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The contribution of intolerance of uncertainty to eating disorder pathology and anxiety symptoms in adolescents with Anorexia Nervosa

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Abstract

The objective of this study was to explore the contribution of intolerance of uncertainty (IU) to the level of eating disorder pathology and anxiety in adolescent girls with anorexia nervosa (AN). The Intolerance of Uncertainty Scale (IUS-12), the Eating Disorder Examination Questionnaire (EDE-Q) and the Trait Scale of the State-Trait Anxiety Inventory (STAI) were used to investigate this relationship. Participants were collected at Altrecht Eating Disorders Rintveld. The final sample consisted of 53 participants, we were able to examine the relationship between IU and eating disorder pathology in 44 participants and in 32 participants the relationship between IU and anxiety. In accordance with previous findings in adult studies, IU predicts higher levels of eating disorder pathology and anxiety in adolescents with AN. Uncertain situations had adolescents experience more severe eating attitudes and behaviors, and leads to more anxiety symptoms, like stress and discomfort. BMI and duration of illness did not have a significant influence on the correlation between IU and eating disorder pathology/anxiety. The current findings highlight the importance of IU as a construct in AN. To make treatment methods more beneficial, IU in adolescents with AN should be assessed and treated.

Keywords: anorexia nervosa; adolescence; intolerance of uncertainty; eating disorder pathology; anxiety

Preface

This thesis is an important part of my Master's Degree in Clinical Psychology at the Faculty of Social Sciences, Utrecht University. As part of my thesis I did a research internship at Altrecht Rintveld Centre for Eating Disorders for three months from November 2015 until February 2016. During this internship I was an assistant in the assessment of the phenotype study. This study aims to specify specific candidate genes and gene-systems associated with specific phenotypes within eating disorders. I extracted the assessed data for analyzing my own hypotheses.

First, I would like to thank Dr. Lot Sternheim for involving me in this project, for sharing her knowledge with me and providing me with valuable feedback. Next to this, she invited me to take part in her thesis circle. I am very thankful for this. I would also like to thank my supervisor Prof. Dr. Annemarie van Elburg for giving me an opportunity to do a research internship at Rintveld and participate in the phenotype study. She supported me during the process of writing my thesis and added comments on versions of my thesis. Furthermore, I want to thank Mirjam Wever for her guidance during my internship, I could always count on her help. I would also want to express my gratitude to Dr. Unna Danner for building the database for my thesis. Finally, I want to thank the current interns of Rintveld, Elisa and Lianne for teaching me how to assess the phenotype study and for scheduling the appointments with the participants.

Utrecht, July 2016

Michelle Rovers

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Introduction

Eating disorders (ED) are recognized as very severe psychiatric disorders. They represent the third most common chronic illness in girls and young adolescent females (Goodheart, Clopton, Robert-McComb, 2012). Findings from the Global Burden of Diseases, Injuries, and Risk Factors Study 2010 (GBD 2010) show that the burden of mental disorders increased by 37.6% between 1990 and 2010. Eating disorders account for 1.2% of the total disability-adjusted life years (DALYs), with the highest proportion of total DALYs occurring in people aged 10–29 years (Whiteford et al., 2013). Anorexia Nervosa constitutes for approximately 40% of all cases, at particular, in the high risk-group of 15 till 19 years old girls (Smink, van Hoeken, & Hoek, 2012). While the overall incidence rate of eating disorders remained stable over the past decades, there has been an increasing trend in the incidence of AN in young adolescent females (Hoek, 2006; van Son, van Hoeken, Bartelds, van Furth, & Hoek, 2006).

Anorexia nervosa is a devastating psychiatric disease. It affects mostly young and adolescent girls, with the highest incidence rates around the age of 15 years (Hill, 2002; Hoek, 2006). Anorexia nervosa can be defined as: "Self-starvation and a refusal to maintain a minimally normal body weight" (Davey, 2008). It is characterized by body image disturbance, which has a profound impact on the physical and psychological functioning of AN patients (Hambrook et al., 2011). This in turn causes high rates of disability and mortality (Arcelus, Mitchell, Wales, & Nielsen, 2001; Sullivan, 1995). Some studies even suggest that AN has the highest mortality rates compared to other mental illnesses (Agras et al., 2004; Birmingham, Su, Hlynsky, Goldner, & Gao, 2005; Smink, van Hoeken, & Hoek, 2013). The treatment of AN is complex and although a lot of progress has already been made in gaining more insight in how to describe and treat AN, fully effective treatments are still scant (Agras et al., 2004). To date, only 46% of adult and 70% of adolescent patients fully recover from AN, while the other patients keep suffering from partial symptoms or remain chronically ill (Arcelus et al., 2001).

