


RESEARCH ARTICLE

Body-related cognitive distortions (thought–shape fusion body) associated with thin-ideal exposure in female students—An ecological momentary assessment study

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Funding information

Otto-Friedrich-University of Bamberg, Grant/Award Numbers: 02060303, number 02060303; H2020 European Research Council, Grant/Award Number: ERC-StG-2014 639445 NewEat

Abstract

Etiological models of eating disorders (EDs) describe body dissatisfaction (BD) as one of the major influences fostering dysfunctional body-related behaviour and disordered eating behaviour. BD is influenced by repeated exposure to thin ideals that evoke high self-ideal discrepancy and result in body-related cognitive distortions such as thought–shape fusion body (TSF-B). The aim of this study was to investigate the covariation of daily media exposure and the experience of TSF-B in a naturalistic setting. It was further analysed whether TSF-B is associated with self-ideal discrepancy, dysfunctional body-related behaviour, and disordered eating behaviour. Moreover, person-related predictors of TSF-B were explored. Altogether, 51 healthy female students (mean age 21.06 years, $SD = 1.76$) participated in an ecological momentary assessment study with four daily surveys during 10 consecutive days. Exposure with thin ideals in contrast to exposure to unspecific media contents went along with the experience of TSF-B. TSF-B was associated with higher self-ideal discrepancy and dysfunctional body-related behaviour as well as more pronounced disordered eating behaviour, suggesting that TSF-B is a common phenomenon in young healthy females' everyday life. A main effect of trait measures (e.g., pre-existing BD) on TSF-B was observable but has no moderating effect. Thus, a specific vulnerability has not been detected.

KEYWORDS

body dissatisfaction, cognitive distortions, eating disorder pathology, ecological momentary assessment, thin ideal, thought–shape fusion body

1 | INTRODUCTION

Eating disorders (EDs) are characterized by a disturbed eating behaviour such as severe restriction of food intake or binge eating with and without compensatory behaviour. Moreover, ED pathology includes a distinct negative body image and dysfunctional body-related behaviour. The most prevalent ED diagnoses such as binge-eating disorder, bulimia nervosa, and anorexia nervosa include overvaluation of shape and weight, and high body-related concerns. Body-related negative

emotions, cognitions, and behaviours, frequently summarized as a negative body image, are among the core underlying and maintaining factors of EDs (Treasure, Claudino, & Zucker, 2010). In longitudinal studies, it has been demonstrated that body dissatisfaction (BD) is the most reliable predictor of a disturbed eating behaviour (Stice, Gau, Rohde, & Shaw, 2017; Stice, Marti, & Durant, 2011; Stice, Marti, Shaw, & Jaconis, 2009).

A particular focus of research in this context is put on the negative influence of media that promote unrealistic body ideals (Fardouly

& Vartanian, 2016; Ferguson, 2013; Hausenblas et al., 2013; Levine & Harrison, 2009; López-Guimerà, Levine, Sánchez-Carracedo, & Fauquet, 2010; Mills, Shannon, & Hogue, 2017). It has been shown that the negative influence of thin ideals in media is not necessarily directly linked to a disturbed eating behaviour but is mediated by individual factors such as pre-existing high BD, strong internalization of the thin ideal, dysfunctional emotion regulation, and a tendency to body-related thought fusion, that is, an individual's difficulty to distract and distance from negative self-related thoughts that may appear in the context of a thin-ideal exposure (Ferguson, 2013; Hausenblas et al., 2013; Humbel et al., 2018; Trindade & Ferreira, 2014). "Thought fusion" is a cognitive distortion that reduces psychological flexibility and thus is an important etiological factor in EDs (Merwin et al., 2011) and other mental disorders (Gloster, Meyer, & Lieb, 2017). Cross-sectional studies showed that such body-related cognitive distortions mediate the relationship between BD and ED pathology (Duarte, Pinto-Gouveia, & Ferreira, 2017; Forrer, Wyssen, Messerli-Bürgy, Meyer, & Munsch, in preparation; Wyssen, Bryjova, Meyer, & Munsch, 2016).

