. In both models we controlled for gender and age and all path coefficients were standardized. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

With regard to identity synthesis, Model 3 (Figure 12) provided good fit to the data [ $\chi^2(16)=21.823$ ,  $p=.149$ ;  $\chi^2/df=1.36$ ; CFI=.997; RMSEA=.030; SRMR=.029] and indicated that identity synthesis predicted relative increases in drive for thinness over time. Furthermore, body dissatisfaction predicted relative increases in drive for thinness and relative decreases in identity synthesis over time. In Model 4 (Figure 13) which had a good fit to the data [ $\chi^2(15)=16.618$ ,  $p=.342$ ;  $\chi^2/df=1.11$ ; CFI=.999; RMSEA=.016; SRMR=.026], positive body image predicted relative increases in identity synthesis over time. Further, correlated changes were significant between identity synthesis and body image and drive for thinness (Figures 12 and 13). Relative changes in identity synthesis correlated positively with relative changes in positive body image and negatively with relative changes in body dissatisfaction and drive for thinness.

Multi-group analyses for gender revealed that cross-lagged paths and correlated change could be set as equal across girls and boys for Model 3 [ $\Delta\chi^2(21)=32.87$ ,  $p<.05$ ,  $\Delta CFI=.008$ ,  $\Delta RMSEA=.014$ ], but not for Model 4 [ $\Delta\chi^2(21)=34.01$ ,  $p<.05$ ,  $\Delta CFI=.009$ ,  $\Delta RMSEA=.037$ ]. Again, for Model 4, gender differences were investigated by conducting multigroup analyses for cross-lagged paths and correlated change separately. Cross-lagged paths could be constrained to equal across girls and boys [ $\Delta\chi^2(14)=19.14$ ,  $p=.160$ ,  $\Delta CFI=.003$ ,  $\Delta RMSEA=.024$ ], whereas correlated change could not be constrained to equal across girls and boys [ $\Delta\chi^2(7)=14.47$ ,  $p<.05$ ,  $\Delta CFI=.006$ ,  $\Delta RMSEA=.038$ ]. Similar to Model 2, multi-group analyses for the correlated changes indicated that all correlated changes could be constrained to equal across girls and boys, except for the correlated change between positive body image and drive for thinness [ $\Delta\chi^2(1)=10.71$ ,  $p<.01$ ,  $\Delta CFI=.008$ ,  $\Delta RMSEA=.019$ ] which was significant for both boys and girls, but larger for girls than for boys (Figure 13).

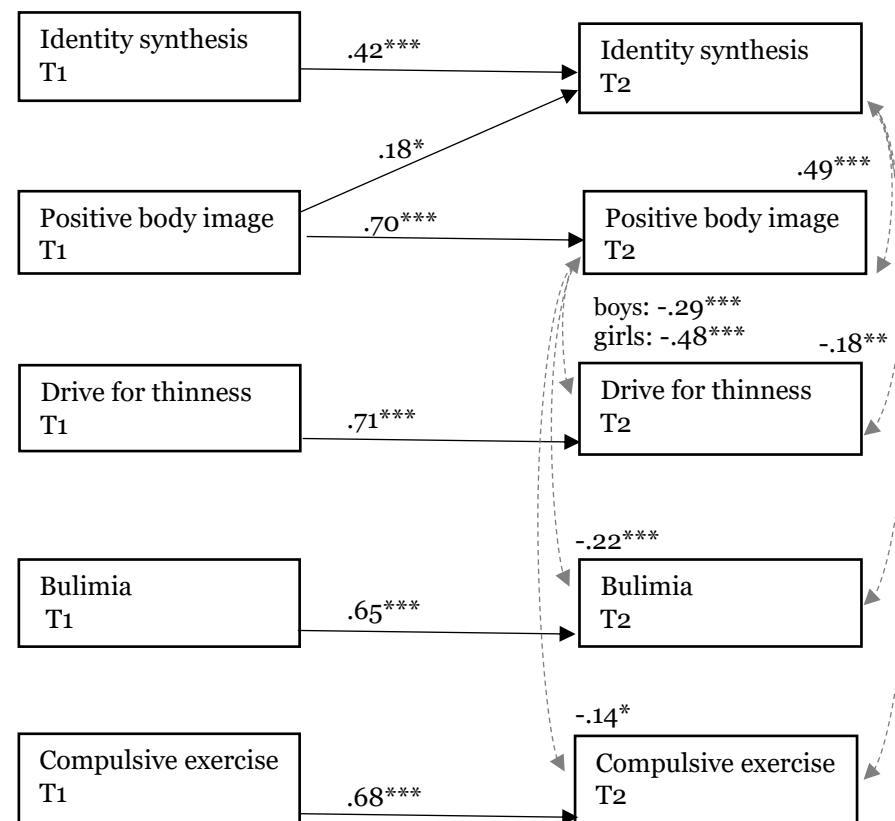
In addition, correlated change was significant between body dissatisfaction and all ED symptoms (drive for thinness, bulimia, compulsive exercise) (Figures 10 and 12) and between positive body image and all ED symptoms (Figures 11 and 13).

Finally, across all models being tested, indirect effects could not be calculated due to the insignificant cross-lagged paths from identity formation to ED symptomatology, and from identity formation to body image.



*Figure 12.* Cross-lagged models linking identity synthesis to body dissatisfaction and ED symptoms (Model 3). Stability paths and cross-lagged paths are shown in full lines and correlated changes in dashed lines. Within-time associations and associations with age and gender are not shown for reasons of clarity. In both models we controlled for gender and age and all path coefficients were standardized.

<sup>x</sup> $p < .05$ . \* $p < .05$ . \*\*\* $p < .001$ .



*Figure 13.* Cross-lagged models linking identity synthesis to positive body image and ED symptoms (Model 4). Stability paths and cross-lagged paths are shown in full lines and correlated changes in dashed lines. Within-time associations and associations with age and gender are not shown for reasons of clarity. In both models we controlled for gender and age and all path coefficients were standardized.

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

### 4.3. *Auxiliary analyses*

First, auxiliary analyses were conducted including adjusted BMI as an additional control variable which resulted in virtually identical findings for all cross-lagged models. Model fit for all cross-lagged models provided good fit to the data and are presented in Table 18. For Model 1, the significant cross-lagged path from body dissatisfaction to drive for thinness remained. For Model 2, one significant path emerged in which bulimia predicted relative decreases in positive body image over time ( $\beta = -.09, p < .05$ ). For Model 3, all significant paths remained significant except for the cross-lagged path from identity synthesis to drive for thinness. For Model 4, one additional significant path emerged in which bulimia predicted relative decreases in positive body image over time ( $\beta = -.08, p < .05$ ).

Second, auxiliary analyses were performed in which cross-lagged paths between drive for thinness, bulimia, and compulsive exercise were included as well. All models provided good fit (Table 18). For all cross-lagged models one additional significant path emerged in which drive for thinness predicted relative increases in bulimia over time (Model 1:  $\beta = .65, p < .001$ , Model 2:  $\beta = .14, p < .05$ ; Model 3:  $\beta = .19, p < .01$ ; Model 4:  $\beta = .14, p < .05$ ). Furthermore, in Model 3, the path from identity synthesis to drive for thinness was no longer significant.



**Table 18***Model Fit Indices Auxiliary Analyses*

	$\chi^2$ (df)	<i>p</i>	$\chi^2/df$	CFI	SRMR	RMSEA
<b>Model 1</b>						
Additional control variable: Adjusted BMI	43.962 (27)	<.05	1.63	.991	.047	.041
Additional cross-lagged paths between drive for thinness, bulimia, compulsive exercise	11.573 (12)	.481	0.96	1.000	.026	.000
<b>Model 2</b>						
Additional control variable: Adjusted BMI	37.593 (25)	.051	1.50	.992	.045	.036
Additional cross-lagged paths between drive for thinness, bulimia, compulsive exercise	8.002 (11)	.713	0.73	1.000	.023	.000
<b>Model 3</b>						
Additional control variable: Adjusted BMI	33.985 (24)	.085	1.42	.995	.044	.033
Additional cross-lagged paths between drive for thinness, bulimia, compulsive exercise	10.528 (10)	.396	1.05	1.000	.021	.011
<b>Model 4</b>						
Additional control variable: Adjusted BMI	26.354 (23)	.284	1.15	.998	.030	.020
Additional cross-lagged paths between drive for thinness, bulimia, compulsive exercise	5.820 (9)	.758	0.65	1.000	.016	.000

## 5. Discussion

The present two-wave longitudinal study in adolescents investigated the temporal associations linking identity formation, body dissatisfaction and positive body image, and ED symptomatology (i.e., drive for thinness, bulimia, and compulsive exercise) over a period of one year. As these ED symptoms frequently co-occur (APA, 1994; Holland et al., 2014; LePage et al., 2008), it has been suggested that identity confusion and body dissatisfaction may constitute transdiagnostic mechanisms in ED symptoms. The present study provided some evidence of longitudinal associations between identity formation, body image, and ED symptoms.

### 5.1. *Body image and ED symptomatology*

First, body dissatisfaction predicted relative increases in drive for thinness over time. This finding confirms the widely established idea that body dissatisfaction is a risk factor for developing ED symptoms (Shagar et al., 2017). However, no significant cross-lagged paths between body dissatisfaction and bulimia and compulsive exercise emerged. This might be partially explained by the fact that the measure for body dissatisfaction in our study focused on the specific belief that certain body aspect are too large or too fat (Garner et al., 1983). As drive for thinness measures a strong desire to be thinner and to have a lower amount of body fat (APA, 2013), it might be more closely linked to such a measure of body dissatisfaction as compared to bulimia and compulsive exercise. Further, body dissatisfaction and drive for thinness were also significantly and positively related at the level of correlated change, indicating that both tend to co-develop to some extent. Combined, these results seem to indicate that body dissatisfaction and drive for thinness not only co-develop over time, but that body dissatisfaction also predicts drive for thinness over time.

Although the cross-lagged paths between body dissatisfaction on the one hand and bulimia and compulsive exercise on the other hand were non-significant, all within-time associations and correlated change associations between body dissatisfaction and these ED symptoms were significant. These findings seem to indicate that, although these variables did not predict each other over time in the present sample, they seemed to be closely interrelated both concurrently and over time. Correlated change between variables (in the absence of significant cross-lagged paths linking these variables) might indicate that these variables are not causally linked to each other, but that these variables might be interrelated due to a third variable which affects the variables simultaneously over time (Klimstra et al., 2013). Hence, it might be possible that body dissatisfaction and ED symptoms are interrelated due to variables such as pressures and internalization of appearance ideals and/or self-objectification, as these concepts are strongly

related to both body dissatisfaction and weight-control behaviors (Dakanalis et al., 2015; Schaefer & Thompson, 2018). Furthermore, as a significant cross-lagged path from drive for thinness to bulimia emerged in auxiliary analyses, it might also be the case that drive for thinness simultaneously affects body image, bulimia, and compulsive exercise over time. Drive for thinness might affect body dissatisfaction as adolescents who experience drive for thinness are overly concerned about their own weight and body shape (Garner, 2004). This way, individuals that strive for thinness might also notice deviations from appearance ideals more easily which increases the risk to experience body dissatisfaction. Furthermore, as patients with an ED are at increased risk to shift from one ED symptom to another ED symptom (Garke et al., 2019), it might be possible that drive for thinness predicts bulimia and compulsive exercise as well.