The high comorbidity of AN with other psychiatric (axis 1) disorders, may partly explain this suboptimal treatment success (Keel & Brown, 2010). Moreover previous studies have shown that the psychiatric comorbidity of AN is significantly associated with unfavorable prognostic feature of outcome (Deter & Herzog, 1994; Salbach-Andrae et al., 2008). Several studies conclude that AN is mostly been associated with depression (20%-98%) and anxiety disorders (7%-65%) (O'brien & Vincent, 2003; Salbach-Andrae et al., 2008). It is suggested that this high comorbidity with anxiety or depression aggravates eating

disorder symptoms (Sternheim, Startup, & Schmidt, 2015; Pallister & Waller, 2008).

Nowadays still little is known about the specific cognitions that are involved in the development and maintenance of AN (Woolrich, Cooper, & Turner, 2008). Most cognitive models have focused on the content of the cognitions, while it is important to focus on the internal cognitive mechanisms that correct, appraise, control and regulate thinking (Wells, 2000). There are promising results from several studies, which suggest that there are some cognitive anxiety related processes involved in the development of AN (Sternheim, Startup, & Schmidt, 2011; Sternheim et al., 2012; Sternheim, et al., 2015). These processes are part of the cognitive-behavioral model of general anxiety disorder, which contain the following features: intolerance of uncertainty (IU), beliefs about worry, cognitive avoidance (AC) and negative problem orientation (Dugas, Freeston, & Ladouceur, 1997). This model was initially developed to predict anxiety and worry, but similar cognitive processes have also been found to play a substantial role in predicting eating disorders (Frank et al., 2012). Especially IU is an important component in the maintenance of AN (Frank et al., 2012; Stewart, 2009).

Intolerance of uncertainty refers to "a tendency to react negatively on an emotional, cognitive, and behavioral level to uncertain situations and events" (Heimberg, Turk, & Mennin, 2004, pp.143). People who have high scores of IU perceive the future as uncomfortable and experience uncertainty as distressing and upsetting, due to a set of negative beliefs (Gosselin et al., 2008, pp.1427). It is a common belief that uncertainty has to be avoided, because it has a negative impact on one's ability to fulfill daily activities (Buhr & Dugas, 2002; Dugas & Robichaud, 2007). There is mounting evidence that suggests that IU plays a fundamental role in developing and continuing problematic worry (Barlow, 2002; Dugas et al., 1997; Dugas, Gagnon, Ladouceur, & Freeston, 1998). Moreover it is also associated with other cognitive structures like perceived control and perfectionism (Buhr & Dugas, 2002, 2006; Stewart, 2009). These structures are also central features of AN (Lawrence, 1979; Weiten, 2008). Although IU was initially a key component for explaining worry within anxiety disorders, it is also a prominent component in the lives of individuals with AN. It narrows one's cognitive focus, which leads to negative thought processes. Also the fear of a negative evaluation by others and the feeling of being imperfect are prominent sources of uncertainty in individuals with AN (Startup et al., 2013). This uncertainty causes the individuals to perceive a lack of control, which results in a strong desire to regain control and manage their internal uncertainty (Frank et al., 2012). The result of their extreme control manifests in all kind of AN related behaviors, e.g. extreme planning and organizing, returning to routines, controlling their weight (Sternheim, Konstantellou, Startup, & Schmidt, 2011).

These findings are confirmed in several other studies, which indicate that eating disorder pathology is associated with elevated levels of IU (Frank et al., 2012; Konstantellou, Campbell, Eisler, Simic, & Treasure, 2011; Konstantellou & Reynolds, 2010; Sternheim et al. 2012). Not only has IU been linked with eating order pathology, it has also been implied that IU contributes for a large extent to the maintenance of symptoms across anxiety disorders and broader psychopathology, like depression (McEvoy & Mahoney, 2012).