The phenomenon of "thought-shape fusion" (TSF) describes an ED-specific cognitive process (Shafran, Teachman, Kerry, & Rachman, 1999) characterized by a tendency to experience body-related cognitive distortions, triggered by the imagination of eating high caloric food (TSF; Coelho, Carter, McFarlane, & Polivy, 2008; Wyssen et al., 2018) or by the imagination of thin ideals (TSF-B; Loeber et al., 2016; Munsch et al., in preparation; Wyssen, Coelho, Wilhelm, Zimmermann, & Munsch, 2016; Wyssen et al., 2017). Validation of a trait version of the "thought-shape fusion body" questionnaire (TSF-B) resulted in two concept subscales ("imagination of the thin ideal" and "striving for own thin ideal") and a clinical impact scale (i.e., extent of impairment). TSF-B was significantly more pronounced in patients suffering from EDs than in healthy control participants (Wyssen et al., 2017).

Experimental studies showed that eating- and body-related cognitive distortions such as TSF and TSF-B lead to an altered perception and evaluation of one's body, which results in feelings of fatness, fear of weight gain, and the urge to engage in dysfunctional behaviour such as excessive body checking, body avoidance, dieting, or excessive exercising. Moreover, it goes along with a decrease in mood and body image satisfaction. TSF and TSF-B have been observed in healthy women and more pronounced in female patients suffering from EDs (Coelho et al., 2008; Coelho et al., 2014; Coelho, Roefs, & Jansen, 2010; Wyssen et al., 2017; Wyssen et al., 2018; Wyssen, Coelho, et al., 2016).

Results from experimental studies that revealed associations between media exposure, social comparison, BD, and disturbed eating behaviour are limited by recall biases and a lack of ecological validity. At the same time, these studies showed that these relationships vary and can change rapidly within individuals. On this account, ecological momentary assessment (EMA) studies were developed to investigate such within-individual relationships in everyday life. Using a real time assessment method, Heron and Smyth (2013a) provided support for the notion that when self-ideal discrepancy is high, concurrent depressed and anxious affect is increased in everyday life of young healthy women. Kelly and Stephen (2016) also used an ambulatory

Key Practitioner Message

- Thought-shape fusion body (TSF-B) describes body-related cognitive distortions.
- Healthy female students experience TSF-B in everyday life when confronted with thin ideals in media.
- TSF-B is associated with self-ideal discrepancy, dysfunctional body-related behaviour, and disordered eating behaviour.

assessment method and were able to show within-person day-to-day covariations in self-compassion with body image and eating behaviour in female college students. Leahey, Crowther, and Ciesla (2011) found that upward appearance comparison, as it occurs in everyday life of women, directly affects negative self-related emotions and cognitions (e.g., BD and thoughts of dieting). Women with pre-existing high BD and ED pathology showed more upward comparison and were more vulnerable to these negative effects. Lepage and Crowther (2010) also used an EMA design to study the effect of exercising on BD in undergraduate women. All participants experienced lower BD after exercising. Ridolfi, Myers, Crowther, and Ciesla (2011) conducted an EMA study with undergraduate women and were able to show that media comparison was associated with negative affect and dysfunctional body-related behaviour (such as body checking). Appearance-focused cognitive distortions moderated the relationship of media comparison and body checking.

To our best knowledge, no other study has investigated body-related cognitive distortions such as TSF-B within an EMA design so far. Thus, the present study aimed at assessing the influence of thin-ideal exposure in media on the experience of body-related cognitive distortions (TSF-B), self-ideal discrepancy, dysfunctional body-related behaviour, and disordered eating behaviour in a naturalistic setting. *First*, we hypothesized that body-related cognitive distortions (TSF-B) are elevated subsequent to the exposure with thin ideals via various media (e.g., TV, social media, and magazines). *Second*, we assumed that thin-ideal exposure is associated with (a) higher self-ideal discrepancy, (b) more dysfunctional body-related behaviour, and (c) more disturbed eating behaviour. *Third*, we expected pre-existing trait levels of ED pathology, BD, and TSF-B to moderate the influence of thin-ideal exposure on the experience of body-related cognitive distortions (TSF-B), self-ideal discrepancy, dysfunctional body-related behaviour, and disordered eating behaviour.

2 | METHODS

2.1 | Participants

Initially, 60 female students participated in the study. Twenty-eight participants were recruited at the University of Fribourg (Switzerland), and 32 were recruited at the University of Bamberg (Germany).

