

**Cognitive distortions, Internalizing Problems and Gender:  
What is the Relationship between Cognitive distortions and Internalizing Problems in  
Adolescents (13-17), and is this Association Moderated by Gender?**

Master's thesis

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### Abstract

**Aim** Cognitive distortions have mostly been described in the context of externalizing problems, however, some indication that cognitive distortions are associated with internalizing problems is available. The aim of this study was to explore the effects of cognitive distortions on internalizing problems, and uncover whether gender differences exist within this relationship. **Method** Data from 535 adolescents (260 boys and 275 girls) aged twelve to nineteen were analyzed in a cross-sectional design. Self-reported questionnaires examined adolescents' cognitive distortion levels, clustered in subscales of self-centering, blaming others, minimizing/mislabeling and assuming the worst, as well as internalizing problem levels. **Results** T-tests revealed that cognitive distortions were more prevalent in boys compared to girls, while girls reported higher rates of internalizing problems. Furthermore, correlation effects revealed that higher rates of cognitive distortions were found to relate to increasing internalizing problems. No significant moderation effects were found for gender in the relationship between cognitive distortions and internalizing problems. **Conclusion** This study was the first to examine whether gender differences play a role the association between cognitive distortions and internalizing problems. The lack of significant moderation effects indicates that boys and girls dealing with depression or anxiety do not require different treatment approaches regarding cognitive distortions. However, more research is necessary to establish a comprehensive picture of how this relationship is shaped.

*Keywords: cognitive distortions, internalizing problems, gender*

### **Cognitive distortions, Internalizing Problems and Gender:**

#### **What is the Relation between COGNITIVE DISTORTIONS and Internalizing Problems in Adolescents (13-17), and is this Association Moderated by Gender?**

Misinterpreting a situation is a common and often innocent error. However, this can become a problematic issue if the incorrect interpretations become a default cognitive process, causing an inaccurate worldview and inducing problematic behavior. Such cognitive distortions are negative biases which influence how an individual interprets a situation. It is discussed that early childhood experiences form cognitive schemata, which shape the thought process and therefore the behavioral patterns of an individual (Gilbert, 1998). While the relationship between cognitive distortions and problem behaviors has been established in literature (Garnefski et al., 2005), underlying mechanisms regarding specific conditions in which this relationship holds itself remain unclear, due to limited empirical research. Gaining a greater insight on whether individual differences such as gender play a role in how cognitive distortions influence problem behavior would fill a gap in existing literature. In addition to this, the current study could provide implications on how cognitive distortions, and possibly related problem behaviors, can be treated more effectively.

#### **Types of cognitive distortions**

Gibbs and Potter (as cited by Barriga and Gibbs, 1996) distinguish four types of cognitive distortions. The first type they discuss include *self-centered distortions*, which are based on the conception that the feelings, needs, views, expectations, etc. of others are less important than their own. The second type of distortion that Gibbs and Potter recognize is that of *blaming others*, in which the blame for inconvenient or misfortunate circumstances is put on other people outside of the self. Furthermore, *minimizing and/or mislabeling* cognitive distortions are described, in which antisocial behavior is justified by portraying it as less severe, acceptable or praiseworthy. Lastly, Gibbs and Potter distinguish distortions on *assuming the worst*, by which it is assumed that unfavorable outcomes will be most likely to happen as if this is an inevitable fate. In addition to this, it is also expected that others have hostile intentions and that behavior is fixed and cannot be improved.

#### **Cognitive distortions and problem behavior**

Cognitive distortions have been found to relate to problem behaviors, specifically externalizing problems (Barriga et al., 2000). A strong relationship between cognitive distortions and externalizing problems has been established, revealing that higher levels of cognitive distortions relate to increased externalizing problem behavior (Helmond et al., 2015). This finding has been explained by cognitive distortions relating to a decreased moral

judgement (Lardén et al., 2006), however, this notion is not fully supported in literature (Nas et al., 2008).