Second, in contrast with theoretical assumptions (Tylka & Piran, 2019; Tylka & Wood-Barcalow, 2015b), no significant cross-lagged paths emerged between positive body image and ED symptomatology. However, within-time associations and correlated changes between positive body image and all ED symptoms emerged in the present study in both girls and boys. These results are in line with Gillen (2015) who revealed that positive body image among college men and women was associated with decreased dieting. As previously mentioned, it might be possible that positive body image and ED symptoms co-develop over time to some extent due to the influence of other variables such as the aforementioned pressures and internalization of appearance ideals and/or self-objectification. Interestingly, other constructs that uphold a more healthy relationship towards one's body and eating might influence positive body image and ED symptoms. For instance, body functionality (i.e., focus on what the body can do), a broad conceptualization of beauty, attunement to exercise, and intuitive eating are intraindividual constructs that are related to increasing self-care behaviors and decreasing self-objectifying practices (Tylka & Piran, 2019). Hence, these constructs could have a positive impact on positive body image and, at the same time, protect against ED symptoms.

As positive body image entails different aspects (Wood-Barcalow et al., 2010), it might also be that some positive body image aspects are more protective for ED symptoms than others. For instance, it has been stated that individuals might appreciate their own body, but at the same time also experience feelings of dissatisfaction towards their own body (Tiggemann & McCourt, 2013). This way, individuals who appreciate their own body might still be vulnerable to turn to ED symptoms. Hence, future research should investigate which positive body image factors might be especially protective against ED symptoms.

### 5.2. *Identity formation and ED symptomatology*

First, in line with expectations, results on the level of correlated change indicated that relative changes in identity synthesis were negative significantly associated with relative changes in drive for thinness, again pointing to some degree of co-development. Second, in contrast with Verschueren, Claes, et al. (2018) who found that identity synthesis predicted relative decreases in drive for thinness over time, the current study indicated that identity synthesis predicted relative increases in drive for thinness over time. However, in auxiliary analyses, this predictive path was no longer significant. Although previous research indicated that healthy identity functioning might provide individuals with more resilience towards engagement in ED symptoms (Corning & Heibel, 2016; Verschueren, Claes, et al., 2018), the current study did not find evidence for a protective role of identity synthesis against ED symptoms over time. Also in contrast with Verschueren, Claes, et al. (2018), the reverse pathway from drive for thinness to identity synthesis did not emerge in the present study. Combined, these findings again indicate that although both variables seem to be related to some extent, no clear conclusions can be drawn with respect to predictive paths over time.

Previous research already revealed inconsistent results regarding identity functioning and drive for thinness (Palmeroni et al., 2020; Verschueren, Claes, et al., 2018). It has been stated that drive for thinness might be related to identity functioning in both a positive and negative way (Bruch, 1981; Casper, 1983; Verschueren, Claes, et al., 2018). As the pursuit of an idealized appearance is highly valued as a central life goal, it might provide individuals with a stronger sense of identity. However, a long-lasting overvaluation of appearance is expected to result in a more fragile identity over time as more healthy sources of self-esteem are largely lacking (Corning & Heibel, 2016).

No significant effects emerged between identity synthesis and bulimia or compulsive exercise, which might indicate that identity synthesis might be related more strongly to ED symptoms that might provide an identity goal (drive for thinness) than ED symptoms that possibly have a stronger emotion regulatory function (bulimia, compulsive exercise). In line with this, Heatherton and Baumeister (1991) described binge eating as a way to escape from disturbing self-awareness. Furthermore, recent research has focused on the regulation of negative affect as a key mechanism of compulsive exercise as well (Taranis et al., 2011; Thome & L. Espelage, 2004). Physical activity is not only highly socially accepted among girls and boys, it is also encouraged by others as it is a healthy behavior (Lichtenstein et al., 2017; Thome & L. Espelage, 2004).

Second, contrary to expectations, the analyses did not identify any significant cross-lagged paths between identity confusion and ED symptoms. Overall, the analyses did not replicate the

findings from Verschueren, Claes, et al. (2018) who reported bidirectional effects between identity confusion and drive for thinness and bulimia. Although we hypothesized that identity confusion might predict relative increases in ED symptoms over time, and that ED symptoms might predict relative increases in identity confusion over time, the current study did not find these effects. Despite the lack of cross-lagged paths between identity formation and ED symptoms, the present study again revealed within-time associations and correlated changes between identity confusion and all ED symptoms.

It might be possible that changes in identity confusion/synthesis and ED symptoms are related to each other due to a third variable, such as appearance pressures and body image investment. It has been stated that appearance pressures negatively impact both identity functioning (Palmeroni et al., 2021) and ED symptoms (APA, Task Force on the Sexualization of Girls, 2007; Keery et al., 2004; Tylka, 2011) in boys and girls. In the same manner, it has been hypothesized that the more one invests in appearance as a primary source of self-worth, the more likely that identity problems and ED symptoms emerge (Corning & Heibel, 2016; Palmeroni et al., 2020).

### ***5.3. Identity formation and body image***

Body dissatisfaction predicted relative decreases in identity synthesis and positive body image predicted relative increases in identity synthesis over time. In contrast to the previous study by Verschueren, Claes, et al. (2018), no significant cross-lagged paths emerged between body image and identity confusion. Although no significant cross-lagged paths emerged, correlated changes between identity confusion and body dissatisfaction/positive body image were found. Relative changes in body dissatisfaction and positive body image were related to relative changes in identity confusion and synthesis in both girls and boys. Combined, these results are partially in line with studies indicating that body dissatisfaction negatively predicts identity functioning over time (Nelson et al., 2018; Verschueren, Claes, et al., 2018). To our knowledge, this study provided the first evidence that positive body image seems to promote healthy identity development over time. In line with this, Luyckx et al. (2013) mentioned that healthy identity functioning is associated with higher self-esteem, which is strongly related to positive body image (Tylka & Wood-Barcalow, 2015b).

Although most studies and theoretical frameworks seem to imply that identity functioning precedes body image development in time, the present study only found evidence for reverse pathways which seems to underscore the importance of effects from body image to identity formation as well. Furthermore, co-development between identity and body image over time might be explained by other constructs that might predict identity and body image simultaneously, such as appearance pressures and self-objectification. Substantive research

uncovered appearance ideals pressures and internalization, and self-objectification as risk factors in the development of body dissatisfaction (APA, Task Force on the Sexualization of Girls, 2007). More recently, these constructs are also expected to have an impact on identity formation (Cary et al., 2020; Daniels & Gillen, 2015).

In sum, our analyses did not reveal as many cross-lagged paths as expected. However, the present study did provide evidence for correlated changes which seems to imply that the constructs are associated to each other over time. Hence, we propose that future research should investigate longitudinal effects with more than two measurement waves in order to pinpoint longitudinal associations among the constructs. Furthermore, future research should address possible variables that could explain correlated changes between the constructs, as previously mentioned.

#### **5.4. *Gender differences in identity formation, body image, and ED symptoms***

With regard to our preliminary analyses, in line with hypotheses, girls reported higher levels of identity confusion, body dissatisfaction, drive for thinness, and bulimia, whereas boys scored higher on identity synthesis and positive body image. Interestingly, no significant gender differences were reported for compulsive exercise. Although it has been stated that boys/males might choose exercise more often as a way to achieve lean muscularity (Goodwin et al., 2014), the present study seems to indicate that exercise in girls seems important as well. Girls/females are indeed increasingly expected to aspire fit and muscular bodies as well, which is communicated through “fitspiration” images and messages (Tiggemann & Zaccardo, 2015).

Gender differences in the longitudinal associations among identity, body image, and ED symptoms were investigated with multigroup analyses. These analyses indicated that estimates for cross-lagged paths could be constrained to equal for girls and boys in all models, similar to findings by Verschueren, Claes, et al. (2018). Estimates for correlated changes could be constrained to be equal for girls and boys except for the correlated change between positive body image and drive for thinness which seemed stronger in girls than in boys. As previously mentioned, the interrelations between positive body image and ED symptoms might be explained by a third variable that influences the constructs simultaneously over time. The third variables that we proposed in this respect, are also more prominent in girls than in boys, such as appearance pressures and self-objectification (APA, Task Force on the Sexualization of Girls, 2007; Striegel-Moore et al., 2009) which might explain why the correlated change between positive body image and drive for thinness emerged to a stronger extent in girls than in boys. Overall, the temporal associations between identity, body image, and ED symptoms were similar in girls and boys. Although research on body image and ED (symptoms) generally

focuses more on girls and females, the results of the current study again emphasize the need to investigate boys' body image and ED symptoms as well (e.g., Tylka, 2011).

### 5.5. *Practical implications*

The present findings demonstrated that identity formation and body image (both body dissatisfaction and positive body image) should be taken into account in prevention and intervention programs targeting ED symptomatology. First, reducing body dissatisfaction might prevent or reduce ED symptoms, for instance by promoting a resistance towards objectification, weight stigma, appearance ideals, and media images (Tylka & Piran, 2019). Furthermore, reducing body dissatisfaction and enhancing positive body image may have a positive effect on identity functioning. Individuals that experience their own body in a positive way are expected to focus less on appearance ideals as possible self-standards. This might provide them with the opportunity to enhance diverse, and healthy identity aspects which plays favorably into identity functioning (Corning & Heibel, 2016). In turn, it has been proposed that healthy identity functioning protects against ED symptoms (Corning & Heibel, 2016; Verschueren, Claes, et al., 2018). However, based on the present results, no clear conclusions can be drawn with respect to predictive paths over time. As youngsters with identity synthesis possibly hold a more diversified identity that is not only linked to appearance, they might be less inclined to aspire appearance ideals which might protect them against drive or thinness (Corning & Heibel, 2016). Indeed, a strong identity has been forwarded as a potential protective factor against appearance-focused behaviors and the aspiration of appearance ideals (Palmeroni et al., 2021).

### 5.6. *Limitations*

The present study is characterized by several limitations that provide avenues for further research. First, although the present results give an indication of direction of effects, no authoritative claims regarding causality can be inferred from the present analyses as other constructs that were not included in the model could have modulated the results.

Second, the current study only included self-report questionnaires which can cause shared method variance. However, due to the inclusion of within-time correlations in the cross-lagged analyses, effects of shared method variance are reduced (Asendorpf & Van Aken, 2003). Although self-report questionnaires measure subjective and internal experiences in the most appropriate manner, it has also been stated that aspects such as contextual factors and memory recall can influence self-reports. Hence, it has been proposed to include a multi-informant approach (e.g., parents) or to include multiple methods (e.g., qualitative interview) to address behaviors that could be complex to interpret, such as binge eating (Fairburn & Beglin, 1994).

Furthermore, assessing variables on a daily level could counteract possible memory biases (e.g., daily diary study, ecological momentary assessment). In addition, these methods would also allow for an in-depth analysis of developmental pathways, within-person mechanisms, and daily implications whereas the current study can only provide information on the between-person level. Furthermore, compulsive exercise was measured by combining different subscales in order to address the multidimensional nature of compulsive exercise. Hence, future research should explore which dimensions of compulsive exercise are especially important in identity and body image functioning. In addition, it has been stated that compulsive exercise might occur more frequently at an earlier age (preadolescence) as its often the first symptom of an ED (Davis et al., 2004; Goodwin et al., 2014). Hence, future research should follow individuals in a longitudinal study from early adolescence until they transition to adulthood.

Third, the current study focused exclusively on identity confusion/synthesis to address the identity formation process. Other identity models should be investigated as well by focusing on more dynamic process-oriented identity models, or by focusing on identity functions or content (e.g., narrative identity; McAdams & McLean, 2013).

Fourth, although identity formation, body image, and ED symptoms might differ across cultures, sexual orientation or gender identity, the present study was conducted in a Western-European sample with a binary focus on gender. Hence, the present sample was rather homogenous and did not take into account possible cultural/ethnic differences or sexual/gender minorities. Additionally, future research should capture cultural and sexual/gender diversities in identity formation, body image, and ED symptomatology by using a more diverse research sample.