A recent study of Sternheim, Startup and Schmidt (2015) confirms previous findings that the main features of the cognitive behavioral model are all associated with eating disorder pathology in adults with AN. This suggests that more severe eating pathology is linked with higher levels of IU and worry (Cooper, Grocutt, Deepak, & Bailey, 2007; Sternheim, Konstantellou et al., 2011; Sternheim et al., 2012). An interesting and novel finding is that these cognitive anxiety processes also contribute to the anxious and depressive symptoms that are frequently found in individuals with AN. In other words, IU is associated with high levels of anxiety and depression (Sternheim et al., 2015). To our knowledge, this is the first study, which focused on the importance of IU as a contributing feature to anxiety and depression in adults with AN. However, since a study of Sternheim, Konstantellou et al. (2011) already showed that there are developmental differences between adults and adolescents, it is also necessary to investigate if similar results are found in adolescents with AN, since AN is a psychiatric disorder that mainly affects young and adolescent girls. A hypothesis that needs further confirmation.

Research about IU in adolescents, and especially in adolescents with AN, is scarce. However in a recent study of Konstantellou, Sternheim, Hale and colleagues (2015) the role of uncertainty in the lives of adolescents with AN was investigated (personal communication Lot Sternheim, November 19, 2015). These results support the previous findings, i.e. that IU is related to eating disorder pathology. Like in adults, adolescents show different AN related behaviors as a way of coping with uncertainty and this gave them a sense of safety (personal communication Lot Sternheim, November 19, 2015). Results from a study of Boelen, Vrinssen and van Tulder (2010) show that high levels of IU in adolescents are correlated with worry, social anxiety and depression. Despite the fact that this research was based on a general population of adolescents, it shows that these traits are of particular importance and seem distinct from those of adults. Until now, no research has been done with regard to find and confirm the possible relationship between IU and anxiety in adolescents with AN.

Because uncertainty is an unavoidable and inescapable aspect of life, it is necessary that individuals can tolerate and cope with this in a healthy way (Sternheim, Konstantellou et

al., 2011). A lot of questions remain with regard to different risk factors that may lead to the development and the maintenance of AN. By doing more research into IU the gap with current research and knowledge can be decreased. The information of this dual perspective can be used for the development of better treatment strategies, which is of pivotal interest for therapists.

The aim of this paper is therefore to investigate the complex interplay of eating disorder pathology and anxiety with IU in adolescent girls with AN. It is expected that similar results with regard to adults will be found among adolescents, i.e. high levels of IU will predict high levels of eating disorder pathology and anxiety (Sternheim et al., 2015).

Hypotheses

The objective of this study is to investigate the relationship between IU and eating disorder pathology and anxiety in adolescents. The study is based on a recent study from Sternheim et al. (2015). Grounded on the results of the study of Sternheim et al. (2015), two hypotheses are proposed. First, IU is related to eating disorder pathology in adolescents with AN. Second, IU is related to anxiety in adolescents with AN. Lastly it will be tested if BMI and the duration of illness have an influence on the relation between IU and eating disorder pathology/anxiety.

Methods

Ethical approval was granted by the Medical Ethical Committee of the University Medical Centre Utrecht (UMCU), and the Local Scientific Board of Altrecht Mental Health Institute. All participants received information and had to sign informed consent prior to the start of the study.

Design

Data for the current study is derived from two separate studies, conducted at Altrecht Eating Disorders Rintveld. The first and largest part of the data comes from an ongoing study at Rintveld. This study investigates the association between specific genes and gene-systems with specific phenotypes within eating disorders. Patients had to complete several questionnaires, i.e. Eating Disorder Examination Questionnaire, Intolerance of Uncertainty Scale and State-Trait Anxiety Inventory, and (neuro) psychological tests, i.e. Trail Making Test, Stop Signal Task and Delay of Gratification task.

The second part of the data comes from an earlier study at Rintveld. The former study investigated cognitive flexibility and impaired learning in patients with AN. The patients had to complete several questionnaires, i.e. Eating Disorder Examination Questionnaire and Intolerance of Uncertainty Scale, and two computer tasks, i.e. Houses & Castles task and Spatial Frequency task (Tieskens, 2014).

