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## The relation between social anxiety and biased interpretations in adolescents with mild intellectual disabilities



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### ABSTRACT

**Background:** Cognitive theories of anxiety emphasize the importance of cognitive processes in the onset and maintenance of anxiety disorders. However, little is known about these processes in children and adolescents with Mild Intellectual Disabilities (MID).

**Aims:** The aim of this study was to investigate interpretation bias and its content-specificity in adolescents with MID who varied in their levels of social anxiety.

**Method and procedures:** In total, 631 adolescents from seven special secondary schools for MID filled in questionnaires to measure their levels of social anxiety. They also completed the Interpretation Recognition Task to measure how they interpret ambiguous situations.

**Outcomes and results:** Adolescents with higher self-reported levels of social anxiety interpreted ambiguous scenarios as more negative than adolescents with lower self-reported social anxiety. Furthermore, this negative interpretation was specific for social situations; social anxiety was only associated with ambiguous social anxiety-related scenarios, but not with other anxiety-related scenarios.

**Conclusions and implications:** These findings support the hypothesis that socially anxious adolescents with MID display an interpretation bias that is specific for stimuli that are relevant for their own anxiety. This insight is useful for improving treatments for anxious adolescents with MID by targeting content-specific interpretation biases.

### What this paper Adds?

Cognitive theories of fear and anxiety emphasize the importance of cognitive processes in the onset and maintenance of anxiety disorders. However, little is known about these processes in children and adolescents with Mild Intellectual Disabilities (MID). This paper is the first study that examines the relation between biased cognitive processes and anxiety in adolescents with MID. The purpose of this study was to determine whether socially anxious adolescents with MID display an interpretation bias and whether this bias is specific for scenarios related to social situations. The results show that socially anxious adolescents with MID indeed display an interpretation bias and that this bias is specific for social situations. Theoretically, this paper indicates that adolescents with MID show biased cognitive processes that are similar to adolescents with average IQ scores. These results provide evidence for the applicability of the cognitive social anxiety model to adolescents with MID. Clinically, this insight is useful for improving treatments for anxious adolescents with MID by targeting content-specific interpretation biases. Treatments aimed at specific biased cognitive processes may be potentially more effective than generic treatment programs.

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## 1. Introduction

Social anxiety disorder is highly prevalent in children and adolescents with Mild Intellectual Disabilities (MID) and is reported as one of the most common forms of social distress in this population (Dekker & Koot, 2003; Emerson, 2003). Social anxiety disorder often develops during adolescence and is marked by the persistent fear of social or performance situations (American Psychiatric Association, 2013). Although treatments for child- and adolescent anxiety have shown good efficacy, at least 40% of children and adolescents continue to have a diagnosis after treatment (James et al., 2013). Moreover, studies related to the treatment of anxiety disorders in adolescents with MID are scarce, but the general conclusion is that treatments are less effective in individuals with MID compared to individuals with an average IQ (e.g. see Dagnan & Jahoda, 2006). To develop potentially more effective treatments for social anxiety disorder in adolescents with MID, more insight into underlying processes of their anxiety seems important.

Over the past two decades, several underlying processes have been defined as maintaining and possibly causing anxiety disorders, including cognitive processes (for a review, see Mathews & MacLeod, 2005). According to theories that describe the importance of cognitive processes (e.g., Beck, Emery, & Greenberg, 1985), socially anxious adults and children have anxiety-related schemata. These schemata direct processing resources towards threat-relevant information, resulting in cognitive biases related to attention, interpretation and memory (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997). There are indeed numerous studies that reported evidence for the existence of cognitive biases in adolescents (for an overview, see Hadwin & Field, 2010) and there is also some evidence that these biased cognitions are content-specific (e.g. Bögels & Zigterman, 2000; Klein et al., 2012, 2014). For example, adolescents who are socially anxious presumably interpret ambiguous stimuli that are related to social situations in a negative way (interpretation bias), while other ambiguous stimuli, for example related to spiders, are not negatively interpreted.

To investigate the causal role of such threat-related biases and the potential to alleviate symptoms by reducing biases, Cognitive Bias Modification for Interpretations (CBM-I) training paradigms have been developed (for a review, see MacLeod & Mathews, 2012). Positive effects on interpretation bias and anxiety have been found in adolescents (Salemink & Wiers, 2011). These positive effects were specifically found in adolescents with lower levels of cognitive control or working memory capacity (Salemink & Wiers, 2012). As adolescents with MID have difficulties in making use of their working memory (Van der Molen, Van Luit, Van der Molen, & Jongmans, 2010), CBM-I might be particularly relevant here as an alternative approach in treatment. However, a prerequisite for the relevance of CBM-I is the presence of an interpretation bias. Furthermore, insight into the content-specificity of this bias is important to target specific biases efficiently. Unfortunately, up to now, there are no published studies that examine the existence of interpretation biases related to anxiety in adolescents with MID. Therefore, it is still unclear whether socially anxious adolescents with MID interpret ambiguous situations in a negative way comparable to adolescents with an average IQ. There are several studies that concluded that individuals with MID have similar coping strategies during difficult situations as individuals without MID (Da Costa, Larouche, Dritsa, & Brender, 2000; Fanurik, Koh, Schmitz, Harrison, & Conrad, 1999; Kurtek, 2016; Madland, Feinmann, & Newman, 2000). These findings might suggest that similar biases in information processing might also play a role in adolescents with and without MID.

Therefore, the focus of the current study was to investigate interpretation bias and its content-specificity in a group of adolescents with MID who varied in their levels of social anxiety. Based on theoretical conceptualization and findings in adolescents with an average IQ, we hypothesized that adolescents with higher levels of social anxiety would display a stronger negative interpretation bias. Furthermore, we expected that this bias would be specific for social anxiety-related situations.

## 2. Methods

### 2.1. Participants

A sample of 740 adolescents was recruited from seven special secondary schools in the Netherlands. Indication criteria for these schools are limitations in intellectual functioning (IQ-scores between 55 and 80) and adaptive behavior, including significant dysfunctions in conceptual, social and practical skills (American Psychiatric Association, 2013; Schalock et al., 2010). After passive consent had been granted by the adolescents and their parents, a total of 631 children (364 boys) participated in this study. All adolescents were between 12 and 18 years old ( $M = 14.35$ ,  $SD = 1.46$ ). The ethics committee of the University of Amsterdam, the Netherlands, approved this study. The current study was part of a large community-based project on adolescent anxiety (Klein et al., 2016a; Klein et al., 2016b).

### 2.2. Instruments and procedure

*Interpretation Recognition Task* (IREC-T; Salemink & van den Hout, 2010; Salemink & Wiers, 2011; Van der Molen & Salemink, 2017). Interpretation bias was measured with the IREC-T that was based on the Recognition Task developed by Van der Molen and Salemink (2017). First, adolescents were asked to read/listen to the instructions and to respond to the different scenarios on a private computer (one of the assistants read the instructions and the scenarios of the IREC-T out loud, because some adolescents had reading problems). Adolescents were asked to imagine themselves as the central character of each scenario. After reading/listening to a scenario, they were asked to answer a comprehension question with ‘yes’ or ‘no’ on the computer screen. After that, the scenario was repeated and the adolescents were asked to indicate the likeliness of the negative interpretation question on a 4-point-likert scale (1 = very small, 4 = very great; see Table 1 for sample scenarios of both categories).

As mentioned above, we used a set of 16 scenarios based on Van der Molen and Salemink (2017) that was divided into two

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