## 6. Conclusion

The present two-wave longitudinal study in adolescents provided evidence of longitudinal associations between identity formation, body dissatisfaction and positive body image, and ED symptoms. This study has not fully confirmed previous research on prospective associations between identity formation, body dissatisfaction, and ED symptoms (Verschuere, Claes, et al., 2018) as our analyses did not reveal as many cross-lagged paths as expected. Despite this, clear evidence was found for correlated changes which seems to imply that identity formation, body dissatisfaction and positive body image, and ED symptomatology are associated to each other over time.



# chapter 6

General discussion



The present project adopted an integrative perspective on the link between identity, body image, and eating disorder (ED) symptoms throughout adolescence and emerging adulthood with input from sociocultural theorizing and developmental psychology/psychopathology. Four objectives were investigated in adolescents and emerging adults by using cross-sectional and longitudinal data. In Objective 1, identity disturbance throughout adolescence and emerging adulthood was investigated. Subsequently, the role of identity was examined in sociocultural processes related to body image (e.g., appearance ideals internalization and appearance comparison) (Objective 2) and body image itself (Objective 3). In Objective 4, interrelations between identity, body image, and ED symptomatology were investigated.

## 1. Overview and integration of main findings

In this section, we provide an overview and integration of our main findings.

### 1.1. ***Objective 1: Identity disturbance throughout adolescence, emerging and young adulthood***

Despite the importance of identity problems in young people's development, a detailed picture of identity disturbance throughout adolescence and emerging adulthood is largely lacking. Literature has indicated that many young individuals seem to struggle excessively with identity-related questions (Berman et al., 2009; Gfeller & Córdoba, 2011). Results of *Chapter 2* showed that identity distress indeed increased throughout adolescence, but the highest levels of identity distress generally occurred during emerging adulthood. Emerging adulthood is characterized by instability and an extended time for identity explorations as stable commitments to adult roles and responsibilities (e.g., adulthood, marriage) are typically delayed (Arnett, 2000). Furthermore, the broad range of possibilities in current Western societies might induce a greater amount of identity confusion and uncertainty about future choices. These identity-related problems throughout adolescence and emerging adulthood have been associated with increased psychological problems and psychopathology as well (Gfeller & Córdoba, 2011; Klimstra & Denissen, 2017; Verschueren, Claes, Gandhi, et al., 2019). Furthermore, findings of *Chapter 2* indicated that extending one's explorations of different alternatives into the late twenties (in the relative absence of identity commitments) was related to increased identity distress. In line with previous research, the adaptive function of identity exploration and commitment might dissipate to some extent in the late twenties (Luyckx et al., 2013). More specifically, in the late twenties, societal expectations to commit to social roles increases, hence, a prolonged exploration without the making of commitments in this life period might be indicative of a problematic identity development.

Although most young people show identity progression over time by means of an increasing sense of identity synthesis and less identity confusion (Bogaerts et al., 2021), certain individuals may experience severe identity disturbance throughout their teens and twenties. An interesting question that remains in this respect is: “What is the difference between normative identity confusion and pathological identity disturbance?”. Using developmental psychopathology as a framework, Kaufman et al. (2014) describe that identity functioning can range from (adaptive) identity functioning to (pathological) identity disturbance, similar to principles in the alternative model of personality functioning in Section III of DSM-5 (American Psychological Association [APA], 2013). According to this perspective, identity synthesis/confusion are part of a normal development, whereas severe identity disturbance may be pathological and can be described as an aggravated identity confusion.

Theorists underscored that for many youngsters, an identity crisis is a normal part of development and should not be treated as pathological (Berman & Montgomery, 2014). In line with this tenet, Erikson (1968) described the identity crisis as a necessary turning point and an opportunity for tremendous growth and not so much maladjustment (Côté, 2018). Nevertheless, failure to work through an identity crisis in the long term can induce feelings of identity disturbance and can have a long-lasting negative impact on the lives of young individuals. Aspects that might give an indication of pathological identity crises are severity, prolongation, and aggravation (Côté, 2018; Erikson, 1968). An identity crisis is described as severe when feelings of identity confusion overshadow feelings of identity synthesis. An identity crisis is aggravated when repeated attempts to resolve identity questions remain unsuccessful; and an identity crisis is prolonged when it lasts over a longer period of time.

Interestingly, the severity of identity disturbance might also be dependent upon the social context one lives in (Côté, 2018). For instance, the social context might partly explain why women in our study reported higher levels of identity distress. More specifically, females in Western societies may struggle more to meet the expectations of balancing the dual roles with regard to love/family and career within the preferred time frame (Wängqvist & Frisé, 2013). For instance, with respect to love/family; as women perceive more pressing age deadlines to find a romantic partner and to have children (Billari et al., 2011), they might experience the need to answer different identity questions more quickly than men. In line with this, in comparison to men, at the age of 18 years old, women are more strongly involved in the exploration of their identity (Bergh & Erling, 2005; Frisen & Wängqvist, 2011; Wängqvist & Frisé, 2013).

With regard to the identity domains, *Chapter 2* revealed that females reported significantly higher levels of distress in comparison to males in almost all identity domains (i.e., long-term

goals, career choice, friendships, values or beliefs, and group loyalties). Importantly, although the identity domains are specifically described in the Identity Distress Survey (IDS; Berman et al., 2004), participants might still think about different identity domains when filling in the questionnaire. For instance, the item which addresses the identity domain of long-term goals integrates both aspects of love and work as it is described as “finding a good job, being in a romantic relationship, etc.” (Berman et al., 2004, p. 8). Future research should address love and work as different identity domains to avoid confusion and to specifically disentangle which identity domains seem especially distressing for women or men. Furthermore, as Erikson characterized love, work, and ideology as the three key identity domains under exploration in adolescents and emerging adults (Jensen et al., 2011), it seems necessary to also specifically address the identity domain of love which is not specifically addressed in the IDS (Berman et al., 2004). It is expected that especially women are concerned about this specific identity domain as women still seem to be more oriented towards interpersonal relationships despite increasing efforts for gender equality (Wängqvist & Frisé, 2013).

In sum, the present doctoral project revealed the importance of identity disturbance in adolescents and emerging adults as a substantial proportion of youngsters seem to experience distress due to the inability to resolve their identity crisis in a positive manner. Building further upon this knowledge, the present PhD-project included both a developmental and clinical perspective on identity when exploring its role in the pathway from sociocultural processes to body image and ED symptomatology. Although the damaging effects of sociocultural pressures on body image and ED symptoms in adolescents and emerging adults are widely established, it remains unclear how and for whom body dissatisfaction and/or ED symptoms might develop. Hence, the current project adopted an integrative perspective on the link between identity and body image in adolescents and emerging adults, paying close attention to sociocultural processes.

### **1.2. *Objective 2: The role of identity formation in sociocultural processes related to body image***

We attempted to bridge the gap between identity and sociocultural literature by investigating the role of identity in sociocultural processes which are commonly addressed in body image research (Stice, 1994; Thompson et al., 1999). Our study was the first to focus specifically on individuals' sense of identity confusion/synthesis to address the link between identity and these sociocultural processes, as proposed by Daniels and Gillen (2015). Erikson underscored the importance of the sociocultural context as he described identity formation as a “process ‘located’ in the core of the individual and yet also in the core of his communal culture” (1968, p.22). In line with this, the study described in *Chapter 3* pointed to both

moderating and partial indirect effects of identity formation in the relationship between sociocultural pressures and appearance ideals internalization and appearance comparison in both adolescent boys and girls.

These results are in line with previous studies that examined the relationship between sociocultural processes and self-concept clarity (Vartanian et al., 2018) and identity styles (Verstuyf et al., 2014). The sociocultural context in Western societies is infused with idealized images that inform youngsters on how men and women should behave and look like as a means to pursue worth and success in life (Dittmar, 2007). Besides the knowledge that these sociocultural pressures adversely impact body image in adolescents (Keery et al., 2004), the current study in *Chapter 3* found that sociocultural pressures also negatively impact body image via identity formation. In this study, identity confused youth seemed to invest more in appearance as a primary source of identity, which resulted in increased appearance ideals internalization and appearance comparison. Identity synthesis, however, seemed to protect youngsters against focusing on appearance as a central part of their identity (Corning & Heibel, 2016; Palmeroni et al., 2020; Vartanian et al., 2018) which resulted in decreased appearance ideals internalization and appearance comparison.

*Chapter 3* also revealed interaction effects between sociocultural pressures and identity in the prediction of appearance ideals internalization and appearance comparison; however, these results were less consistent than the indirect effects. In the present study, the interaction between sociocultural pressures and identity confusion significantly predicted lower muscular-ideal internalization and the interaction between sociocultural pressures and identity synthesis significantly predicted lower thin-ideal internalization and appearance comparison. Important to note is that all these significant interaction effects were found in the case of low to average sociocultural pressures, but not for high sociocultural pressures. As an exception, very high sociocultural pressures predicted higher muscular-ideal internalization, especially for adolescents high in identity synthesis. The reason for this seemingly contradictory result is not completely clear, but a possible explanation is that, in the face of very high sociocultural pressures, adolescents high in identity synthesis turn to the muscular-ideal as it might be a healthier option than the thin-ideal (Ramme et al., 2016). These results have further strengthened our confidence that exploring the role of identity formation in sociocultural processes regarding body image development is relevant and important (Daniels & Gillen, 2015).

### 1.3. ***Objective 3: The relationship between identity formation and body image***

As mentioned in the previous objective, identity formation is significantly related to sociocultural processes that play a central role in the development of body image in adolescents (*Chapter 3*). Another important question that remains largely unanswered is how identity and body image are related to each other. Despite an increasing research interest in the ways identity formation and body image are related to each other, their inter-relationship is still poorly understood (Daniels & Gillen, 2015).

Most research on the direct link between identity formation and body image has focused on identity from a developmental perspective (Nelson et al., 2018; Verschueren, Claes, et al., 2018; Wängqvist & Frisé, 2013), whereas a focus on identity from a clinical perspective has only been investigated once (Kamps & Berman, 2011). Hence, the study in *Chapter 4* was the first to address identity formation both from a developmental and clinical perspective in the investigation of body image by using the *Self-concept and Identity Measure* (SCIM; Kaufman et al., 2015). Furthermore, no study directly investigated the link between identity confusion/synthesis and both negative and positive body image. Hence, in *Chapter 5*, we addressed the associations between (1) identity confusion/synthesis and (2) body dissatisfaction and positive body image in a longitudinal study using a developmental perspective.

#### 1.3.1. *Identity → body image.*

Some of the arrows in the theoretical model and some of the theoretical descriptions in the present project forward identity as a possible predictor of body image. Different theoretical frameworks state that the internalization of appearance ideals or the engagement in ED symptoms can constitute an identity substitute or a means of avoiding profound identity work for both adolescents and emerging adults experiencing identity diffusion (Stice, 1994; Vartanian et al., 2018; Verstuyf et al., 2014).

When investigating the pathway from identity to body image, *Chapter 4* indicated that lack of identity (a measure of severe identity disturbance) significantly predicted body dissatisfaction, albeit on a cross-sectional level. Although we expected that identity synthesis and normative identity confusion would also predict body dissatisfaction, *Chapter 4* did not reveal these results. Also, as discussed in *Chapter 5*, no significant cross-lagged paths from (1) identity synthesis and normative identity confusion to (2) body image emerged in the current project. However, longitudinal associations did emerge as relative changes in identity confusion/synthesis over time were related to relative changes in positive body image and body

dissatisfaction (as an indication of correlated change). More specifically, relative changes in identity confusion were positively related to relative changes in body dissatisfaction and negatively related to relative changes in positive body image. Relative changes in identity synthesis were negatively related to relative changes in body dissatisfaction and positively related to relative changes in positive body image. The findings of the current project (*Chapter 4*) seem to indicate that lack of identity is predictive of body dissatisfaction. However, no significant cross-sectional or longitudinal paths from identity confusion/identity synthesis to body image were reported (*Chapter 4 and 5*). These findings are in contradiction with previous results reported in the literature as (Verschueren, Claes, et al., 2018) indicated significant cross-lagged paths from identity synthesis/identity confusion to body image.