Participants

All participants were recruited at Altrecht Eating Disorders Rintveld and could be in- or outpatients. The study sample consisted of 53 adolescent girls who were diagnosed with AN. Participants met the criteria of AN that are stated in the Diagnostic and Statistical Manual 5 (DSM-5) (American Psychiatric Association, 2013). This includes that participants need to have a body mass index (BMI) of 18.5 kg/m² or lower. BMI was calculated using a digital Tanita scale and measuring their height with a stadiometer. Diagnosing AN and the screening of eating pathology, were made by experienced clinicians and confirmed by using the Eating Disorder Examination (EDE; Fairburn & Cooper, 1993). The EDE is a semi-structured interview and accounts as the most important standard for assessing and diagnosing eating disorders; it is a highly validated tool (Fairburn & Cooper, 1993; Guest, 2000). The interview is designed to determine the state of the preceding four weeks. It consists of 23 questions,

which measure four subscales of dietary restraint, eating concern, weight concern and shape concern (Cooper & Fairburn, 1987; Jansen 2002).

Measures

1.1 Demographic variables

Demographic variables such as age, duration of illness and BMI were collected in all participants (Table 1).

Table 1

Demographic data (age in years) and clinical characteristics (BMI in kg/m², duration of illness in years)

	n	**M**	**SD**	**Min**	**Max**
Age	53	15.65	1.50	10.71	17.91
BMI	53	16.27	1.90	13.03	20.70
Duration of illness	53	1.83	1.32	0.33	5.50

1.2 Intolerance of Uncertainty Scale (IUS-12; Freeston, Rhéaume, Letarte, Dugas, & Ladouceur, 1994).

The IUS measures one's fear of uncertainty. It was originally a French scale translated into English (Buhr & Dugas, 2002). The IUS-12 is a shorter version of the original 27-item IUS. There is a strong correlation with the original scale (α = .96) (Carleton, Norton, & Asmundson, 2007). The scale consists of self-report items, which measure emotional, cognitive and behavioral perspectives to features of IU (e.g. ambiguous situations, attempts to control the future). It has two subscales: prospective IU, which measures cognitive distress, and inhibitory IU, which measures behavioral inhibition. The items are rated on a 5-point Likert scale ranging from 1; 'Not at all characteristic of me' to 5; 'entirely characteristic of me' (Buhr & Dugas, 2002). High scores indicate high levels of IU. The IUS-12 has been evaluated and it includes both convergent and discriminant validity, both scales have high

internal consistency (α = .85) and a good test-retest reliability over a period of five weeks (r = .74) (Buhr & Dugas, 2002; Carleton, Norton, & Asmundson, 2007; Freeston et al., 1994). The IUS has been validated and correlates significantly with symptom measures of worry (Freeston et al., 1994).

1.3 Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994).

The EDE-Q focuses on the key behavioral aspects of eating disorder pathology (Fairburn & Beglin, 1994). The Questionnaire consists of 36 self-report items, which measure eating attitude and behavior of participants over the last 28 days. The items are rated using a 7-point scale ranging 0; 'absence of the feature' to 6; 'feature present every day' and are scored among the four key EDE subscales (weight concern, dietary restraint, eating concern, and shape concern) (Fairburn & Beglin, 1994; Luce & Crowther, 1997). High scores indicate high levels of eating disorder pathology. The EDE-Q has an excellent internal consistency and test-rest reliability over a period of two weeks, a good concurrent validity and acceptable criterion validity (Mond, Hay, Rodgers, Owen, & Beumont, 2004).

1.4 Trait Scale of the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

The STAI was used for assessing the presence and severity of current symptoms of anxiety (state-anxiety) (Spielberger et al., 1983). The Trait Scale of the STAI, which measures generalized propensity to be anxious (trait-anxiety), is used in the current study. It can be defined as a constant feeling of stress, worry and discomfort. The Trait Scale consists of 20 items that are rated on a 4-point Likert scale ranging from 1;'not at all' to 4;'very much so' based on the feeling at that moment (Spielberger et al., 1983). High scores indicate high levels of anxiety. The STAI has a high internal consistency (α = .85-.95) and acceptable test-retest reliability over a period of two months (r = .65-.75) (Spielberger et al., 1983). The scale has also a good construct and concurrent validity (Spielberger, 1989).

Procedure

Each participant was scheduled for an appointment. There was one data collection moment and both studies took place at Altrecht Eating Disorders Rintveld. The participants were seated in a quiet room. In this room a laptop was present on which they performed the required tests. The experimenter was also present in the room during the whole experiment to let the participants feel more at ease and for answering questions when necessary. Every session in both experiments lasted approximately one hour.

