

**Problematic Eating Behavior in Women:
How Much Do Autistic Traits and Cognitive Inflexibility Matter?**

A Thesis

Submitted in Partial Fulfillment
of the Requirements of the degree
MSc Psychology

Rebecca I. Z. Wenk

Student Number: 5306566

Department of Clinical Psychology, Utrecht University

Program: Clinical Psychology

Supervisor: Sabrina Schröder

Second Assessor: Lonneke van Tuijl

August 30, 2022

Word count: 5191

Abstract

This study investigated the relationship between autistic traits, cognitive inflexibility (CI), and problematic eating behavior (PEB) in a sample of Dutch-speaking women ($N = 61$). PEB was assessed by means of three constructs: picky eating (PE), PEB frequently associated with autistic traits, and Avoidant/Restrictive Food Intake Disorder (ARFID). These PEB constructs were assessed by means of self-report questionnaires (APEQ, SWEEA, NIAS). Results showed that autistic traits was a significant predictor for PE and PEB frequently associated with autistic traits, but not ARFID. CI was a significant predictor for all three PEB measures, and autistic traits and CI were positively associated. Further, CI did not enhance the effect of autistic traits on PEB. In conclusion, autistic traits and CI both seem to predict the level of PEB in women. Autistic traits and CI are associated, however, it is still unclear which forms and components of CI relate to the sub-traits of autism. Future research needs to develop and use diagnostic tools that are based on the female autistic phenotype in order to investigate the relationship between autistic traits and PEB in women.

Keywords: Problematic eating behavior, autistic traits, cognitive inflexibility, rigidity, picky eating, arfid

Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by difficulties with regards to social communication as well as repetitive and restrictive patterns in behavior, activities and interests (American Psychiatric Association, 2013). Autistic traits exist on a spectrum, with high and low traits at the ends of the continuum, and many variations in the middle consisting of individuals that are considered subclinical (Morael-Hidalgo et al., 2017; Vermeirsch et al., 2021). As a developmental disorder, ASD is per definition rooted in childhood, with early signs in males being noticeable around the age of two and above. However, diagnoses are often made later in life and have a prevalence of approximately 1% within the population (Fombonne, 2009; Bargiela et al., 2016; Lord et al., 2009; Hyman et al., 2020).

ASD is known to co-occur with other psychiatric disorders (Brereton et al., 2006; Matson & Cervantes, 2014) with an estimated 70% of individuals with ASD experiencing a comorbid disorder and even 40% displaying two or more additional psychological disorders (DeFilippis, 2018). These comorbidities can include anxiety disorders, depressive disorders, disorders on the psychotic spectrum, as well as ADHD and problematic eating behavior (PEB), with individuals with ASD reporting a significantly higher psychological burden than controls with a (neuro)typical, developmental history (Padgett et al., 2010; van Steensel & Heeman, 2017).

Individuals with PEB fall onto a spectrum, ranging from clinical levels, known as eating disorders (EDs), to subclinical levels that have been shown to be present in various parts of the population (Greenleaf et al., 2009; Touchette et al., 2011; Aspen et al., 2014). With regards to PEB, individuals with ASD can display difficulties early on, such as toddlers showing higher levels of sensory sensitivity, including avoidance of certain food textures, a behavioral pattern that has been referred to as *picky eating* (Cermak et al., 2010; Bandini et al., 2010; Mayes & Zickgraf, 2019). Further, parents of children with ASD report more feeding problems, such as refusal of new foods (i.e. food neophobia), demand of specific food presentation, food intake

from a range of small food categories only, or behavioral difficulties during mealtime (Schreck, et al., 2004; Sun et al., 2013; Curtin et al., 2015).

As these results point towards a relationship between PEB and autistic traits, recent research has focused on the comorbidity and relationship between ASD and eating disorders (EDs). Results have shown that traits that are associated with ASD, including cognitive inflexibility, restrictive and repetitive behaviors, and social impairments have been repeatedly found to be overrepresented in ED samples with prevalence rates between 4 and 52% (Danner et al., 2012; Dingemans et al., 2015; Mandy & Tchanturia, 2015; Huke et al., 2013; Treasure & Schmidt, 2013; Nickel et al., 2019). Women are the most common sufferers of EDs with an estimated female to male ratio of 10:1 (Hudson et al., 2007). And with recent research highlighting the crucial role of autistic traits in PEB, researchers have raised the question as to whether autistic traits might play a much more significant role in women's ED development than currently reported. They consequently proposed that ASD in women might be underdiagnosed (Hudson et al., 2007). Lai et al. (2015) proposed sex differences in ASD to stem from distinct sex phenotypes, with women using "camouflaging" strategies consciously and unconsciously during social interactions to mask their social difficulties. Those strategies include the hiding of behaviors that are typically associated with ASD or the attempt to give the impression of social competence. Results by Rynkiewicz et al. (2016) supported the camouflaging hypothesis, with high-functioning females with ASD being better at non-verbal communication than boys, suggesting sex differences in the social domain. These different ASD phenotypes pose diagnostic challenges that might cause women to receive a late ASD diagnosis or no diagnosis at all (Begeer et al., 2013, May et al., 2012; Oswald et al., 2016).