### 1.3.2. *Body image → identity.*

Most studies and theoretical frameworks seem to imply that identity functioning precedes body image (Stice, 1994; Vartanian et al., 2018; Verstuyf et al., 2014); hence, in *Chapter 4*, we only focused on identity formation as a predictor of body image. However, body image might affect identity development as well (Daniels & Gillen, 2015; Nelson et al., 2018). Erikson (1968) already indicated that physical changes and sexual maturation during adolescence spark questions and uncertainties about one's identity. Furthermore, gender norm roles with regard to body image or negative feedback on one's body weight/shape might affect certain identity choices or the (absence of) explorations of identity domains (Calogero, 2011; Daniels & Gillen, 2015). Empirical evidence for this association was provided by Nelson et al. (2018) who reported that the decline of appearance/weight esteem during early adolescence hinders healthy identity development at the age of 24. In the current dissertation, significant cross-lagged paths emerged from (1) body dissatisfaction and positive body image to (2) identity synthesis, but not to identity confusion (*Chapter 5*). More specifically, body dissatisfaction predicted relative decreases in identity synthesis over time and positive body image predicted relative increases in identity synthesis over time. In other words, empirical evidence was found for the first time that positive body image is a protective factor in the formation of identity synthesis. Even though these results are partly in line with (Nelson et al., 2018; Verschueren, Claes, et al., 2018), they also differ as no significant cross-lagged paths were found from body dissatisfaction to identity confusion.

### 1.3.3. *Identity ↔ body image.*

The present study found evidence for cross-sectional associations between identity and body image (*Chapter 4*) (Vartanian et al., 2018) and for longitudinal effects in the direction from body image to identity (*Chapter 5*) (Nelson et al., 2018). Despite the fact that we did not found bidirectional associations between identity and body image in *Chapter 5*, one study



found reciprocal effects between identity formation and body image (Verschueren, Claes, et al., 2018). Indeed, identity and body image are expected to co-develop throughout adolescence and emerging adulthood (Daniels & Gillen, 2015).

In sum, despite some inconsistency in results over studies, identity formation and body image seem to be significantly related to each other, both on a cross-sectional and longitudinal level (*Chapters 4 and 5*). Possible explanations for the inconsistent results are provided. First, differences in operationalizations of both identity formation and body image across studies might cause inconsistent results. We will critically reflect on these measurement issues further in the discussion.

Second, in *Chapter 5*, cross-lagged paths were estimated with two measurement waves whereas the study conducted by Verschueren, Claes, et al. (2018) made use of three measurement waves. It might be possible that the estimation of cross-lagged paths would improve with the inclusion of three instead of two measurement waves in *Chapter 5*. Hence, future research should integrate at least three measurement waves in order to grasp the complexity of these developmental processes over time. Furthermore, although the participants in both studies were rather similar with regard to gender distribution and mean age, there were some differences. First, the study of Verschueren, Claes, et al. (2018) included early adolescents whereas the study conducted in *Chapter 5* focused especially on mid-to-late adolescents. Second, the study in *Chapter 5* was more diverse in schooling levels as it included students from the academic/general, technical and vocational track, whereas the study of Verschueren, Claes, et al. (2018) only included students from the general/academic and technical track.

Third, as correlated changes between identity and body image were found in this study (but no consistent cross-lagged effects), it might be the case that identity and body image are interrelated over time due to a third variable such as appearance pressures and body image investment that affects identity and body image simultaneously over time (Corning & Heibel, 2016; Palmeroni et al., 2020). More specifically, appearance pressures predict both identity formation (Palmeroni et al., 2021) and ED symptoms (APA, Task Force on the Sexualization of Girls, 2007; Keery et al., 2004; Tylka, 2011). With regard to body image investment, it has been hypothesized that the more one invests in appearance as a primary source of self-worth, the more likely that identity problems and ED symptoms will emerge (Corning & Heibel, 2016; Palmeroni et al., 2020). In sum, further longitudinal work on identity formation and body image as multidimensional constructs would help us to increasingly understand the ways in which these developmental processes might be related to each other.

#### 1.4. ***Objective 4: The interrelations between identity formation, body image, and ED symptoms***

Research addressing the role of body dissatisfaction in ED symptomatology development is widely established (Shagar et al., 2017) and, more recently, positive body image is forwarded as an important protective factor as well (Tylka & Piran, 2019). More recent research also focuses on the role of identity formation in the development of body dissatisfaction and ED symptomatology (Verschuere, Claes, Gandhi, et al., 2019). However, an integrative perspective on the interrelations between identity formation, negative and positive body image, and ED symptomatology development is largely lacking.

##### 1.4.1. *Body image and ED symptomatology.*

Whereas body image disturbance constitutes a core criterion in the categorical ED diagnoses (APA, 2013), body dissatisfaction is also highly prevalent in nonclinical samples, even to the extent that it has been generally referred to as a ‘normative discontent’ among women (Farrell et al., 2006; Rodin et al., 1984). This is a disturbing fact as negative body image has been identified as one of the most consistent and robust risk factors for the development and maintenance of ED symptoms (Shagar et al., 2017). Also in the present project, with a few exceptions, body dissatisfaction positively predicted ED symptoms (*Chapters 4 and 5*). More specifically, body dissatisfaction predicted drive for thinness both on a cross-sectional (*Chapter 4*) and longitudinal level (*Chapter 5*). Furthermore, bulimia was also predicted by body dissatisfaction at the same point in time, but not over a period of one year. No significant relations were found for compulsive exercise. However, relative changes in body dissatisfaction were related to relative changes in all ED symptoms (i.e., drive for thinness, bulimia, compulsive exercise) over time (as an indication of correlated change). Combined, these results seem to indicate that body dissatisfaction and all ED symptoms co-develop over time, but that body dissatisfaction also predicts drive for thinness over time.

Although body dissatisfaction has been related to drive for thinness, bulimia, and compulsive exercise (Brausch & Muehlenkamp, 2014; Shagar et al., 2017), the current results point to the possibility that the predictive effect of body dissatisfaction on several ED symptoms might differ depending on how body dissatisfaction is operationalized. When we look more closely to the original definition of body dissatisfaction (Cash et al., 1997), it refers to (1) a desire to change certain aspects of one’s appearance and (2) negative affect. A desire to change appearance might result in the engagement in dieting behaviors or striving for thinness whereas negative affect might be more strongly related to bulimic behaviors or compulsive exercise due to its emotion regulatory capacities (Heatherton & Baumeister, 1991; Stice & Shaw, 2002). In *Chapter 5*, the measure of body dissatisfaction focused most strongly on the

desire to change certain aspects of one's appearance. More specifically, we used the *Eating Disorder Inventory-3* (EDI-3; Garner, 2004) which measures the conviction that certain body parts are too fat or too large and should be changed. In line with this, in *Chapter 5*, only cross-lagged paths emerged between body dissatisfaction and drive for thinness and not for bulimia and compulsive exercise. In *Chapter 4*, we combined the previously mentioned body dissatisfaction subscale of the EDI-3 (Garner, 2004) with the *Body Investment Scale* (BIS; Orbach & Mikulincer, 1998). As the latter questionnaire addresses general feelings and attitudes about the body, (negative) affect towards the body is explicitly integrated in the items of this questionnaire. In *Chapter 4*, a significant relationship between body dissatisfaction and drive for thinness and bulimia occurred. In sum, ED symptoms might differ depending on how body dissatisfaction is operationalized. Future research should address body image as a multidimensional construct providing the opportunity to investigate which components of body image are most strongly related to which ED symptoms.

#### 1.4.2. Identity formation and ED symptomatology.

As found in *Chapter 4*, on a cross-sectional level, identity confusion was related to drive for thinness and bulimia, whereas lack of identity was only directly related to drive for thinness. Furthermore, identity synthesis did not uniquely and significantly predict ED symptoms.

When addressing the relationship between identity and ED symptoms longitudinally (*Chapter 5*), we found significant cross-lagged paths for identity synthesis, but not for identity confusion. Furthermore, we only found significant cross-lagged paths from identity synthesis to drive for thinness, but not for the other ED symptoms or in the other direction (from ED symptoms to identity). Interestingly, although the study by Verschueren, Claes, et al. (2018) indicated that identity synthesis seemed to protect against drive for thinness over time, the study in *Chapter 5* indicated that identity synthesis predicted relative increases in drive for thinness over time. However, this cross-lagged path was not consistently significant across all models. On the level of co-development over time, however, relative changes in identity confusion/synthesis were related to relative changes in all ED symptoms over time, in line with expectations.

Overall, the results differ somewhat from the study by Verschueren, Claes, et al. (2018) that reported bi-directional associations between identity confusion/synthesis and drive for thinness and bulimia. The inconsistency in results might be explained by the differences between the study in *Chapter 5* and the study by Verschueren, Claes, et al. (2018) as previously mentioned under Objective 3. Furthermore, the inconsistent results regarding drive for thinness and identity functioning might be explained by the ambiguous nature of drive for thinness in identity functioning (Bruch, 1981; Casper, 1983; Verschueren, Claes, et al., 2018).

It has indeed been stated that drive for thinness could be related to both identity synthesis and identity confusion as striving for thinness can provide individuals with a stronger sense of identity, however, overvaluation of thinness in identity can also result in a more fragile identity (Corning & Heibel, 2016; Verschueren, Claes, et al., 2018).

Although our results regarding the relationship between identity and ED symptoms differ to some extent from those of Verschueren, Claes, et al. (2018), identity formation and ED symptomatology seem to be related to each other throughout the present project at different levels of analyses. Based upon an integration of the results of the current PhD project with the results of Verschueren, Claes, et al. (2018), the results are partially in line with theories on the role of identity formation in the etiology and maintenance of ED symptomatology. In societies that are appearance-focused, especially youth with identity problems might be inclined to aspire appearance ideals and to use their body to fill the identity void they experience (Casper, 1983; Schupark-Neuberg & Nemeroff, 1993). Furthermore, in appearance-focused societies, ED symptoms might be more easily used in order to escape, avoid or distract from distressing emotions, in the face of (severe) identity confusion (Heatherton & Baumeister, 1991; Schupark-Neuberg & Nemeroff, 1993; Wheeler et al., 2001). Indeed, it has been stated that ED symptoms, especially for girls, are socially accepted to some extent (Heatherton & Baumeister, 1991). Indeed, our results, in combination with previous longitudinal research (Verschueren, Claes, et al., 2018) seemed to indicate that individuals with normative and severe identity disturbance (who lack a clear identity) are more vulnerable for drive for thinness as it might provide an identity goal. With regard to the relationship between identity functioning and bulimia, the results of *Chapter 4*, in combination with previous longitudinal research (Verschueren, Claes, et al., 2018) indicated that individuals with normative identity confusion are more vulnerable for bulimia. These results also seem to underscore the possible emotion regulatory function of bulimia (Heatherton & Baumeister, 1991).

#### *1.4.3. Identity formation, body image, and ED symptomatology.*

In *Chapter 4*, cross-sectional indirect effects between lack of identity and drive for thinness were found through the mechanism of body dissatisfaction in adolescents and emerging adults. More specifically, lack of identity predicted drive for thinness directly, but also indirectly through body dissatisfaction. In line with what was previously mentioned, individuals lacking a clear identity might be more susceptible to turn to external standards, such as appearance ideals, to achieve a sense of (pseudo-)identity (Stice, 1994; Vartanian et al., 2018; Verstuyf et al., 2014). When one's identity coincides with appearance, deviations from appearance ideals are more easily observed which increases the risk to develop body dissatisfaction (Dittmar, 2007). However, it is important to note that the cross-sectional study in *Chapter 4* can only provide preliminary information on potential mediation effects as statistical mediation can

only be inferred from longitudinal studies with at least three measurement waves (Karazsia & Berlin, 2018).