Inclusion criteria were age between 18 and 25 years and a body mass index (BMI) in normal weight range (18.5–25 kg/m²). Exclusion criteria were the presence of a mental disorder, psychopharmacological medication, and pregnancy. Thirty percent of the participants were Swiss, 68.3% were German, and 1.7% belonged to another nationality; 38.3% reported to be single, and 61.7% reported to be in a relationship. All participants hold a higher school certificate; 81.7% of the participants lived in a city, and 18.3% in a rural area. All participants were informed in verbal and written form about the study aim and procedure. They signed an informed consent. The local ethics committees approved the study protocol that adheres to the Declaration of Helsinki. Four participants withdrew from participation after the baseline assessment. Five more participants were excluded from analyses because of less than 50% EMA data records (low compliance). The dropout rate equals to 15% (nine participants).

2.2 | Procedure

The participants were recruited with advertisements at the Otto-Friedrich University of Bamberg (Germany) and the University of Fribourg (Switzerland) and via social networks. Participants received course credits or a remuneration of 30€.

First, participants were invited for a diagnostic interview. Then they received an email with a link to the baseline assessment questionnaire. Baseline measures included sociodemographic variables and questionnaires assessing general psychopathology, ED symptoms, BD, and cognitive distortions. After completing the questionnaires, participants took part in an in-person information session. At this session, the smartphone application for the EMA was installed, and the use of the application was introduced by answering sample questions. The EMA included four signal-contingent measures per day during 10 days. The signals occurred at 8:00 a.m., 2:00 p.m., 5:00 p.m., and 9:30 p.m. Questions concerned participants' media consumption, dysfunctional body-related behaviour, eating behaviour, self-ideal discrepancy, and body-related cognitive distortions. At the end of the information session, participants received an information sheet containing information about the use of the app and contact details in case of problems or questions.

2.3 | Instruments

2.3.1 | Diagnostic interview

Mental disorders were assessed using the short form of the Diagnostic Interview for Mental Disorders (Mini-DIPS; Margraf & Cwik, 2017). The Mini-DIPS is based on the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* (American Psychiatric Association, 2013) and has a good interrater reliability ranging from 0.84 to 1.0 (Margraf, Cwik, Pflug, & Schneider, 2017). It was used to exclude participants with mental disorders from further study participation. The interviews were conducted by three trained and supervised interviewers.

2.3.2 | Body mass index

Participants' BMI was calculated as follows: weight in kilograms divided by the square of height in metres. BMI was used to exclude participants with underweight (BMI < 18.5 kg/m²) or overweight (BMI > 25 kg/m²).

2.3.3 | Baseline, self-report questionnaires

ED pathology and BD

For the assessment of disordered eating behaviour, the German version of the Eating Disorder Examination-Questionnaire (EDE-Q; Hilbert & Tuschen-Caffier, 2016) was used. The EDE-Q refers to the last 28 days and assesses the severity of ED pathology with 28 items. The EDE-Q contains four subscales (restraint eating, eating concern, shape concern, and weight concern) and a total score. Hilbert, de Zwaan, and Braehler (2012) report strong internal consistencies of the subscales and the total score (subscales: .78 ≤ Cronbach's α ≤ .89; total score: Cronbach's α = .94). Retest reliability in a nonclinical sample confirmed stability of the measure over 3 months (Hilbert, Tuschen-Caffier, Karwautz, Niederhofer, & Munsch, 2007). Cronbach's α of the total score and the subscales shape and weight concerns in the present sample was between .82 and .94.

Cognitive distortions

Body-related cognitive distortions were measured with the Thought-Shape Fusion Body Trait Questionnaire (TSF-B trait; Wyssen et al., 2017). The TSF-B trait consists of the 12-item scale *Concept* with two subscales *Imagination of thin ideals* and *Striving for own thin ideal* with items such as "I feel fatter after picturing thin women" and the scale *Clinical Impact* ("To what extent do thoughts about your thin ideal interfere with your daily life?"). All items were rated on a 5-point Likert scale ranging from 0 = *not at all* to 4 = *totally/always*. The internal consistency ranged from α = .82 to α = .95 for healthy participants and participants with EDs. Cronbach's α of the Concept scale in the present sample was .90.

2.3.4 | EMA measures

EMA was conducted using a smartphone application (PsyDiary, University of Applied Sciences Salzburg), which was available for participants in the regular "App-Store." The questions were designed using the online data assessment system LimeSurvey. Some items were developed for this study, and other items were adapted from well-known and validated questionnaire measures.