Even though existing literature has predominantly examined the effects of cognitive distortions in light of externalizing problem behavior, there is some indication that the distortions are related to internalizing problems as well (Garnefski et al., 2005). For example, the assumption that the worst possible outcome will be most likely to occur has been found to be significantly correlated to internalizing problems in some studies (Jager-Hyman et al., 2014; Weems et al., 2001). However, details on the relationships between the four types of cognitive distortions and internalizing problems remain unclear due to the limited amount of existing studies.

### **Cognitive distortions, internalizing problems and gender**

In addition to the uncertainty on how cognitive distortions influence internalizing problems, little is known about extent to which gender influences these processes. When solely regarding internalizing problems, gender differences are confirmed in empirical research, in which girls have been found to experience higher levels of anxiety and depression than boys (Costello et al., 2005; Kubik et al., 2003). In their longitudinal study, Essau et al. (2010) found that adolescent girls not only report higher onset levels of depression, but also that the frequency and duration of their depressive episodes is increased compared to that of boys. While there is less known about similar gender differences in the trajectory of anxiety (Christiansen, 2015), there is some indication that besides an increased prevalence, women experience a greater number of fears in addition to more severe anxiety-related symptoms compared to male counterparts (Asher et al., 2017).

While little research has been conducted on this gender difference in cognitive distortions related to internalizing problems (Muris & Field, 2008), studies in the context of externalizing problems are available. These studies often find that boys with externalizing problem behavior experience more cognitive distortions. For example, in their study on delinquent Swedish youth, Lardén et al. (2006) found that girls experience less cognitive distortions than boys and explain this in light of their finding that the girls in their sample reported a higher empathic level and more mature moral judgements. Similarly, Barriga et al. (2001) found lesser rates of distortions in externalizing girls, specifically self-serving distortions which serve to justify antisocial problem behavior. In addition, they found that the girls in their sample had a higher moral judgement, comparable to the study of Lardén and colleagues.

In short, these findings reveal a gender difference in internalizing problems in which girls report higher rates of depression and anxiety, while also providing an indication that gender differences exist within cognitive distortions. However, it remains unclear whether, and if so how, the relationship between cognitive distortions and internalizing problems differs for boys and girls.

### **Current study**

Since there is still much unknown about the underlying mechanisms, the aim of this study was to fill this gap in literature by taking on an explorative approach. As of now, the effects of cognitive distortions have mostly been assessed in the context of externalizing problems. The current study however, will discuss new insights on the link between cognitive distortions and internalizing problems, which could provide implications for future interventions. Currently, interventions for anxiety and depression often entail some form of Cognitive Behavioral Therapy (CBT), in which mal-adaptive thoughts are identified and modified to decrease emotional distress and stimulate more adaptive behavior (Wenzel, 2017). While proven effective, outcomes and effect sizes of CBT for treating internalizing problems often vary per individual (Crawley et al., 2008; Crowe & McKay, 2017; Klein et al., 2007). Recent studies more often aim to uncover whether (and if so which) predictors and moderators influence treatment effectiveness, in order to determine how therapy can effectively be personalized to guarantee optimal results, when specific conditions apply (Benjamin et al., 2011). In light of this trend, the results of this study serve as a first attempt into understanding the influence of cognitive distortions, and gender as a moderator, on internalizing problems. Results of the analyses will implicate whether it is relevant to adapt cognitive behavioral interventions to these conditions.

In this study, three research questions have been proposed in order to learn more about the relationship between cognitive distortions and internalizing problems, as well as possible moderation effects of gender. First, it was investigated whether the subscales and total scale for cognitive distortions are significantly associated with internalizing problems. While priorly discussed literature mostly described effects in the context of externalizing problem behaviors, it was expected that similar associations would be found for internalizing problems as well. Thus, higher reports of cognitive distortions were expected to be correlated with higher rates of internalizing problems.

With the second research question, it was analyzed whether gender differences exist in the amount of self-reported cognitive distortions and internalizing problems. Since earlier studies have identified gender differences in levels of both cognitive distortions and

internalizing problems, similar results are expected for this study. Specifically, boys were expected to report higher rates of cognitive distortions, while reporting less internalizing problems compared to girls.