Besides lack of identity, we also investigated the relations between identity, body image, and ED symptoms by focusing on identity from a developmental perspective. The study in *Chapter 4* reported no indirect effects in the relationship between identity confusion/synthesis and ED symptoms via body dissatisfaction. However, with regard to identity confusion, in the partial indirect effects model, identity confusion was not significantly related to body dissatisfaction but the direct effect between identity confusion and bulimia remained significant. These results possibly indicate the existence of other mechanisms through which identity confusion is linked to bulimia, such as emotion regulation. Indeed, identity has been related to emotion dysregulation (Kaufman et al., 2014) and bulimic symptoms have been forwarded as ways to cope with difficult emotions (Heatherton & Baumeister, 1991).

Second, with regard to identity synthesis, in contrast to Verschuere, Claes, et al. (2018), no significant indirect pathways from identity synthesis to ED symptomatology via body image emerged in *Chapters 4* and *5*. Although no significant association occurred in *Chapter 4* between identity synthesis and body dissatisfaction, identity might affect other components of body image. Indeed, different operationalizations of body dissatisfaction were used in *Chapter 4* in comparison to the study by (Verschuere, Claes, et al., 2018).

In *Chapter 5*, indirect effects (1) from identity formation to ED symptomatology and indirect effects (2) from ED symptomatology to identity formation could not be calculated as the conditions to establish indirect effects were not fulfilled due the lack of cross-lagged paths. First, identity confusion and identity synthesis did not significantly predict body image and ED symptoms over time. Second, positive body image predicted identity synthesis over time, however, ED symptomatology did not predict positive body image over time. Possible explanations for the absence of cross-lagged paths in *Chapter 5* are already elaborated upon under Objective 3.

In sum, the present doctoral project revealed a meaningful role for identity formation in the pathway from sociocultural pressures to body image and ED symptoms. As we included different identity models, it seemed that both identity from a developmental and clinical perspective is significantly associated with body image and ED symptoms. Adopting a normative-developmental perspective on identity, identity confusion/synthesis was significantly associated with sociocultural processes related to body image. Furthermore, this project revealed significant relations between one's identity structure (identity confusion/synthesis) on the one hand and body image and ED symptoms on the other hand.

However, this project did not fully confirm previous research (Nelson et al., 2018; Verschueren, Claes, et al., 2018) as significant cross-lagged paths with identity confusion and bidirectional associations between identity and body image and ED symptoms were not found in the present dissertation. Adopting a more clinical perspective on identity, severe identity disturbance (lack of identity) was only investigated in relation to body dissatisfaction, drive for thinness and bulimia in *Chapter 4*, and proved to be a significant predictor for body dissatisfaction and drive for thinness. The present project pointed to the relevance and importance to investigate identity formation (both from a developmental and clinical perspective) in the pathway from sociocultural pressures to body image and ED symptoms. We hope that the present set of studies can be an important step for further research to provide a more detailed picture on the associations among identity, body image and ED symptoms.

## 2. Critical reflections on the measurement of the constructs

First, some critical reflections are provided on the different measures that are used in the current project with regard to identity formation, body image, and ED symptomatology. Second, we include some critical reflections on the applicability of the measures to both girls/women and boys/men. Lastly, we reflect upon the use of self-report questionnaires and provide some ideas to include other types of methods as well.

### 2.1. *Measurement of identity formation*

Clinically oriented researchers increasingly emphasized the need to not only focus on normal identity development (as has been commonly done in this research field), but also on (severely) disturbed identity development (Kaufman et al., 2014). Hence, developmental psychopathology inspired this project as it provides a framework that integrates both developmental and clinical identity conceptualizations (Kaufman et al., 2014). We aimed at integrating an Eriksonian perspective on identity as proposed by Daniels and Gillen (2015), while also focusing on different ‘levels’ of identity confusion. More specifically, in the current dissertation, we assess identity synthesis and normative identity confusion with both the *Erikson Psychosocial Stage Inventory* (EPSI; Rosenthal et al., 1981; Schwartz et al., 2009) and the *Self-Concept and Identity Measure* (SCIM; Kaufman et al., 2015) whereas more severe identity disturbance was assessed with the lack of identity subscale of the SCIM (Kaufman et al., 2015) and the *Identity Distress Survey* (IDS; Berman et al., 2004).

In addition, other identity models should be integrated in body image research as well, such as process-oriented identity models (e.g., Wängqvist & Frisé, 2013) and narrative identity models (McAdams & McLean, 2013). People can create an identity by constructing a life-story of themselves, which is described as *narrative identity* (McAdams & McLean, 2013).

Narrative identity refers to an internalized story of the self that is constructed by an individual to define a sense of meaning of oneself and the world one lives in (McAdams & McLean, 2013). More specifically, this story of the self is ever evolving and is built upon the autobiographical past, present, and a narrative anticipation of an imagined future (McAdams, 2011). Interestingly, the construction of these life stories is heavily depended upon sociocultural norms that are part of the many narratives of social life (McAdams, 2011). This way, sociocultural appearance standards might also run through the narrative of youngsters, influencing how they come to see themselves (in the past, present, and future). In line with this, a recent study by Dings (2019) proposed interrelations between narrative identity and embodiment. Furthermore, the ability to construct a narrative of coherent past, present, and future events seemed compromised in patient suffering from an ED (Rasmussen et al., 2017). Future research should address the role of narrative identity besides more quantitative, questionnaire-based neo-Eriksonian identity models in body image – and ED research.

## ***2.2. Measurement of body image***

When looking more closely to body image literature, the past five decades, most research has focused on body dissatisfaction as an appearance-based construct in which “a persistent report of dissatisfaction, concern, and distress that is related to an aspect of physical appearance” (Thompson et al., 1999, p. 11) exists. More recently, body image researchers called for an expansion of the field by not only focusing on appearance, but also taking into account the ways in which people live in their own body more positively, but also more broadly. Positive ways of living in the body are not the opposite from negative body image and have been uniquely related to youth functioning and well-being, over and above negative body image (Tylka & Piran, 2019; Tylka & Wood-Barcalow, 2015b).

In this respect, two perspectives gained increasing interest: positive body image and embodiment. Positive body image entails positive ways of living in the body and integrates different aspects which not only focus on appearance, such as favorable opinions of the body, body acceptance, body respect and engagement in health behaviors, and body protection by rejecting the unrealistic appearance ideals (Tylka & Wood-Barcalow, 2015b). More recently, Maes et al. (2021) offered a conceptualization of positive body image that focused specifically on adolescents which addresses four factors: body-self appreciation, body-other appreciation, resilience against media body ideals, and resilience against negative appearance feedback. Embodiment, in turn, integrates both negative and positive ways of living the body and provides a broader perspective as compared to body image literature (Piran, 2016). Positive embodiment includes “positive body connection and comfort, embodied agency and passion,

and attuned self-care” and negative embodiment includes “disrupted body connection and discomfort, restricted agency and passion, and self-neglect or harm” (Piran, 2016, p. 47).

In the present project, we made use of different measures in an attempt to address both negative and positive aspects of body image. First, in *Chapter 4*, body dissatisfaction was measured by using two subscales: the body dissatisfaction subscale of the EDI-3 (Garner, 2004) and the body feelings and attitudes subscale of the BIS (Orbach & Mikulincer, 1998). The body dissatisfaction subscale of the EDI-3 focuses specifically on the conviction that body parts, such as stomach and hips, are too large (Garner, 2004) and is intensively used in body image and ED research. In an attempt to also include more general feelings towards appearance and the body, the body feelings and attitudes subscale of the BIS (Orbach & Mikulincer, 1998) was integrated as well. This subscale integrates both negative and positive bodily feelings and attitudes.

In *Chapter 5*, a slightly different approach was used as we wanted to uphold an even more differentiated view on body image. Hence, we included both negative and positive body image components which were measured by the body dissatisfaction subscale of the EDI-3 (Garner, 2004) and the *Body Appreciation Scale-2* (BAS; Alleva et al., 2016; Tylka & Wood-Barcalow, 2015a), respectively. In an attempt to measure positive body image, we used the BAS-2 which addresses positive ways of living in the body more broadly than the aforementioned BIS which focused exclusively on the affective dimension of bodily feelings. The BAS-2 integrates different bodily aspects, such as body acceptance despite imperfections, respect towards the body, and engagement in nurturing and healthy behaviors (Tylka & Wood-Barcalow, 2015a). In order to measure negative body image, we decided to only use the EDI-3 to assess body dissatisfaction very specifically. We did not integrate the BIS as we wanted to contrast a more specific body image measure that focuses solely on appearance (EDI-3) to an assessment of positive body image that extends beyond appearance (BAS-2). Furthermore, a conceptual overlap exists between the items of the BIS that addresses positive bodily feelings and the items of the BAS-2.

In sum, in the present project we attempted to provide a differentiated view on body image in line with recent recommendations (Tylka & Piran, 2019). However, further work needs to be performed that integrates an even more broad perspective on body image by also integrating the embodiment framework which address both negative and positive aspects of different bodily components. This broadened perspective on body image might help to grasp a detailed perspective on the complex ways in which youth in today’s society develop a sense of bodily awareness and (dis)satisfaction (Tylka & Piran, 2019).



### 2.3. *Gender-specific measures*

Although most body image research focused heavily on measures that were specifically constructed for females (Striegel-Moore et al., 2009), we also included measures that can assess body image and ED symptoms in males.

Research indeed indicated that due to gender norm roles, women in general are more vulnerable to experience ‘a drive for thinness’ whereas men are more vulnerable for ‘a drive for muscularity’ (Dittmar, 2009). In line with this, in *Chapter 3*, we included gender-adjusted versions of appearance ideals internalization by means of the *Sociocultural Attitudes Towards Appearance Questionnaire-4* subscales: the ‘internalization of the thin ideal’ and the ‘internalization of the muscular/athletic ideal’ (Schaefer et al., 2015). Furthermore, in the present project, these subscales proved to be invariant across boys and girls (*Chapter 3*). However, in other studies these subscales were not invariant across gender, hence, a renewed version of this questionnaire (SATAQ-4R) has been developed which provides researchers with a female and a male version of the questionnaire (Schaefer et al., 2017).

Most body image scales that we used in this dissertation are appropriate measures for both females and males. The BIS and BAS-2 are equally useful in males and females as it addresses body image in a broad way. The EDI-3 (Garner, 2004), however, seems to focus more on bodily concerns encountered by females as this scale addresses “the belief that specific parts of the body associated with shape change or increased "fatness" at puberty are too large (e.g. hips, thighs, buttocks)” (Garner et al., 1983, p. 17). Although many studies used this subscale to assess body dissatisfaction in males (Bully & Elosua, 2013; Iannaccone et al., 2016; Nurkkala et al., 2016; Rodgers et al., 2012; Smolak & Murnen, 2008; Verschueren, Claes, et al., 2018; Verschueren, Claes, Palmeroni, et al., 2019), the EDI-3 addresses physical features that can be more concerning for females, whereas physical features that can be more concerning for males, such as muscularity (Tylka, 2011), are not addressed. Although, leanness is an important aspect of male body ideal (Rodgers et al., 2012; Tylka, 2011), muscularity concerns need to be addressed as well if we want to fully understand male body image.

With regard to ED symptoms, the drive for thinness and bulimia subscales of the EDI-3 assesses ED symptoms which are common in the clinical EDs anorexia and bulimia nervosa which are also more prevalent in females (APA, 2013). Hence, in *Chapter 5* we included a measure for compulsive exercise as it has been forwarded as an important ED symptom in boys and girls (Taranis et al., 2011). However, we did not account for eating behaviors aimed at achieving the muscular ideal such as eating more carbohydrates or using steroids. Hence, in our project, we did not capture the full spectrum of body concerns and disturbed eating

behaviors in males (and females) as our focus was mainly on ED symptomatology common in clinical EDs of anorexia and bulimia nervosa. Hence, we expect an underestimation of body image concerns and ED symptoms in males in *Chapters 4 and 5*. Future studies should address additional measurements that can assess the full spectrum of bodily concerns and ED symptomatology across gender.