Statistical analysis

All data was analyzed by using the statistical analysis program 'Statistical Package for the Social Sciences' (SPSS, version 22.0). Data was checked for normality of distribution by using histograms and Kolmogorov-Smirnov (K-S) tests. A reliability check was performed to measure Cronbach's alfa for each of the subscales. Pearson's (product-moment) correlation coefficients were use to explore the relation between the independent (IU) and both of the dependent (eating disorder pathology and anxiety) variables. Linear regression analysis was used to measure the predictive value of IU on each of the dependent variables. To determine whether the influence of IU at eating disorder pathology/anxiety may depend on BMI and duration of illness, Pearson's correlation coefficients were examined.

Results

Four participants had missing values, those missing values were replaced with the method of mean substitution.

2.1 Demographic and clinical data

Demographic and clinical data are presented in Table 2. The final sample consisted of 53 young adolescent girls with AN, of which only 21 participants fulfilled all three questionnaires. Therefore the relationship between IU and EDE-Q data was analyzed for 44 participants and in 32 participants the correlation between IU and anxiety could be determined. The average age was 15.695 years (SD = 1.50), the BMI score of the participants had an average of 16.27 kg/m² (SD = 1.90) and the duration of illness had an average of 1.83 years (SD = 1.32). The reliability estimates of the IU, EDE-Q and STAI-T were satisfactory (Cronbach's alpha > 0.80).

Table 2

Demographic data (age in years) and clinical characteristics (BMI in kg/m², duration of illness in years), Intolerance of Uncertainty (IUS), Eating Disorder Examination Questionnaire (EDE-Q), state anxiety (STAI-T)

	n	**M**	**SD**	**Min**	**Max**
Age	53	15.65	1.50	10.71	17.91
BMI	53	16.27	1.90	13.03	20.70
Duration of illness	53	1.83	1.32	0.33	5.50
IUS	53	36.23	7.53	19.00	50.00
EDE-Q	44	3.71	1.25	0.44	5.50
STAI-T	32	47.56	4.74	39.00	57.00

2.2 Correlation and Linear regression

Scatterplots were examined to check for outliers. No outliers were found in the correlation IU versus eating disorder pathology, however one outlier was found in the correlation with anxiety. Pearson correlation analysis was conducted to investigate the relation between IU and eating disorder pathology and anxiety (Table 3). Intolerance of uncertainty scores were positively correlated with eating disorder pathology ($r = .516$, $p < 0.01$). At first sight there was no significant interaction effect with anxiety, but after eliminating the outlier, results became positively significant ($r = .355$, $p < 0.05$). Both significant relations indicate that high scores on IU relate to more severe eating psychopathology and anxiety symptoms. Linear regression models showed that IU scores accounted for 26.6% ($R^2 = .266$) of the variance in eating disorder pathology scores and for 12.6% ($R^2 = .126$) of the variance in anxiety scores.

Table 3

Correlation coefficients of Intolerance of Uncertainty (IUS), Eating Disorder Examination Questionnaire (EDE-Q), state anxiety (STAI-S)

	1	2	3
1. IUS	-		
2. EDE-Q	.516**	-	
3. STAI-T	.355*	-	-

* $p < 0.05$; ** $p < 0.01$

2.3 BMI and Duration of illness

Pearson correlation analysis was conducted to examine if there was any significant correlation between BMI/duration of illness and both eating disorder pathology and anxiety (Table 4). None of the correlation coefficients were significant. Therefore there is no clear influence of BMI/duration of illness on the relationship between IU and eating disorder pathology/anxiety. Only the correlation coefficient of duration of illness on anxiety suggests a trend ($r = 0.289$).

Table 4

Correlation coefficients of Eating Disorder Examination Questionnaire (EDE-Q) and state anxiety (STAI-T) with BMI and duration of illness.

	BMI	**Duration of Illness**
1. EDE-Q	-.030	-.167
2. STAI-T	-.013	.289

Discussion

The main goal of the present study was to test if IU plays a significant role in eating disorder pathology and anxiety in adolescent girls with AN. Both hypotheses, regarding the predictive relation between IU and both eating disorder pathology and anxiety, were confirmed. Participants, who had high levels of IU, had more severe eating disorder pathology and more severe anxiety symptoms. In addition we examined whether the influence of IU at eating disorder pathology/anxiety depends on BMI and duration of illness. None of these results were significant. Only the correlation coefficient between anxiety and duration of illness indicates a weak positive trend. Thus, although duration of illness does not seem to directly affect anxiety symptoms, it could influence some of the risk factors underlying anxiety. A plausible explanation for the non-influential factor of illness duration could be that adolescents have shorter illness duration in general with less variety. Next to this, BMI plays no role in the interplay of IU with eating disorder pathology and anxiety. This could indicate that the starved state may be more of a consequent of eating distorted behaviors and associated anxiety processes.