Media consumption

The items measuring general media consumption were developed for this study to assess quantity of media exposure. For each kind of media (TV, magazines, internet, and social media), participants were asked to report how long they consumed respecting media since the

last survey (1= 0min, 2= 1–15 min, 3= 16–30 min, 4= 31–60 min, 5= 61–90 min, 6= 91–120 min, 7= 121–150 min, and 8= 151–180 min). As a subsequent question, participants were asked whether they were exposed to the thin ideal in media (thin-ideal media consumption) since the last survey (visual analogue scale [VAS] from 0= *never* to 100= *very often*). For the analyses, different media sources were summarized to the categories general media consumption and thin-ideal media consumption.

Body-related cognitive distortions

To assess current body-related cognitive distortion, the items “Do you have the feeling of having gained weight since the last signal?,” “Do you feel fatter since the last signal?,” and “In this moment, how much do you fear gaining weight?” from the TSF-B state (Wyssen, Coelho, et al., 2016) were used. The participants were asked to make their decisions using a VAS from 0= *not at all* to 100= *very strong*. Cronbach's α in the present sample was .91.

Self-ideal discrepancy

The FigureRating Scale (Stunkard, Sorenson, & Schulsinger, 1983) was used to identify the self-ideal discrepancy. Participants had to choose one of seven images presenting female bodies of different weight and body shapes by answering the following questions: “Which of the presented figures best indicates your own actual body?” and “Which of the presented figures best indicates the ideal female body shape what you are wishing for?.” Self-ideal discrepancy was calculated as real minus ideal; thus, higher scores imply being bigger/heavier than one's own ideal. Thompson and Altabe (1991) reported good retest reliability and adequate validity.

Dysfunctional body-related behaviour

To assess dysfunctional body-related behaviour, four items (“In this moment, how much do you feel the urge to exercise or be physically active?,” “In this moment, how much do you feel the urge to check your body in the mirror?,” “In this moment, how much do you feel the urge to check your weight using a scale?,” and “In this moment, how much do you feel the urge to check the shape and the constitution of your body?”) were developed. Dysfunctional body-related behaviour was measured using a VAS from 0= *not at all* to 100= *very much/completely right*. Cronbach's α in the present sample was .86.

Dysfunctional eating behaviour

The items measuring dysfunctional eating behaviour (“Since the last signal I intentionally ate less to control my shape/weight,” “Since the last signal I lost control over eating,” “Since the last signal I took action to avoid gaining weight (e.g., vomiting, laxatives, exercising),” “Since the last signal my thoughts rotated around eating,” and “In this moment, how much do you feel the urge to diet or to limit your food intake?”) were developed for this study to assess restraint eating, rumination, loss of control over eating, and the use of vomiting, exercise, or laxatives to control weight. Participants were asked to make their decision on a VAS from 0= *not at all* to 100= *very much/completely right*. Cronbach's α in the present sample was .76.

2.4 | Statistical analyses

For every signal, aggregated scores were obtained by calculating the mean of the three items for body-related cognitive distortions, four items of dysfunctional body-related behaviour, five items of disordered eating behaviour, and four items for general media exposure and thin-ideal exposure each. Self-ideal discrepancy was derived by subtracting ideal self from realself.

Hierarchical linear models were applied using the software HLM7 (Raudenbush, Bryk, & Congdon, 2011) because of the nested structure of the data. Occasions (Level 1) were nested in participants (Level 2). At Level 1, we separately modelled thin-ideal exposure and general media exposure as predictors of body-related cognitive distortions. Similarly, we modelled body-related cognitive distortions as predictor of self-discrepancy, dysfunctional body-related behaviour, and disordered eating behaviour. At Level 2, we modelled EDE-Q total and its two subscales, and the TSF-B trait as predictors of the intercept as well as moderators of Level 1 slopes. Level 1 predictors were person mean centred, and Level 2 predictors were grand mean centred. Intercepts and slopes were allowed to vary randomly across participants.

3 | RESULTS

3.1 | Description of the sample

Table 1 describes the present sample including 51 female participants who terminated data assessment.