Another concept that has been linked to PEB and EDs is cognitive inflexibility (CI), which is characterized by difficulties to adapt one's mind to new tasks or changing situations (van Eylen et al., 2011). Research indicated that higher levels of CI accounted for a

significant amount of PEB in adolescents with bulimia nervosa and anorexia nervosa (Wang et al., 2019). Similarly, CI was found to be a significant predictor of picky eating (PE) in children, adolescents, and young adults (Zickgraf et al. 2020) as well as EDs in young adults (Arlt et al., 2016).

Considering the aforementioned insights, research suggests that women with an ED and comorbid ASD might require a treatment that addresses their ASD related problems, including CI and sensory difficulties, rather than the typically known ED related causes, such as body image or weight loss (Kinnaird et al., 2019). Consequently, discovering and treating ASD related characteristics that are associated with PEB might serve as a key in treating women suffering from ED related problems successfully (Kinnaird et al., 2019).

The relationship between ASD traits and PEB in women remains unclear, as research has mostly focused on men and children. Due to the scarcity of literature with regards to women, this study will focus on this relationship in a sample consisting of women only. Further, the study will examine whether this relationship is influenced by the degree of CI an individual displays, thus focusing on a concept that seems to be related to PEB. The researchers will therefore try to gain more insight into specific mechanisms underlying the relationship between ASD, CI, and PEB. Following this line of thought, the researchers will investigate the following research question: What is the relationship between autistic traits and problematic eating behavior in women and is it influenced by cognitive inflexibility?

Consequently, the researchers will investigate the following hypotheses:

1. More autistic traits are associated with more problematic eating behavior.
2. More autistic traits are associated with higher levels of cognitive inflexibility.
3. Higher levels of cognitive inflexibility are associated with more problematic eating behavior.
4. Women with more autistic traits and higher levels of cognitive inflexibility have more problematic eating behavior.

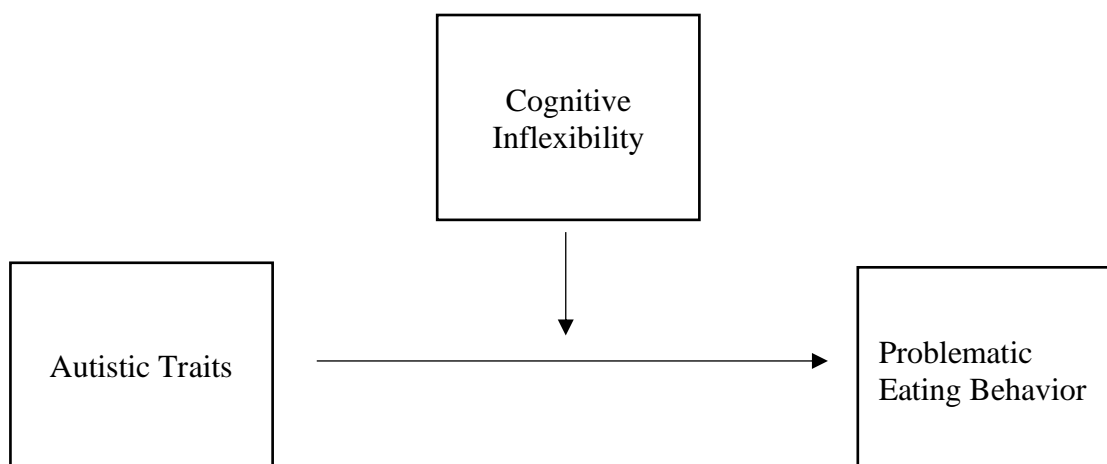
Method

Design

This study used a cross-sectional research design and inquired into the research question by means of bivariate correlations and linear multiple regressions. The researchers investigated the relationship between autistic traits (independent variable), problematic eating behavior (dependent variable), and cognitive flexibility (moderator) (Figure 1). Problematic eating behavior was assessed by means of three instruments that measured a) problematic eating behavior often associated with autistic traits, b) picky eating, and c) traits that are associated with Avoidant/Restrictive Food Intake Disorder. For each problematic eating behavior measure, one linear regression analysis was conducted, resulting in a total of three separate regression analyses.