Across studies in the current dissertation, in comparison to boys, girls scored higher on identity problems (i.e., identity distress, lack of identity, identity confusion), body image concerns (i.e., sociocultural pressures, thin-ideal internalization, appearance comparison, body dissatisfaction), and ED symptoms (i.e., drive for thinness and bulimia). Boys scored higher on identity synthesis, muscular-ideal internalization, and positive body image than girls. No gender differences were reported for compulsive exercise. However, despite mean gender differences, the interrelations between (1) identity and (2) sociocultural processes (*Chapter 3*) and between body image and ED symptomatology (*Chapters 4 and 5*) were not significantly different in boys/males and girls/females. Furthermore, age trends in identity distress (*Chapter 2*) were similar for girls/females and boys/males as well (*Chapter 2*). The only exception emerged in *Chapter 5* in which some differences in correlated changes between girls and boys were reported. In girls, correlated changes emerged between (1) identity and (2) body dissatisfaction and positive body image, and ED symptoms. In boys, however, correlated changes between (1) identity and (2) ED symptoms did not reach significance in the model that included positive body image. Overall, in the current dissertation and in line with Verschueren, Claes, et al. (2018) identity, body image and ED symptoms are related to each other in a similar way in girls/females and boys/males. The results further underscore the need to include boys/males in research on body image and ED symptoms as they are still often underrepresented in this field of research (Tylka, 2011).

#### **2.4. Use of self-report questionnaires**

The current dissertation focused exclusively on self-report questionnaires. Although self-report questionnaires are most appropriate to measure internal and subjective experiences, the inclusion of a multi-informant (e.g., parents) or a multi-method (e.g., qualitative interview) approach might increase our understanding of the study variables. For instance, qualitative research could enhance our understanding of the lived experiences individuals have of their own body and identity and could provide the opportunity to ask follow-up questions or to provide information on complex items (Fairburn & Beglin, 1994). Furthermore, assessing variables on a daily level (e.g., daily diary study, ecological momentary assessment) could counteract possible memory biases and provide valuable information on daily mechanisms. Hence, although self-report questionnaires seem to give a good indication of the constructs in

the present dissertation, it might be interesting to also include alternative methods in future research.

### 3. Suggestions for further research

In the following section we provide some suggestions for future research on the identity-body image link.

#### 3.1. *Broadening of theoretical frameworks*

With regard to theoretical frameworks that guided this research project, the present project is situated at the cross-road of developmental psychology (with its focus on identity formation) and clinical psychology (with its focus on body image and psychopathology) but also with input from sociocultural frameworks that are commonly applied in body image research (sociocultural pressures and internalization of appearance ideals). Although we perceive it as a strength to combine different theoretical frameworks, other interesting perspectives received little attention in the current project, such as a genetic/neurobiological perspective and a feministic approach.

First, although a focus on psychosocial factors has dominated research on identity and body image, genetic and biological factors might increase susceptibility to develop problems regarding identity and/or body image. For instance, for a range of body image problems, twin and adoption studies revealed moderate-to-strong genetic effects in female and male adolescents and adults (Baker et al., 2009; Suisman & Klump, 2011). Smaller genetic effects were found in males; however, these findings are based on only a few studies and the findings differ across studies as well (Suisman & Klump, 2011). Furthermore, specific genes associated to serotonin transmission might be related to body image problems and drive for thinness as serotonin is implicated in the regulation of mood and food intake (Devlin et al., 2002). In addition, neuroimaging studies point to the existence of potential neural mechanisms such as fronto-limbic brain functioning with prefrontal cortex regions and limbic structures which are implicated in self-reflective and self-evaluative processing which are part of identity formation (Gaudio & Quattrocchi, 2012; Meyer & Lieberman, 2018). In sum, with regard to future directions, research should integrate models that focus on both psychosocial factors and genetic/neurobiological models (Suisman & Klump, 2011). It might be possible that genetic/neurobiological characteristics place certain individuals at increased risk to develop body image concerns or identity problems when confronted with certain environmental risk factors (e.g., appearance pressures). In line with this, it has been proposed to investigate gene-environment interactions in future research (Suisman & Klump, 2011).

Second, feminist social critique has pointed out that, for several generations, the body has been the primary site for female identity (Calogero, 2011). From a very young age, girls are expected to place appearance at the center of one's self by focusing on what they wear or how they look like to others (APA, Task Force on the Sexualization of Girls, 2007). Girls, more so than boys, are praised for their looks but are also judged by how they appear to others. As women's bodies are watched and evaluated by others, body consciousness increases and girls increasingly learn to view their own body from an outsider's perspective (i.e., self-objectification). As a consequence, normative body dissatisfaction in females is described as a social phenomenon by feminist theorists, and not as a function of individual psychopathology (Calogero, 2011). From this feministic perspective on how girls and women learn to view themselves in terms of appearance, a lot of psychological research has emerged that revealed a link between self-objectification and psychopathology such as body image problems, ED symptoms, sexual dysfunctions, and lowered well-being (Moradi & Huang, 2008).

More recently, theorists raised the question how self-objectification might impact identity development in girls (Daniels & Gillen, 2015). First, the constant bodily consciousness might ask a lot of cognitive resources from girls (Gay & Castano, 2010), which could make it harder to reflect on identity issues. Furthermore, an identity goal that still remains for women in Western societies is a pursuit of sexual attractiveness to attract males and get married (Calogero, 2011). As a consequence, appearance-related identity choices might be chosen before other alternatives or certain identity domains might not even be explored. For instance, girls might choose leisure activities that are more appearance-focused, such as dance or fashion. However, higher levels of self-objectification might also impact study or occupational choices. For instance, women are underrepresented in science, engineering, math, and technology. In line with this, an experimental study indeed revealed that self-objectification negatively impacted math performance (Fredrickson et al., 1998). Although self-objectification and its negative consequences appear more strong in women, negative effects from self-objectification in males were found as well (e.g., lower math performance Hebl et al., 2004). In sum, these studies underscore the importance to investigate the interrelation between identity formation and self-objectification (in both directions) in females and males (Daniels & Gillen, 2015).

### **3.2. *Broadening of the age span***

In this research project, we focused on the developmental stages of adolescence and emerging adulthood as both identity formation and body image processes come to the foreground during these life stages. In general, identity strengthens throughout adolescence and emerging adulthood and develops progressively in most individuals (Erikson, 1968;

Meeus, 2011). However, identity formation and body image are lifelong processes which means that they unfold already before adolescence and continue to do so well into adulthood. The identity process can come to foreground at any time in one's life, depending on developmental challenges or specific life events that might inspire or push people to rethink one's own life (Erikson, 1968).

Second, longitudinal studies on body dissatisfaction and ED symptoms reported either stability or increases in body dissatisfaction and ED symptoms from early adolescence to young adulthood (Bucchianeri et al., 2013; Slane et al., 2014; Verschueren, Claes, Palmeroni, et al., 2019). After the age of 18, body dissatisfaction and drive for thinness further increased, whereas bulimia remained fairly stable between the ages of 18 and 25 years (Slane et al., 2014). Although clinical EDs often persist into adulthood, the symptoms themselves often develop and have their first onset during adolescence. Factors that are associated to the increase of body dissatisfaction and ED symptoms are the onset of puberty and accompanying biological and physical transitional changes (e.g., BMI increase, acne) which bring the bodies of girls further away from cultural appearance standards.

Hence, most studies on body image and ED symptoms focused on the developmental period of adolescence and young adulthood. However, concerns with regard to body and weight and ED symptoms are already reported in elementary school children (6 -12 years) (Holt & Ricciardelli, 2008; Smolak, 2011). Especially girls seem more oriented towards appearance from a young age on which might be explained by gender-role expectations and the encouragement to play with appearance-oriented toys (e.g., Barbie) or to engage in appearance-oriented activities (e.g., focusing on hair or outfits of themselves or play characters) (APA, Task Force on the Sexualization of Girls, 2007). On the contrary, whereas girls are more oriented towards appearance, boys are more oriented towards action which is also reflected in toys and activities (e.g., sports). Although bodily concerns occur with lower frequency and severity in pre-adolescents in comparison to adolescents and adults, body-related concerns and behaviors during childhood are forwarded as risk factors for the concurrent and later development of (ED) pathology (Holt & Ricciardelli, 2008).

Furthermore, more recent studies also focused on the developmental stages beyond young adulthood. Women from over the age of 40, for instance, experienced feelings of body dissatisfaction to a similar extent as younger women (Slevec & Tiggemann, 2011) or even to a higher extent (Runfola et al., 2013). In line with this, maladaptive eating behaviors and the onset of EDs are also more common during midlife as previously believed (Slevec & Tiggemann, 2011). Indeed, during this life phase, menopause and anxiety for aging and the loss of a youthful appearance might induce body dissatisfaction. Overall, body dissatisfaction

seems to remain important across the life span in women (Runfola et al., 2013), although it has also been proposed by Cash and Smolak (2011) that some evidence exist for increasing positive body image in women aged 60 and older. Hence, future research should address the identity-body image interplay not only in adolescents and emerging adults but also in individuals across the life span ranging from childhood to old adulthood.

### **3.3. *Integrating a person-centered approach***

Besides general developmental trends, substantial inter-individual differences exist in how body image and identity develop over time. However, most studies, including the studies conducted in the current PhD project, focused on the between-person level in which the scores provided are relative to the group. Between-person models provide no information on how associations between identity, body image, and ED symptoms fluctuate within individuals. However, one's body image may be shaped and molded during one's identity process, and, at the same time, body image experiences may have important ramifications for identity formation within the individual. Hence, it seems necessary to integrate a person-centered approach to investigate subgroups of individuals displaying (sub)optimal development. Furthermore, in order to pay more attention to fluctuations within individuals, future research should investigate intra-individual stability and fluctuations in identity and body image functioning over the longer-term and at the daily level (by using an experience sampling method). An in-depth analysis of developmental pathways, within-person mechanisms, and daily implications will provide important information for the development of interventions (Hamaker et al., 2015).

### **3.4. *Pathology and well-being***

Future research should investigate the link between identity and body image above and beyond ED symptoms, in community and clinical samples. In the current project, body dissatisfaction was conceptualized as a well-established risk factor in ED symptom development and maintenance in community samples (Shagar et al., 2017). The present project indeed mainly focused on subclinical ED symptoms which are part of clinical EDs of anorexia and bulimia nervosa. Another way to look at negative body image, is to conceptualize it as an ED symptom in itself as it represents a core criterium in ED diagnoses, such as in anorexia and bulimia nervosa (APA, 2013). Individuals with anorexia nervosa experience specific disturbances regarding the perception and experience of the own body and individuals with bulimia nervosa are also overly concerned with body shape/weight (DSM-5; APA, 2013). Hence, future research could focus on clinical EDs as well by examining the identity-body image link in clinical samples.

Second, people who experience their own body more negatively might also experience themselves as separate from their body, which increases the risk to target their own body when confronted with difficult emotions. In this respect, besides ED symptoms, non-suicidal self-injury (NSSI) also involves harm inflicted on the body (Brausch & Muehlenkamp, 2014). NSSI has been related to negative body image (Brausch & Muehlenkamp, 2007; Muehlenkamp et al., 2012) and identity. For instance, NSSI can be used to claim a sense of self in the absence of life-defining goals (Breen et al., 2013). In line with this, research at our center has found significant associations between NSSI and identity diffusion both in community and ED samples (Claes et al., 2015; Gandhi et al., 2017). Additional weight-control behaviors or appearance-enhancing behaviors (e.g., botox, cosmetic surgery) or drugs (dieting pills, anabolic-androgenic steroids) might be interesting to include as well as they might also negatively impact the daily lives of youngsters. Although previous sociocultural frameworks focused most intensively on ED symptoms (Stice, 2002; Thompson & Stice, 2001), future research should address the identity-body link in various pathological behaviors that extend beyond ED symptoms, such as NSSI and appearance-enhancing behaviors.