The third and final research question of this study investigated whether gender (significantly) moderates the relationship between cognitive distortions and internalizing problems. As priorly stated, this study will be the first to discuss the potential moderation effects of gender in this context. The amount of studies currently available is too limited to present well-founded expectations regarding this research question, which therefore will be explored without a priori hypothesis.

## **Method**

### **Sample, procedure and design**

To attract participants for their study on sibling relations, parent-child relations and other psychosocial functioning, students of the University of Utrecht reached out to Dutch high schools from their own networks. Of these schools, seven had agreed to take part and after receiving passive permission from parents and active consent from the adolescents themselves, data were collected. After correcting for missing values, the data of 535 students aged twelve to nineteen ( $M=14.6$ ) were analyzed in the current study. Of these participants, 48.6% is male ( $N=260$ ) and 51.4% is female ( $N=275$ ). Different school levels were represented within the participant group, ranging from pre-vocational secondary education to pre-university education (VMBO 37.4%, VMBO/HAVO 13.6%, HAVO 17.4%, HAVO/VWO 6% and VWO 25.6%).

The data used for this thesis stem from a cross-sectional research project in which the participants filled out questionnaires which included several topics of interest. Most participants filled out their questionnaires at school in the presence of students of the University of Utrecht. However, a small group was visited at home due to the coronavirus pandemic. Questionnaires were filled out anonymously, which included questions on the sibling relationship and the relationship between both parents and the participant. In addition to this, participants answered questions on internalizing and externalizing problem behavior, competence, peer relationship quality, personality and cognitive distortions, as well as background variables (sex, age, ethnicity and whether or not parents have been divorced).

The data are tested for linearity, homoscedasticity, multicollinearity, continuity and normal distribution and have been found to abide by these assumptions. All construed scales were analyzed for their reliability via reliability analyses, which was deemed sufficient when the Chronbach's Alpha was found greater than .70. Descriptive statistics including means and

standard deviations for all scales were calculated and t-tests were run to compare the means between boys and girls. Cohen's  $d$  was used to describe if the effect sizes of these t-tests could be considered small ( $d=.20$ ), medium ( $d=.50$ ) or large ( $d=.80$ ). The relationships between the different cognitive distortions scales and internalizing problems, as well as the moderation effect of gender, were analyzed by running hierarchical regression analyses.

### **Measuring instruments**

#### *Internalizing problems*

Internalizing problems were measured based of scores on the Youth Self Report, in which participants reported the extent of their own problematic behaviors on both externalizing (aggressive behavior) and internalizing (anxiety/depression) scales. Answers were given on a 3-point Likert scale, ranging from 'does not apply' (1) to 'applies clearly/often' (3). The scores of the fourteen items reflecting internalizing problems have been computed into a mean scale, including statements such as '*I feel lonely*' and '*I cry often*'. The reliability analysis for this scale revealed that  $\alpha=.92$  and is therefore deemed reliable.

#### *Cognitive distortions*

For measuring cognitive distortions, this study used the How I Think Questionnaire (HIT) (Barriga et al., 2001), translated in Dutch (Hoe Ik Denk Vragenlijst HID, by Nas et al., 2008). This questionnaire is made up of 54 items which measure four subscales of cognitive distortions: self-centering, blaming others, minimizing and/or mislabeling and assuming the worst. Answers are based on a 6-point Likert scale, ranging from 'totally disagree' (1) to 'totally agree' (6). Mean scales were computed for all subscales, as well as a scale regarding the total of cognitive distortions. The scale for self-centering is based on nine items of the questionnaire, containing statements such as '*Sometimes you have to lie to get what you want*'. For the 'blaming others' subscale, ten items are used to construct the scale such as '*I make mistakes because I surround myself with the wrong people*'. Furthermore, nine items are included to measure the minimizing and/or mislabeling scale, with statements like '*It is not bad to lie, everyone does it*'. Lastly, the subscale 'assuming the worst' is construed by eleven items, including '*No one is to be trusted, because everyone lies to you*'. All scales measuring cognitive distortions were found to be reliable (self-centering  $\alpha=.78$ , blaming others  $\alpha=.78$ , minimizing/mislabeling  $\alpha=.77$ , assuming the worst  $\alpha=.79$ ). The remaining fifteen items of the questionnaire are not included in this study, since they are not related to any scale but solely added to filter out socially acceptable answers and to reduce the negative load (Brugman et al., 2011).