TABLE 1 Descriptive statistics (N = 51)

| | M | SD | Min | Max |
|--------------------------------------|-------|-------|-------|--------|
| Baseline measures | | | | |
| Age (years) | 21.06 | 1.76 | 18.0 | 25.0 |
| BMI (kg/m ²) | 20.67 | 1.53 | 18.1 | 24.6 |
| EDE-Q total | 0.79 | 0.80 | 0.00 | 3.42 |
| EDE-Q shape concern | 1.26 | 1.15 | 0.00 | 4.88 |
| EDE-Q weight concern | 0.90 | 1.00 | 0.00 | 3.60 |
| TSF-B trait | 7.80 | 7.92 | 0.00 | 33.0 |
| EMA measures | | | | |
| General media exposure | 0.45 | 0.57 | 0.00 | 3.25 |
| Thin-ideal media exposure | 26.15 | 27.33 | 0.00 | 100.00 |
| TSF-B state | 12.35 | 17.47 | 0.00 | 100.00 |
| FRS self-ideal discrepancy | 0.58 | 0.74 | −2.50 | 3.00 |
| Disordered eating behaviour | 8.15 | 11.66 | 0.00 | 64.20 |
| Dysfunctional body-related behaviour | 16.37 | 20.85 | 0.00 | 99.25 |

Abbreviations: BMI, body mass index; EDE-Q, Eating Disorder Examination-Questionnaire; EMA, Ecological Momentary Assessment; FRS, Figure Rating Scale; M, mean; SD, standard deviation; TSF-B state, Thought-Shape Fusion Body State Questionnaire; TSF-B trait, Thought-Shape Fusion Body Trait Questionnaire.

3.2 | TSF subsequent to media exposure

Higher thin-ideal exposure (across all media types) was related to higher body-related cognitive distortions (TSF-B state; $\beta_{10} = .069$, $SE = .027$, $p = .016$). In contrast, general media exposure did not significantly relate to TSF-B state ($\beta_{10} = .656$, $SE = .597$, $p = .278$). Even after general media exposure was controlled for, thin-ideal exposure remained a significant predictor.

3.3 | Correlates of TSF

Higher body-related cognitive distortions (TSF-B state) were associated with higher self-ideal discrepancy ($\beta_{10} = .006$, $SE = .001$, $p < .001$), higher dysfunctional body-related behaviour ($\beta_{10} = .287$, $SE = .044$, $p < .001$), and higher disordered eating behaviour ($\beta_{10} = .188$, $SE = .024$, $p < .001$).

3.4 | Predictors of TSF

The relationship between thin-ideal exposure and body-related cognitive distortions (TSF-B state) was not moderated by the EDE-Q total score and its subscales, nor by the TSF-B trait questionnaire. However, all questionnaires exhibited a significant main effect on TSF-B state (Table 2).

Similarly, the relationship between higher body-related cognitive distortions (TSF-B state) and self-ideal discrepancy was not moderated by either of the questionnaires ($\beta_{11s} < .001$, $ps > .134$). However, all questionnaires exhibited a significant main effect on self-ideal discrepancy (Table 3).

The relationship between higher body-related cognitive distortions (TSF-B state) and dysfunctional body-related behaviour was not moderated by either of the questionnaires ($\beta_{11s} < -.051$, $ps > .189$). However, all predictors exhibited a significant main effect on dysfunctional body-related behaviour (Table 3).

Similarly, the relationship between higher body-related cognitive distortions (TSF-B state) and disordered eating behaviour was not moderated by either of the questionnaires ($\beta_{11s} < -.399$, $ps > .293$). However, all questionnaires exhibited a significant main effect on disordered eating behaviour (Table 3).

TABLE 2 Predictors of thought–shape fusion

| Predictor | Main effect | | | Moderation | | |
|----------------------|--------------|-------|-------|--------------|------|------|
| | β_{01} | SE | p | β_{11} | SE | p |
| Level 2 | | | | | | |
| EDE-Q weight concern | 9.39 | 1.68 | <.001 | .051 | .037 | .172 |
| EDE-Q shape concern | 7.50 | 1.49 | <.001 | .019 | .025 | .445 |
| EDE-Q total | 12.1 | 2.09 | <.001 | .043 | .043 | .253 |
| TSF-B trait | 1.31 | 0.212 | .001 | .005 | .005 | .253 |

Note. Relationship between thin-ideal exposure and TSF-B state on Level 1 with TSF-B state as outcome.