Figure 1

A Model of the Study Design



Note. Investigation of the relationship between autistic traits, cognitive inflexibility, and problematic eating behavior

Procedure

The present study is part of the research project “Eating Behaviors of Women with an Eating Disorder and Autism Spectrum Disorder” (protocol ID: NL74635.041.20) which was

approved by the Medical Research Ethics Committee at Utrecht University. Ethical approval for this study was obtained through permission by The Ethics Review Board of the Faculty of Social and Behavioural Sciences at the UU. Participants were approached via mail or personally and received information about the study either verbally or in short, written form. Upon further interest in participation, they received an information letter that laid out the intention, goals, content, and ethical implications of the study. In order to be included, participants had to identify as female, fall within the age range of 18-58 and be fluent in the Dutch language. The letter included an informed consent form that was signed by subjects who were willing to participate. After returning the signed form, subjects participated in an online survey that took about 30-40 minutes to complete. The self-report measures were created, published and distributed as a survey via the online platform Qualtrics XM. Recruitment was carried out by means of the Utrecht University SONA Systems where Bachelor's students received subject participation hours (PPU) in return for their participation. Additionally, the researchers recruited participants through convenience sampling, that is to say by contacting acquaintances and friends personally.

Power Analysis

An a-priori power analysis using G*power 3.1 (Faul et al., 2009) yielded that given an α of .05, power of .8, and effect size of $f^2=.15$, the required sample size for a linear multiple regression with 2 predictors is 55.

Participants

The initial sample included 69 Dutch-speaking women. Eight participants were missing multiple survey responses and were consequently removed from the sample, resulting in a total of 61 participants. As indicated by the Qualtrics XM support team, missing item responses might be due to errors in the survey matrix during response recording. Sample characteristics can be found in Table 1.

Table 1*Sociodemographic Characteristics of the Participants*

Variables	<i>N</i>	<i>n</i>	%	<i>M</i>	<i>SD</i>
Age	61			29.77	9.91
18 – 25		33	54.10		
26 – 40		18	29.51		
> 40		10	16.39		
BMI	61			23.20	3.43
Underweight (< 18.5)		2	3.28		
Normal weight (18.5 – 24.9)		45	73.77		
Overweight (25 – 29.9)		11	18.03		
Obesity (> 30)		3	4.92		
Educational Level	61				
Master's degree		21	34.4		
WO Bachelor		17	27.9		
HBO Bachelor		10	16.4		
MBO		7	11.5		
Lower Level		5	8.2		
Different		1	1.6		

Note. BMI=Body Mass Index (calculation formula: kg/m²)

Instruments*Assessment of Autistic Traits***Autism Quotient Test (AQ).**

The Autism Quotient Test (AQ-50; Baron-Cohen et al., 2001) is a short self-report questionnaire which assesses 5 different areas on the autism spectrum by means of 50 items. Assessment areas include social skills, attention switching, attention to detail, communication, and imagination. Items, such as “*I enjoy social occasion*” were answered on a 4-point Likert scale, ranging from “*definitely agree*” to “*definitely disagree*” (Baron-Cohen et al., 2001). The initial validation of the questionnaire by Baron-Cohen et al. (2001) showed reasonable construct validity with moderate to high alpha coefficients. External validity of this validation was also reasonable, as the validation study assessed four different sample groups, including individuals with ASD, individuals with characteristics that are associated with autistic traits, as well as a control group (Baron-Cohen et al., 2001). The total score was

calculated by taking the sum of all scores, resulting in a total score between 50 and 200 with a low score indicating less autistic traits and a higher score indicating more autistic traits (Baron-Cohen et al., 2001). The researchers used the Dutch translation of this questionnaire by Hoekstra et al. (2008). A reliability analysis for the study's sample showed that the internal consistency of the total scale was high with a Cronbach's alpha coefficient of .91.

Assessment of Cognitive Inflexibility

Detail and Flexibility Questionnaire (DFlex).

The Detail and Flexibility Questionnaire (DFlex; Roberts et al., 2011) is a 24-item self-report questionnaire measuring cognitive functioning. The instrument is divided into two subscales, measuring cognitive rigidity and attention to detail, with cognitive rigidity being the subscale that was used for this study. Respondents answered the items by means of a 6-point Likert scale ranging from “*strongly agree*” to “*strongly disagree*” with items such as “*I dislike change*” or “*I get angry if people do not do things my way*” (Roberts et al., 2011). The researchers used the Dutch translation of the questionnaire (Sternheim et al., 2022). Further, the Dflex showed high discriminant validity between lifetime eating disorders and controls. The initial validation of the Dflex showed that construct validity was high, and external validity was satisfactory (Roberts et al., 2011). The total score of cognitive flexibility was calculated by taking the sum of all 12 subscale items. A reliability analysis for the present sample showed that internal consistency of the Dflex was high with a Cronbach's alpha coefficient of .85.