## Results

### Research question 1: (How) Are cognitive distortions related to internalizing problems?

As shown in Table 1, the correlation analysis reveals that all cognitive distortion subscales are significantly and strongly correlated with internalizing problems, except for the minimizing/mislabeling scale. Thus, no significant relationship seems to exist between minimizing and/or mislabeling a situation and experiencing internalizing problems.

Regarding the ‘self-centering’, ‘blaming others’ and ‘assuming the worst’ scales, this significance indicates that individuals who report higher rates of these distortions, also experience more internalizing problems. Despite that the (non-significant) ‘minimizing/mislabeling’ subscale is included in the ‘total cognitive distortions’ scale, the correlation analysis reveals that the latter is still significant, meaning that more cognitive distortions overall also relate to higher rates of internalizing problems.

### Research question 2: Are there significant gender differences within the cognitive distortions and internalizing problems scales?

Table 2 shows the means and standard deviations for the internalizing problems scale, as well as the cognitive distortion subscales. In addition to this, the means and standard deviations are presented for both boys and girls separately, together with t-test results per scale. These analyses show that girls report significantly higher rates of internalizing problems than boys. On the other hand, boys report significantly higher rates on all cognitive distortions subscales, as well as on the total cognitive distortions scale. Effect sizes of these mean differences vary:

**Table 1**

*Means and Standard Deviations of, and Correlates between Internalizing Problems and Cognitive Distortion Scales (N=535)*

	M	SD	1	2	3	4	5	6
1. Internalizing problems	1.54	.49	-					
Cognitive distortion scales								
2. Self-centering	2.25	.73	.09*	-				
3. Blaming others	2.11	.72	.14**	.76**	-			
4. Minimizing/mislabeling	2.36	.76	.06	.75**	.74**	-		
5. Assuming the worst	2.21	.70	.24**	.77**	.81**	.75**	-	
6. Total cognitive distortions	2.23	.66	.15**	.90**	.91**	.89**	.92**	-

Note. \*  $p < .05$ , \*\*  $p < .01$



**Table 2***Descriptive Statistics and T-tests for Internalizing Problems and Cognitive Distortions Scales: Gender Differences*

	Boys (N=260)		Girls (N=275)		T-test	Cohen's <i>d</i>
	M	SD	M	SD	t	<i>d</i>
1. Internalizing problems	1.37	.40	1.71	.51	-8.51***	-.74
Cognitive distortion scales						
2. Self-centering	2.39	.76	2.12	.68	4.14***	.36
3. Blaming others	2.25	.76	1.98	.67	4.93***	.37
4. Minimizing/mislabeling	2.53	.81	2.19	.68	5.23***	.46
5. Assuming the worst	2.28	.74	2.15	.66	2.14**	.19
6. Total cognitive distortions	2.36	.70	2.11	.60	4.36***	.38

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

with the effect size of differences within the 'assuming the worst' scale being negligible, those of 'self-centering', 'minimizing/mislabeling' and 'total cognitive distortions' being considered as small. For the internalizing problems scale, the effect size of the mean difference between boys and girls was considered as medium.

### **Research question 3: Does gender (significantly) moderate the relationship between cognitive distortions and internalizing problems?**

For each scale of cognitive distortions, separate hierarchical regression analyses are conducted. Table 3 shows the results of each step for the five moderation analyses (four regarding the subscales and one for the total cognitive distortions scale).

Congruent with the analysis for correlates, the effects of the relationships between the cognitive distortions scales and internalizing problems scale were found to be significant for all scales but the minimizing/mislabeling scale. The relationship between gender and internalizing problems was found to be significant in all models. Based on the priorly discussed t-tests, girls report significantly more internalizing problems compared to boys.