Abbreviations: EDE-Q, Eating Disorder Examination-Questionnaire; SE, standard error; TSF-B state, Thought-Shape Fusion Body State Questionnaire; TSF-B trait, Thought-Shape Fusion Body Trait Questionnaire.

TABLE 3 Main effects of several questionnaires on Level 2 on self-ideal discrepancy, dysfunctional body-related behaviour, and disordered eating on Level 1

| Predictor | Main effect | | |
|--------------------------------------|--------------|-------|-------|
| | β_{01} | SE | p |
| Level 2 | | | |
| Self-ideal discrepancy | | | |
| EDE-Q weight concern | 0.484 | 0.063 | <.001 |
| EDE-Q shape concern | 0.377 | 0.046 | <.001 |
| EDE-Q total | 0.541 | 0.078 | <.001 |
| TSF-B trait | 0.051 | 0.008 | <.001 |
| Dysfunctional body-related behaviour | | | |
| EDE-Q weight concern | 8.01 | 3.31 | .019 |
| EDE-Q shape concern | 7.28 | 3.17 | .026 |
| EDE-Q total | 12.6 | 4.39 | .006 |
| TSF-B trait | 1.43 | 0.358 | <.001 |
| Disordered eating | | | |
| EDE-Q weight concern | 6.86 | 1.61 | <.001 |
| EDE-Q shape concern | 5.71 | 1.50 | <.001 |
| EDE-Q total | 9.66 | 1.69 | <.001 |
| TSF-B trait | 0.901 | 0.191 | <.001 |

Abbreviations: EDE-Q, Eating Disorder Examination-Questionnaire; SE, standard error; TSF-B trait, Thought-Shape Fusion Body Trait Questionnaire.

4 | DISCUSSION

4.1 | Aim and summary of results

The present study employed an EMA design to investigate the phenomenon of body-related cognitive distortions (TSF-B) in everyday life of 51 young, healthy females.

Firstly, on a descriptive level, TSF-B (i.e., thin-ideal associated body-related cognitive distortions), which has previously been investigated in psychometric and laboratory studies (Wyssen et al., 2017; Wyssen, Coelho, et al., 2016), is a phenomenon that is prevalent in everyday life of young healthy women. Second, the results of the present study confirmed that TSF-B covaries with higher self-ideal discrepancy, dysfunctional body-related behaviour, and disordered eating behaviour within individuals, opening a new level of inquiry

and confirming the general concept. Moreover, these results point to the state dependency of this construct. Thus, TSF-B is worth considering a cognitive correlate of the phenomenology and aetiology of EDs. *Third*, and contrary to our expectations, we did not find person-level (between individual) factors related to a higher susceptibility to TSF-B in the context of a thin-ideal exposure (nomoderated relationship), but we found main effects that confirm the closeness of TSF-B with trait factors such as pre-existing BD. For example, Wyssen and colleagues (2016) found that a higher degree of ED symptomatology amplified the effect of a thin ideal imagination in the laboratory on TSF-B. Leahey et al. (2011) found that higher pre-existing BD predicts upward comparison when confronted with thin ideals. We were not able to replicate this result. Independently of such characteristics, our participants exhibited higher body-related cognitive distortions when confronted with media presenting thin ideals but not when consuming media without such contents.

4.2 | Strengths and limitations

The strengths of this study include high ecological validity, because it investigates correlates of thin-ideal exposure in media in participants' natural environment. The results are thus not limited by an artificial laboratory setting nor by retrospective self-report data. Repeated sampling in real time allowed a reliable estimation of experiences and behaviours of participants (Shiffman, Stone, & Hufford, 2008). Nevertheless, the EMA design relied on repeated self-report, possibly reducing reporting accuracy over time (e.g., due to response biases or fatigue effects). Future research might circumvent this by including objective data. To illustrate, wearables or sensors might be able to detect physical activity (e.g., Wang et al., 2015) or eating behaviour (e.g., Blechert, Liedlgruber, Lender, Reichenberger, & Wilhelm, 2017), while tracking software in smartphones or computers might aid in assessing media consumption. Furthermore, a limitation of this approach is the possible "reactivity," that is, changes of reported variables through the awareness created by repeated reporting (Hufford, Shields, Shiffman, Paty, & Balabanis, 2002), even though other studies did not find reactivity to multiple reporting initiated by a device (e.g., Munsch et al., 2009). We did not attempt to distract from the purpose of the study. Our participants were repeatedly asked about media consumption, body image, and eating behaviour, which may have modified their perception of media contents and strengthened their awareness of body- and eating-related thoughts, emotions, and behaviours. However, existing data also suggest that EMA designs allow assessing body image experiences in everyday life without necessarily triggering measurement reactivity (Heron & Smyth, 2013b). Reciprocal relationships between higher awareness and reported symptoms need to be further investigated. Another limitation of this study arises from the composition of the sample. It is a homogenous sample consisting of female students within normal BMI range and no psychiatric diagnosis. Values in the baseline questionnaire assessment confirmed the comparability of our sample with other healthy samples (e.g., average EDE-Q values). Our results