Assessment of Problematic Eating Behavior

Adult Picky Eating Questionnaire (APEQ).

The Adult Picky Eating Questionnaire (APEQ; Ellis et al., 2016) is a 16-item self-report questionnaire that assesses adult picky eating (PE) behavior. It consists of 4 subscales including *meal presentation*, *food variety*, *meal disengagement* and *taste aversion*. Items

included statements, such as “*I have a strong preference toward specific food presentation*” or “*I prefer foods of a particular color*” (Ellis et al., 2016). External validity of the questionnaire’s validation study was high, with a large sample size ($N=1,663$). Convergent validity of PE items was good ($\alpha =.86$) in comparison to the 6-item Food Business Scale of the Child Eating Behavior Questionnaire (Ellis et al., 2016). The total score was calculated by calculating the mean of all items. The researched used a Dutch back-to-back translation of the questionnaire. A reliability analysis for the present sample showed that the APEQ’s internal consistency was high with Cronbach’s alpha being .82.

The Swedish Eating Assessment for Autism spectrum disorders (SWEEA.)

The Swedish Eating Assessment for Autism spectrum disorders (SWEEA; Karlsson et al., 2013) is a self-report questionnaire that was developed for the assessment of eating behaviors that are frequently associated with ASD. The questionnaire consists of 60 questions with 8 subscales assessing the following areas: *perception, motor control, purchase of food, eating behavior, mealtime surroundings, social situation at mealtime, other behavior associated with disturbed eating, hunger/satiety*. Further, there are two single items assessing *simultaneous capacity* and *pica* (“eating inedible things”). Answers are assessed by means of a 5-point Likert scale ranging from “*never*” to “*always*” with a mid-point alternative of “*sometimes*”. (Karlsson et al., 2013). Further, external validity of the questionnaire’s validation study was reasonable. (Karlsson et al. 2013). The total score was established by calculating the mean of the total score and transforming it into a scale from 0-100 (items A-I). Due to the study’s Dutch-speaking sample, researchers used the Dutch translation of the questionnaire by Spek et al. (2020). A reliability analysis for the present sample showed that internal consistency of the SWEEA was high with Cronbach’s alpha being .87.

Nine Item Arfid Screening (NIAS).

The Nine Item Arfid Screening (NIAS; Zickgraf & Ellis, 2017) is a brief, self-report

questionnaire that assesses eating behaviors that are associated with Avoidant/Restrictive Food Intake Disorder (ARFID). This includes a) picky eating, b) poor appetite or restricted interest in eating and c) fear of negative consequences from eating. (Zickgraf & Ellis, 2017). Items, such as “*I dislike most of the foods that other people eat*” were scored on a 6-point Likert scale ranging from “*Strongly disagree*” to “*Strongly agree*”. All nine items were summed and resulted in a total score between 0 and 45, with a higher score indicating more problematic eating behavior. External validity for the questionnaire’s validation study was moderately satisfactory, with three sample groups being investigated that included subjects from national research panel platforms and an undergraduate college sample (Zickgraf & Ellis, 2017). All convergent and divergent validity measures demonstrated acceptable to excellent internal consistency, and criterion validity was high (Zickgraf & Ellis, 2017). The researchers used the Dutch translation of the questionnaire by Mulkens, Kroes & Neimeijer (2019). A reliability analysis for the present sample showed that internal consistency of the NIAS was high with Cronbach's alpha being .82.

Data Collection

Data analyses were conducted by means of IBM SPSS Statistics 26. In order to visualize moderating effects, all moderated regression analyses were done with PROCESS macro (Hayes, 2022). The researcher tested the normality of distribution for all questionnaires by means of the Kolmogorov-Smirnov test with an alpha of <01 . Results showed that the NIAS scores were significantly skewed with $p < .01$. An inspection of the histogram showed 3 outliers that were 1.5 box lengths above the median and were consequently removed from the final regression analysis. Thus, the analysis that used NIAS as the measure for the dependent variable included 58 participants.