Third, besides the inclusion of pathology measures, identity and body image might also play a significant role in general health and well-being. For instance, healthy identity has been related to increased self-esteem, positive well-being and adjustment (Côté & Schwartz, 2002; Waterman, 2007). Furthermore, positive body image has a positive effect on general well-being (Tylka & Piran, 2019; Tylka & Wood-Barcalow, 2015b) and on health behaviors such as sun protection, cancer screening, and alcohol consumption (Andrew et al., 2016). Hence, as also forwarded by positive psychology, it is not only important to protect individuals against psychopathology, but it is also important to focus on conditions that can increase general well-being and help people thrive in their lives (Seligman & Csikszentmihalyi, 2000). Hence, research should include measures that address psychopathology, but also well-being in multiple areas (physical, emotional, social, and psychological).

### **3.5. A broader perspective on culture/ethnicity and socioeconomic status**

In Western countries, self and body are individualistic notions, whereas in many non-Western countries a collectivistic perspective is more common (Hofstede, 1980). Individualistic countries are defined by a focus on the individual in which personal interests/achievements, autonomy and, independence are central, whereas in collectivistic countries people see themselves more as part a social community and not so much as isolated individuals (Becker, 2013; Hofstede, 1980). As the meaning of self and body vary across cultures, the identity formation process and body image might differ as well depending on cultural standards (Moradi, 2010; Smith, 2011). Apart from differences in culture and

ethnicity, individuals also differ in socio-economic status which could have an impact on developmental processes, such as identity formation and body image. In the current PhD project, we did not take socio-economic status into account, hence, future research should be more sensitive to the social standing of an individual (and their family).

### *3.5.1. Identity formation in Western vs. non-Western countries.*

Erikson (1950, 1968) stated that the cultural context is deeply intertwined with the individual and interacts with personal identity formation. In individualistic countries, identity is more strongly defined by individual characteristics and goals, whereas being a member of a dense social group predominantly defines one's identity in collectivistic countries (Smith, 2011).

The world we live in is characterized by increased cultural diversity due to globalization and immigration which has an impact on the personal identity process as well (Smith, 2011). In line with this, Erikson stressed that cultural changes can impose a difficulty to make connections between the past and the future (i.e., self-continuity) which is a central aspect in the formation of a healthy identity (Syed & Fish, 2018). As forwarded by Jensen et al. (2011) both opportunities and risks with regard to identity come alongside this cultural diversity. First of all, globalization has led to an expansion of possible identity options for youngsters, also in developing countries (Jensen et al., 2011). With regard to marriage and romantic relationships, young people have more freedom and experience less influence from family to choose a partner. Furthermore, increased flexibility in gender roles provided more identity options for women who can explore personal identity preferences beyond becoming a wife and mother. For instance, women can educate themselves and choose a profession from which they were formerly excluded (e.g., medicine, law). Besides an increase in opportunities, this cultural diversity can also result in cultural identity confusion (Jensen et al., 2011). For instance, individuals who are presented with multiple cultural contexts need to negotiate the identifications with their own ethnic group while living among other ethnic/racial groups. For instance, youngsters might lack to commit to any culture (i.e., marginalization; Berry, 1997) or bounce between different cultural identities across different contexts. This cultural identity confusion has been related to several internalizing and externalizing symptoms (Hermans & Dimaggio, 2007).

Although we could not provide information on ethnicity and race in the current dissertation, it is important to note that individuals from ethnic minorities who live in Flanders need to negotiate the identifications with their own ethnic group while living among other ethnic/racial groups which could result in cultural identity confusion. Hence, future research



should be more sensitive to cultural/ethnic differences by addressing these research questions from a more diverse cultural perspective (Syed & Fish, 2018).

### *3.5.2. Body ideals in Western vs. non-Western countries.*

With regard to appearance ideals and cultural standards, we especially focused on appearance ideals that are most prominent in Western societies. With regard to our specific Flemish sample, appearance ideals are in line with Western-European appearance ideals which refer to thinness and sexual attractiveness for girls and lean muscularity for boys (Cash & Smolak, 2011). However, it has been stated that although thinness and lean muscularity are often central in appearance ideals, appearance ideals are described as changeable and can differ across social groups. More specifically, appearance ideals seems to be influenced by the people in the social group with whom you compare your own appearance with (Aniulis et al., 2021).

With regard to non-Western countries, these appearance ideals might be different as appearance ideals are interpreted and perceived differently across cultures (Moradi, 2010). Indeed, body ideals are dependent on local standards and are also determined by aspects such as availability of food and industrialization (Cash & Smolak, 2011). In general, in most parts of the world, the waist-to-hip ratio is key for females and the waist-to-chest ratio is key for males. Many non-Western countries tend to embrace slightly more curvaceous bodies than Western countries do (Cash & Smolak, 2011). In line with this, it has been stated that racial/ethnic minority girls/women, such as Hispanic/Latino, but especially African American tend to have more positive body image, especially if they have a stronger ethnic identity (Capodilupo & Kim, 2014). However, caution must be paid, as these findings are often contradictory and as body image research often focuses on typical Western bodily concerns such as thinness (Capodilupo & Kim, 2014). Ethnic minority women might be pressured to adhere to appearance standards from the dominant culture and those provided from their own family/culture. For instance, pressures about skin tone, hair color and texture, facial features, and shape and size of body parts may shape body image problems and ED symptoms for racial or ethnic minority women (Moradi, 2010).

In countries that undergo industrialization, appearance ideals tend to shift more towards Western ideals and more individualistic beliefs that an individual can control his/her own body (in order to comply cultural standards). In line with this, a concern that arises is that Western appearance ideals and its negative consequences are exported to the rest of the world due to globalization (Anderson-Fye, 2004, 2009). This might be especially the case in, for instance, industrialized Asian countries. Korean and Chinese women reported even higher levels of body

dissatisfaction and ED symptoms in comparison to women living in the United States which is also visible in the expanding market of plastic surgery for cosmetic purposes (Jung et al., 2009; Lin & Raval, 2020). Collective pressures to maintain a perfect appearance might exist in order to increase marital prospects and not bring shame or dishonor to the family (Lin & Raval, 2020) or to provide intergenerational success for the family (Wong et al., 2017). In line with this, it has been stated that ethnic minorities might be at increased risk to develop negative body image or ED symptoms as they might be in conflict with the dominant Western appearance ideals and more traditional gender roles of their culture (Lin & Raval, 2020). However, not all countries which undergo globalizing change are characterized by an increase in ED symptoms, which seems to indicate that effects of globalization on body image tend to be multiple and highly dependent upon local contexts (Becker, 2004).

In sum, the Western individualistic perspective on the body is increasing around the world, but it is not universal. However, as ethnic minorities might be especially vulnerable to experience conflicting body image expectations, it is important to address race and ethnicity in body image as well. Overall, non-Western countries are underrepresented in body image research, hence, future research should integrate body image views and ideals from a multicultural context to increase our understanding of body image in non-Western countries (Cash & Smolak, 2011).

### **3.6. *Athletic/dance identity***

In recent years, an increasing number of collegiate athletes testified to suffer from an ED. For instance, Belgian athlete Louise Carton shared her own personal experience with an ED on a personal blogpost in May 2019 (Carton, 2019). In line with this, research has indicated that athletes are at increased risk to develop ED symptoms, however, only a minority of athletes will also develop a clinical ED (Smolak et al., 2000; Thompson & Sherman, 2014).

Athletic identity refers to the extent that an individual identifies with the role of being an athlete (Brewer et al., 1993) and is continuously shaped by both positive and negative sport experiences (Chang et al., 2018). In athletes who developed a strong athletic identity, challenges of their athletic identity might impact their overall identity as other identity aspects might be underdeveloped. This might also partly explain why athletic identity is related to burn-out in athletes as they might lack alternate sources of esteem that otherwise could help in protecting against self-esteem blows (e.g., poor performances). A strong athletic identity could motivate athletes to engage in athletic-related activities, but can also increase negative outcomes such as body image concerns and ED symptomatology (Chang et al., 2018; Turton et al., 2017). Relatedly, dance identity has been referred to as the degree to which one identifies

as a dancer, and has been negatively related to body appreciation in female modern dancers (Langdon & Petracca, 2010).

Athletes (especially on a more competitive level) experience unique sport and appearance pressures which have also been related to higher levels of subclinical ED symptoms (weight loss, muscle gain, change of physique) in comparison to nonathletes (Petrie et al., 2009). Indeed, in order to enhance physical performances, athletes are continuously regulating their weight and dietary intake. Furthermore, athletes are highly aware of their own body appearance and functionality and their body is continuously commented upon and evaluated by others (especially in a negative way) to further improve sports/appearance performances. In addition, when practice and competition uniforms are revealing (e.g., gymnastics, swimming), self-objectification and body image concerns increases (Nemeth et al., 2020). In aesthetic and judged sports (e.g., figure skating, synchronize swimming, gymnastics) besides physical performance and skills, athletes are evaluated on their appearance which increases the risk to develop body dissatisfaction and ED symptoms (Kong & Harris, 2015). Important to note is that recreational athletes, in comparison to collegiate athletes, might be even more vulnerable to develop body image concerns as they are less likely to achieve the same body standards as collegiate athletes (Hausenblas & Downs, 2001). Relatedly, studies in dancers revealed that established dancers reported more negative body image and ED symptoms as a focus on body is inherent in dancing due to, for instance, mirror use (Radell et al., 2014) and clothing (Price & Pettijohn Ii, 2006). Importantly, research focused especially on ballet dancers who are continuously encouraged to look thin and who also reported higher drive for thinness, body dissatisfaction and self-objectification (Anshel, 2004; Radell et al., 2017; Tiggemann & Slater, 2001). However, body image research should also include more non-balletic types of dance as non-appearance focused types of dance have been associated with positive body image as well, such as modern, street, creative, aerobic, and belly dance (Swami & Tovée, 2009; Tiggemann et al., 2014). Hence, future research should address identity, body image and ED symptoms in collegiate and recreational athletes and dancers from different types of dance.

Besides the previously mentioned bodily concerns in athletes, positive body image feelings or pride has been reported as well. In other words, conflicting feelings towards the body seem prominent in athletes (Galli & Reel, 2009). Athleticism is indeed related to increased positive body image as athletes' physique are often similar to sociocultural appearance ideals due to their level of fitness and activity. However, many athletes also experience a lack of ideal leanness or muscularity, probably because they are pressured by others to achieve appearance ideals, but also because they are highly competitive against other athletes who might

approximate or even exceed appearance ideals (Galli & Reel, 2009; Thompson & Sherman, 2014). Especially in female athletes, a conflict exists between social and athletic body ideal, as society expects attractive women to be lean and toned, but not too toned or muscular (Krane et al., 2004). Hence, future research could address both negative and positive feelings towards the body in collegiate and recreational athletes.

### **3.7. Gender and sexual identity (LGBTQ+)**

Perceptions people have of themselves are shaped by the sociocultural context one lives in, which generally emphasizes heterosexuality and classifies gender into either masculine or feminine. When one deviates from this dominant culture (with regard to sexual and/or gender identity) developing a personal sense of identity can be more challenging. Coming to terms with one's own sexual orientation/gender identity and integrating it into one's own identity can be challenging, especially if one's homosexuality/gender identity is not accepted by the individual itself, significant others, or the community one lives in. It has been stated that transgender youth who developed a stronger gender identity also reported more social awareness and self-acceptance (McGuire et al., 2016) which could foster general identity formation as well.