do thus not allow conclusions for male samples or vulnerable groups (e.g., patients with EDs). We applied a diagnostic interview to rule out that our participants suffer from a mental disorder. Unexpectedly, none of the participants were diagnosed with a mental disorder, which could refer to a selection bias or questions validity of the diagnostic interview. Finally, the current study used a modest sample size. Whereas we found strong results on Level 1, our preliminary findings on Level 2 are possibly influenced by the sample size and should be replicated in future studies.

4.3 | Clinical implications

In the present study, thin ideals in media were confirmed as a correlate of body-related cognitive distortions such as TSF-B. TSF-B describes body-related thought fusion, that is, an individual's difficulty to distract and distance from negative self-related thoughts (Trindade & Ferreira, 2014). In TSF-B, thought fusion leads to an altered perception and evaluation of one's body (Coelho et al., 2008; Wyssen et al., 2017; Wyssen, Coelho, et al., 2016). If a threatening cognition (such as in TSF-B "Looking at these thin ideals makes me feel fat.") is considered as true and real, the individual will experience negative emotions and will show behaviours to reduce them (e.g., body checking and avoid eating). This demonstrates the importance of distorted cognitions as a potential maintaining factor of disturbed eating behaviour and EDs. If replicated in studies including larger samples of healthy controls and participants with EDs, these findings could be implemented in clinical practice by the following three actions: *first*, sensitization of therapists regarding such cognitive processes; *second*, application of in-session manipulations (exposure with triggers to induce TSF-B) and identification of the individual distorted cognitions with a thinking out aloud task; and *third*, performance of corrective interventions with the aim of defusing from the distorted cognitions. Specific intervention from acceptance and commitment therapy named "cognitive defusion" addressing thought fusion to increase psychological flexibility (Gloster et al., 2017; Merwin et al., 2011) should be examined. Cognitive defusion addresses dysfunctional cognitions by establishing distance to the cognition to reduce its influence and associated distress (e.g., Healy et al., 2008; Masuda, Feinstein, Wendell, & Sheehan, 2010; Yovel, Mor, & Shakarov, 2014). Cognitive defusion applied to TSF-B may result in reduced believability and reduced discomfort associated with the thought. Further studies could apply an ambulatory intervention design to test such hypotheses.

5 | CONCLUSION

Being confronted with thin ideals is part of women's everyday life. Thus, numerous situations exist that may trigger body-related cognitive distortions such as TSF-B. Cognitive processes have shown to be of high importance in respect of a negative body image and ED pathology (Wyssen et al., 2017). However, body-related cognitive

distortions do pertain not only to patients suffering from an ED but also to women from the general population (Wyssen, Coelho, et al., 2016), as this study confirmed. This underlines the need of understanding and considering factors such as body-related cognitive distortions in prevention and treatment of BD and EDs.

ACKNOWLEDGEMENTS

The authors wish to thank Hanna Seitz, Jule Metzger, and Léa Nina Köhnlein for their support in the collection of the data reported here. This work was supported by a grant from the Otto-Friedrich-University of Bamberg (Grant number 02060303). J.B. and J.R. were supported by the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (H2020 European Research Council, ERC-StG-2014 639445 NewEat).

CONFLICT OF INTEREST

We declare no competing interests.

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How to cite this article: Wyssen A, Leins J, Reichenberger J, Bleichert J, Munsch S, Steins-Loeber S. Body-related cognitive distortions (thought–shape fusion body) associated with thin-ideal exposure in female students—An ecological momentary assessment study. *Clin Psychol Psychother*. 2020;1–8. <https://doi.org/10.1002/cpp.2421>