No significant interaction effects were found in the moderation analyses. These lack of effects reveals that the relationship between cognitive distortions and internalizing problems is not significantly moderated by gender. Thus, boys and girls did not differ in experiencing cognitive distortions related to internalizing problems.

**Table 3***Summary of the Five Hierarchical Regression Analyses Predicting Internalizing Problems (N=535)*

	Internalizing problems				
	B	SE B	$\beta$	$\Delta R^2$	$p \Delta R^2$
Step 1					
a. Self-centering	.07***	.03	.14	.14	<.001
b. Blaming others	.10***	.03	.21	.16	<.001
c. Minimizing/mislabeling	.05	.03	.11	.14	<.001
d. Assuming the worst	.12***	.03	.24	.19	<.001
e. Total cognitive distortions	.09***	.03	.19	.16	<.001
Step 2					
a. Gender	.36***	.04	.37		
b. Gender	.38***	.04	.39		
c. Gender	.37***	.04	.38		
d. Gender	.36***	.04	.37		
e. Gender	.38***	.04	.39		
Step 3					
a. Self-centering x gender	.01	.04	.02	.00	.720
b. Blaming others x gender	.00	.04	.00	.00	.997
c. Minimizing/mislabeling x gender	.03	.04	.04	.00	.413
d. Assuming the worst x gender	.04	.04	.05	.00	.315
e. Total cognitive distortions x gender	.03	.04	.04	.00	.469

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

- a. Regression analyses for models regarding the 'self-centering' scale.
- b. Regression analyses for models regarding the 'blaming others scale'.
- c. Regression analyses for models regarding the 'minimizing/mislabeling' scale.
- d. Regression analyses for models regarding the 'assuming the worst' scale.
- e. Regression analyses for models regarding the 'total cognitive distortions' scale.

## Discussion

In this study, the relationship between cognitive distortions and internalizing problems was explored and tested for moderation effects by gender. The first research question that was analyzed was if (and how) cognitive distortions are related to internalizing problems. In light of evidence from studies on externalizing problems, the hypothesis for this research question was that higher rates of cognitive distortions are related to higher levels of internalizing problems. Results of the analysis are mostly in support of this hypothesis, revealing significant relationships between all cognitive distortion scales and internalizing problems,

except for the ‘minimizing/mislabeling’ scale. With these findings, this study provides new evidence for how the association between cognitive distortions and internalizing problems is shaped.

In literature, internalizing problems appear to be linked to a more self-oriented focus in relation to emotional awareness (Rieffe & de Rooij, 2012). Cáceda and colleagues (2014) found that depressed women show less reciprocity and higher levels of self-centered behaviors than non-depressed individuals in trust experiments. They explain this finding in light of depressed individuals being less capable to care for others. These effects may explain the significant association between self-centering distortions and internalizing problems in the current study. However, this statement should come with caution, since opposite effects are also described in literature, stating that depressive symptoms relate to increased submissive and altruistic behaviors (Fujiwara, 2007; O’Connor et al., 2002).

Opposed to the significant relationship between the blaming others subscale and internalizing problems, prior research also links internalizing problems with self-blame (Zahn et al., 2015). In their 1997 article, Abramson & Sackeim proposed a paradox that entailed people suffering from depression both blame themselves for their problems as well as feel helpless and out of control. Gilbert and Miles (2000) found a correlation between putting the blame on others and anxiety, and hypothesize that people who value themselves in a negative light expect others to treat them negatively. This emphasizes that self-blame attributions do not exclude the assumption that others are to blame and could explain the significant effects of the blaming others scale on internalizing problems.

In line with findings discussed in prior research, ‘assuming the worst’ has been found to have a significant effect on internalizing problems. Major Depressive Syndrome has been linked to a tendency to predict ambiguous situations more negatively (Wisco & Nolen-Hoeksema, 2010), while feelings of anxiety can increase catastrophizing cognitions in which the worst possible outcome is expected (Weems et al., 2001). This overlap could explain the significance of the relationship between the ‘assuming the worst’ scale and internalizing problems.