Most frameworks presumed that the healthy endpoint of identity development in transgenders is the achievement of an unambiguous identification of either a lesbian-gay-bisexual identity or either male or female in transgender individuals (Devor, 2004). However, increasing empirical evidence revealed that such models fail to grasp the complex and diverse experiences of sexual/gender-minority identity (Diamond, 2008) (Diamond et al., 2011). For instance, the sexual/gender-minority identity development is often characterized by non-linear and abrupt processes in which multiple identity states, such as identity exploration and (re)negotiation shift over time (Diamond et al., 2011).

With regard to body image, internalized homonegativity and transgenderism have been associated to body image problems and ED symptoms (Jones et al., 2016; Kimmel & Mahalik, 2005; Tran et al., 2020). Homosexual people might also oscillate between oppressing appearance ideals forwarded by either the dominant culture or the gay culture, and specific subgroups exist that also denote different body ideals (Kelly, 2007). Up till now, research seems to indicate that, in comparison to heterosexuals, gay men seem to be more at risk and lesbian women at lower risk to experience negative body image (Morrison et al., 2004). However, this research is limited and the full scope of body image issues across sexual orientation is not addressed.

Transgender youth may also be at greater risk to develop negative body image and ED symptoms as they are confronted with unique stressors regarding body and gender (Romito et al., 2021). Transgender youth experience an incongruence between their own body and their sense of gender identity which increases with the onset of secondary sex characteristics (Romito et al., 2021). As these youth feel that their body is developing in the wrong direction, ED symptoms might develop in order to minimize secondary sex characteristics (Coelho et al., 2019). However, both high scores on negative and positive body image were found in transgender youth and both gender transitioning and gender identity played a role therein (McGuire et al., 2016; Romito et al., 2021). For instance, transgender youth who developed a stronger gender identity also reported increased body satisfaction (McGuire et al., 2016).

In sum, although the majority of research on adolescents included heterosexual and cisgender youth (i.e., youth in which their gender identity is in line with their sex at birth), future research should address identity- and body-related questions in sexual/gender minority youth. Furthermore, it seems especially important to take on a holistic approach in order to create a complete picture of the lived experiences of these individuals as they often occupy multiple identities (i.e., intersectionality) that all carry specific expectations with them. For instance, the intersection of two identities (being gay and an athlete, being female and an athlete), might impose additional challenges to adhere to conflicting idealized body standards (Filiault & Drummond, 2008; Krane et al., 2004). In line with this, appearance ideals should be addressed more broadly as ideals are highly dependent on the subgroups youths identify themselves with (Aniulis et al., 2021). Hence, despite the importance of thinness and muscularity, other appearance ideals might exist as well across subgroups. In line with this, the SATAQ-4R included a subscale that addresses a more general desire for an attractive appearance (Schaefer et al., 2017) which could address the internalization of an idealized appearance without specifying the content of this ideal.

### 3.8. **Trauma**

Negative (early) life events and traumatic experiences might hinder the development of a healthy identity, which in turn, seemed to result in increased body dissatisfaction and ED symptoms (Vartanian et al., 2018). ED symptoms and negative body image, and especially body shame, have been clinically and empirically related to traumatic experiences (Preti et al., 2006; Rodríguez et al., 2005; Sansone & Sansone, 2007). Interestingly, not only sexual abuse, but also objectification, sexualization of the body, and unwanted sexual attention as a child might induce body image problems in adulthood (Whealin & Jackson, 2002). Theoretically, it has been proposed that victims of sexual abuse experience feelings of shame and disgust towards one's own body. In general, a disruption to body ownership occurs in which a safe,

rightful ownership of one's body is absent (Piran, 2016). These negative emotions might be so overwhelming that coping mechanisms, such as self-harming behaviors are used. In an attempt to either destroy one's body or to regain control over it, these individuals might purge, starve themselves, for instance. In an attempt to 'repair' one's body, especially body dissatisfied individuals who live in a context that encourages thinness, might engage in ED symptoms.

### **3.9. COVID-19**

The COVID-19 pandemic poses a large burden on the (daily) lives of youngsters. Although the studies in this dissertation were conducted before the onset of the pandemic in Belgium, it should be noted that vulnerability to develop body image concerns and ED symptoms increased during the pandemic (Rodgers et al., 2020; Sciensano, 2021). Proposed risk factors in this respect are increased social media use and confrontation with idealized images and the widespread message that people should exercise during the pandemic (Fernandez-Aranda et al., 2020). Furthermore, youngsters might experience lack of support by peers or loneliness which might be exaggerated by imposed quarantine regulations or might turn to ED symptoms as a way to cope with stress imposed by the pandemic and lockdown (Fernandez-Aranda et al., 2020). The COVID-19 pandemic might also disrupt healthy identity development as it increases general psychological distress and the psychosocial support systems of youngsters might be disrupted due to the pandemic and quarantine measures (e.g., spending less time with peers). For instance, research on the impact of negative life events or natural disasters on identity formation indicated more identity problems than would be expected under normal circumstances (Scott et al., 2014; Vartanian et al., 2018).

## **4. Implications**

Collectively, the findings of the present dissertation have some implications for the prevention and intervention of body image problems and ED symptomatology. It is important to note, however, that no strong conclusions for clinical practice can be made as we did not conduct interventional studies that would allow us to infer causal conclusions.

### **4.1. Enhancing positive identity formation**

Although most young people show identity progression over time (Bogaerts et al., 2021) some youngsters experience severe identity confusion (*Chapter 2*). As identity confusion is also related to a range of pathological behaviors (Klimstra & Denissen, 2017; Verschueren, Claes, Gandhi, et al., 2019), it is necessary to bring identity problems into attention in order to foster young people's development in the challenging transition to adulthood.

Interestingly, the severity of identity confusion might be dependent upon the social context one lives (Côté, 2018). Although a lot of social expectations exist, it is also somewhat expected

from youngsters to develop a sense of identity on their own as autonomy is highly valued in Western countries. For some youngsters, the instability and changes that characterize adolescence and emerging adulthood combined with the numerous possibilities available can be overwhelming. Parents, teachers, and the community can support youngsters in their identity formation process by helping to find a good person-context fit and by preparing them emotionally for certain identity choices (Côté, 2018). More specifically, adaptive exploration and commitment processes can be stimulated and prolonged ruminative exploration cycles should be remedied in order to make room for adaptive identity work.

In this identity work, it seems important to stimulate different aspects of the self that are not only related to body and appearance, such as non-body-related interests and talents. Indeed, with regard to the relationship between identity and body image, the present project revealed that identity confusion positively and identity synthesis negatively predicted appearance ideal internalization, appearance comparison, body dissatisfaction, and ED symptoms (*Chapters 3, 4 and 5*). In societies that highly value appearance, youngsters might focus on appearance ideals in order to define a sense of identity. For these individuals, threats to body and appearance (e.g., weight gain) might threaten the identity more broadly when other sources of self-esteem are lacking. Hence, it seems especially important to develop a more diversified sense of self which is less closely linked to appearance as it might protect youngsters to strive for appearance ideals. Besides the enhancement of healthy identity choices, interventions such as cognitive restructuring may be used to challenge self-schemas that emphasize appearance over other attributes of the self (Schaefer & Thompson, 2018).

#### **4.2. *Resisting negative body image and cultivating positive body image and embodiment***

First, in line with previous research (e.g., Wilksch et al., 2014), reducing negative body image and increasing positive body image might reduce or prevent ED symptoms in prevention and intervention programs (*Chapters 4 and 5*). Besides the effects of body image on ED symptomatology, appearance pressures and body image also seemed to impact identity formation (*Chapter 3 and 5*). Hence, reducing appearance pressures and negative body image as well as enhancing positive body image might have a positive impact on ED symptoms and general identity formation.

What we see now, especially in Western countries, is that bodies are portrayed as objects of sexual desire and that positive outcomes such as intelligence, competence, and success are equated to an ideal appearance. Furthermore, it is strongly believed that the body is controllable and that beauty standards can be attained if you are willing to work hard

(McKinley & Hyde, 1996). These beliefs of what the body defines, engenders that many individuals experience a negative or disturbed relationship with their own body. In this respect, it seems especially important to change this disturbing relationship towards the body by promoting a resistance towards objectification, weight stigma, appearance ideals, and media images (Tylka & Piran, 2019). For instance, self-compassion and use of non-appearance related media has been shown to have positive effects in this respect (Andrew et al., 2016).

As body ideals and expectations are socially constructed, parents, peers, teachers, and the larger community might play a vital role in enhancing more healthy attitudes towards the body. A lot can be learned from cultures that take a more healthy stance towards the body. For instance, a strong social network in African American cultures seems to provide young girls with more resistance against dominant (Western) appearance ideals (Lovejoy, 2001). Family members and peers tend to be more supportive and provide body image related messages that are positive and more accepting than in Western countries (Parker et al., 1995).

More recently, this renewed interest towards body acceptance is visible in social media as well, which is described as the *body positivity* movement. Body positivity refers to social media content that challenges dominant appearance ideals by portraying and promoting a diversity of bodies and appearances (Stevens & Griffiths, 2020). An experimental study revealed that people who watched pictures of average-sized bodies, experienced less body dissatisfaction (Tiggemann et al., 2020). In line with this, body acceptance by others (friends, family, dating partners, society, media) can have a positive effect on body image as well (Andrew et al., 2016).

Although body positivity has been related to positive body image and emotional well-being (Stevens & Griffiths, 2020), caution should be paid as larger bodies are still underrepresented in social media and many posts still contain messages that encourage thinness and weight-loss (Lazuka et al., 2020). Furthermore, body positivity messages are still centralized around appearance and efforts should be made to approach the body from another perspective as well. Increasing favorable opinions towards one's body might be enhanced by focusing on body functionality (i.e., what can the body do in comparison to what it looks like), conceptualizing beauty more broadly, intuitive eating, and participating in embodying activities. While participation in sports is generally protective of body image, practicing sports that emphasize appearance such as ballet-dancing is related to increased body image problems and ED symptoms (Smolak et al., 2000). For instance, embodying activities such as belly dancing and yoga have been proposed as especially protective with regard to body image (Mahlo & Tiggemann, 2016; Tiggemann et al., 2014).



## 5. Conclusion

The present doctoral project adopted an integrative perspective on the link between identity, body image, and ED symptoms throughout adolescence and emerging adulthood. This project was guided by interdisciplinary theoretical frameworks from developmental psychology and developmental psychopathology (clinical and normative identity formation), clinical psychology (body image and ED symptomatology), and social sciences (sociocultural pressures and internalization of appearance ideals). This project addressed four objectives which were investigated with cross-sectional and longitudinal data in community adolescents and emerging adults.

First, identity disturbance throughout adolescence and emerging adulthood was investigated. These results indicated that identity distress increased throughout adolescence, with the highest levels of identity distress generally occurring in emerging adulthood. Second, in an adolescent sample, the role of identity was examined in sociocultural processes related to body image. This study revealed both moderation and indirect effects of identity in the relationship between sociocultural pressures and the internalization of appearance ideals and appearance comparison. Third, significant associations between identity and body image were reported both cross-sectionally and prospectively over time. Fourth, interrelations between identity formation, body image, and eating disorder symptomatology were indicated as well. More specifically, this project revealed that identity from different perspectives (both normative-developmental and clinical) was significantly related to body image and ED symptoms. In sum, our research highlighted the relevance of studying the role of identity formation in body-image related sociocultural processes, body image, and ED symptomatology (Daniels & Gillen, 2015). We hope that the present doctoral project can inspire future research to provide a more detailed picture on the link between identity, body image and ED symptoms.



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