The results of this study are in line with the findings from previous studies in adults in which IU has a relationship with eating disorder pathology and anxiety symptoms (Frank et al, 2012; Sternheim et al. 2015). Of particular relevance are the findings from a recent study of Konstantellou, Sternheim, Hale and colleagues (2015), in which results suggested that IU plays a role within adolescents with AN (personal communication Lot Sternheim, November 19, 2015). Theoretically, these results emphasize the importance of understanding IU as an important construct in AN. When interpreting the results in terms of broader psychopathology IU plays a significant role in the expression of eating disorder pathology and anxiety. It is conceivable that IU is a vulnerability factor that manifests in adolescents with AN.

The significant relation between IU and eating disorder pathology indicates that adolescents with AN are more preoccupied with weight-, eating- and shape concern and are stricter in their dietary restraint when they have high scores of IU. Next to this, adolescents with AN who experience uncertainty have more distress concerning behaviors that could lead to weight gain (e.g., increasing caloric intake). When interpreting the results in relation with anxiety, the level of stress, worry and discomfort increase when adolescents with AN are faced with uncertainty in their lives. Adolescents who have high scores of IU have more negative beliefs and they experience uncertainty as anxiety-provoking. Therefore they participate in stricter anorectic behaviors like planning and organizing to avoid uncertainty.

These anorectic behaviors create a sense of safety and give them a feeling of regaining back control over their lives.

The current study has important strengths. While previous studies are focused on adults with AN, this study is unique in examining the relationship between IU and eating disorder pathology, and anxiety in adolescent girls with AN. Further, this study increases knowledge of eating disorder pathology in adolescents girls with AN.

Although the present study is the first study that examines the interaction of IU with eating disorder pathology and anxiety symptoms in adolescents with AN, a few limitations have to be taken into account. First, in this study the final sample consisted of 53 participants (N=53), but only 21 participants fulfilled all three questionnaires. Therefore only 44 participants could be used to examine the correlation between IU and eating disorder pathology and only 32 participants for the correlation between IU and anxiety symptoms. Therefore the power of this study is limited. Second, the present study integrates databases of two different studies. It could be that the inclusion criteria for both studies were different and that both samples are very diverse in their participants. Another point worth mentioning is that the IUS questionnaire used, was different in both studies. One study used the original 27-item version, while the other study used the short 12-item version. For this study the items from the short IUS were extracted from the 27-item IUS, so that only the questions that were present in both studies were used in the dataset.

The results of this study may be relevant for clinical applications regarding the treatment of AN among adolescents. Uncertainty plays an important, unavoidable and inescapable aspect of life. This is something individuals have to tolerate and cope with in a healthy way (Sternheim, Konstantellou et al., 2011). For the purpose of the clinical importance, more focus should therefore be on the internal cognitive mechanisms underlying AN instead of focusing on the expression of AN symptoms. Since these cognitive anxiety related mechanisms seem to affect eating disorder pathology (Sternheim, Startup, & Schmidt, 2011; Sternheim, et al., 2015). Secondly, future research should include more participants, so that the results are more interpretable and generalizable for the population. A future study should also work with only one IU questionnaire, so that all participants got the same length of questionnaire.

In conclusion, since the incidence of AN is increasing, it is necessary to increase knowledge of eating disorder pathology in adolescents (Hoek, 2006). Especially understanding the role of IU in eating disorders has some promising perspectives. This study sets a first step towards a better understanding of this construct. It gains a better insight in the

development and maintenance of AN during adolescence and will broaden the knowledge about factors contributing to this construct. The results of this study suggest that IU plays an important role in patients with AN.

When interpreting this in terms of broader psychopathology, high scores of IU contribute to more severe levels of eating disorder pathology and anxiety symptoms. This information can be used to make current treatment methods more effective or it can help when developing new treatment opportunities for adolescents with AN.

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