The second research question formulated in this study was whether significant gender differences exist within cognitive distortions and internalizing problems scales. In line with the hypothesis, t-test results revealed that boys report significantly higher levels on all cognitive distortion scales compared to girls. Different effect sizes were found for each scale. While boys and girls reported significantly different rates in how strongly they assumed that the worst outcome would be most likely to occur, effect sizes for this scale were negligible.

Small effect sizes were found for the gender difference within the ‘self-centering’, ‘minimizing/mislabeling’ and ‘total cognitive distortion’ scales.

Despite Lardén and colleagues (2006) finding larger effect sizes for these gender differences, the current findings agree with and add to the evidence that boys experience significantly higher levels of cognitive distortions, at least those related to self-centeredness and minimizing or mislabeling situations. Lardén and colleagues suggest that a higher baselevels of empathy in girls could serve as a protective factor in experiencing cognitive distortions. Results of the current study do not provide alternative explanations as to why this gender difference exists and since limited evidence is available, future research is necessary to uncover the causes for this discrepancy. Furthermore, t-test results revealed significant, moderate effect for gender difference in self-reported internalizing problem rates, by which girls experienced higher levels than boys. Again, this finding was expected based on a higher prevalence of both depression and anxiety in girls.

The third and final research question that was investigated in this study was whether gender significantly moderated the relationship between cognitive distortions and gender. For this research question, this study took on an explorative approach since existing literature could not provide well-founded expectations for the outcome of the moderation analyses. The results reveal no significant moderation effects of gender in the relationships between any cognitive distortion scale and internalizing problems. Thus, despite gender differences being present in the cognitive distortion scales for self-centering, blaming others and assuming the worst, as well as in internalizing problems, the associations between these scales did not differ between boys and girls.

This study is one of the first to analyze the relation between the cognitive distortions of the HIT-questionnaire and internalizing problems. These new insights provide a greater understanding of the mechanisms that underly this relationship, by which implications for interventions and future research arise. Treatments for anxiety disorders which target cognitive distortions such as Cognitive Behavioral Therapy indicate medium effects (Otte, 2022), which further emphasizes the importance of recognizing and treating cognitive distortions in individuals with internalizing problems. The lack of significance in the moderation analyses implies that as of now, no different approach is indicated for treatment of cognitive distortions in internalizing male or female adolescents.

This study comes with some limitations. Cognitive distortion measures were based on items from the HIT-questionnaire which, according to Barriga and colleagues (2000), specifically measures self-serving distortion rates. In their article, it is discussed that this type

of distortion is strongly associated with externalizing problems. It should be acknowledged that other questionnaires on cognitive distortions such as the Cognitive Distortions Questionnaire (CD-Quest) (de Olivera et al, 2015) include items that target internalizing problems more. Since this study discussed effects of only four cognitive distortion types out of the many others distinguished in literature (Yurica & DiTomasso, 2005), future designs should include other subtypes to create an extensive understanding of associations between cognitive distortions and internalizing problems.

Internalizing and externalizing problems often co-exist (Boylan et al., 2007; Bubier & Drabick, 2009; Drabick et al., 2006). For example, internalizing problems have been found to relate to a hostile attribution bias, in which irritability and anger may arise (Barriga, Hawkins & Camelia 2008; Smith et al., 2016). With this in mind, it is possible that participants of this study who report higher levels of internalizing problems also deal with externalizing behaviors. Unfortunately, it was beyond the scope of this study to identify whether the findings were influenced by possible effects of this comorbidity. Future research should take this into account and investigate how influential comorbid externalizing problems are within cognitive distortions and internalizing problems.

Another limitation of this study is that results are based on self-reports. While self-reports are most often used when evaluating internalizing problems, answers in self-reported questionnaires are prone to being more socially acceptable. While the design of the current study provides no significant indication that the data would be less reliable, future studies could explore this by also considering informant reported data.

Nonetheless, in the assessment of internalizing problems, it is always important to consider the thought processes that color the cognitions and behaviors of an individual. Identifying when and how these thoughts become distorted should be taken serious as risk factor in developing adolescent depression and anxiety.

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