Results

Regression Analyses: Testing Assumptions

The researchers found no violations for the following assumptions:

Linearity between variables was tested by inspecting scatter plots between the study variables with no evidence indicating non-linearity. *Multicollinearity* between independent variables was tested by means of the VIF, with spss reporting a value below 5. *Independence of residuals* was tested by means of the Durbin-Watson test, with the test reporting a value of 2.559. *Normality of residuals* was tested by investigating histograms which showed values that fell within the range of -3 and 3. *Homoscedasticity* was tested by inspecting the scatter plots for standardized residuals, with a cloud-shaped pattern within the plot and values falling within the range of -3 and 3.

Exploratory Analyses: Associations between Age, BMI, Autistic Traits, and Cognitive Inflexibility, and Effects of Educational Level on Problematic Eating Behavior

Since autistic women are thought to use “camouflaging” strategies to mask their social difficulties (Lai et al., 2015), the researchers expected that women might learn social coping skills over time and that higher age might be correlated with lower levels of autistic traits. Results showed no significant association between age and autistic traits ($r=.051$, $p=.694$).

As some PEB has been associated with a significantly low or high BMI (Ellis et al., 2016; Zickgraf & Ellis, 2018; Karlsson et al., 2013), the researchers investigated whether BMI and levels of PEB were associated. Results showed no significant association between any of the PEB scales and BMI (APEQ: $r=.014$, $p=.913$; SWEEA: $r=.069$, $p=.596$); NIAS: $r=.047$, $p=.725$). There was no significant association between autistic traits and BMI ($r=.223$, $p=.084$), and a small, significant positive association between CI and BMI ($r=.268$, $p=.037$).

The researchers hypothesized that higher SES might serve as a “buffer” for PEB, as more (financial) resources might make food-related adjustments easier. Results showed that the level of education was not a significant predictor for any PEB, which meant that the level of problematic eating behavior was not dependent on the level of education (PEB 1: $b=-.04$, $t(56)=-1.29$, $p=.20$; PEB 2: $b=-.26$, $t(56)=-.77$, $p=.44$; PEB 3: $b=-.51$, $t(53)=-1.81$, $p=.08$).

Hypothesis 1: “More autistic traits are associated with more problematic eating behaviors.”

Autistic Traits and APEQ

Results for the correlation between the APEQ-total and autistic traits showed that there was a significant, positive, and moderately strong association ($r=.391$; $p=.001$, Table 2).

Autistic Traits and SWEEA

Results for the correlation between the SWEEA-total (PEB 2) and autistic traits showed a significant, positive, and moderately strong association between autistic traits and problematic eating behavior ($r=.470$; $p<.001$, Table 1).

Autistic Traits and NIAS

Results for the correlation between the NIAS-total and autistic traits showed a significant, positive association with a small effect size ($r=.266$; $p=.022$, Table 2).]

In summary, the results for the associations between all three PEB measures and autistic traits were in line with hypothesis 1, which meant that more autistic traits were associated with more problematic eating behavior.

Hypothesis 2: “More autistic traits are associated with higher levels of cognitive inflexibility.”

Results showed that there was a significant, positive, and moderately strong association between autistic traits and cognitive inflexibility ($r=.339$; $p=.004$, Table 2). These

results were in line with hypothesis 2, which meant that more autistic traits were associated with higher levels of cognitive inflexibility.

Hypothesis 3: “Higher levels of cognitive inflexibility are associated with more problematic eating behaviors.”

Cognitive Inflexibility and APEQ

Results showed that there was a significant, positive, and highly strong association between CI and APEQ-total ($r=.495$; $p<.001$, Table 2).

Cognitive Inflexibility and SWEEA

For the SWEEA-total and CI, there was a significant, positive, and highly strong association ($r=.530$; $p<.001$, Table 2).

Cognitive Inflexibility and NIAS

Similarly, results for the correlation between the NIAS-total and CI revealed a significant, positive, and moderately strong association ($r=.461$; $p<.001$, Table 2).

In conclusion, the associations between all three PEB measures and CI were in line with hypothesis 3, meaning that higher levels of CI were associated with more PEB.

Table 2

Correlations for Study Variables

Variable	<i>n</i>	1	2	3	4
1. AQ-50	61	—			
2. DFlex	61	.34**	—		
3. APEQ	61	.39**	.50**	—	
4. SWEEA	61	.47**	.53**	.76**	—
5. NIAS	58	.27*	.46**	.63**	.62**

* $p < .05$. ** $p < .01$.

Table 3*Descriptives of Study Variables in Comparison to Clinical Samples*

Measure	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i> in ASD samples	<i>M</i> in ED samples
AQ	100.88	19.50	61	133.5-142.25 ^a	—
DFlex	32.61	10.03	61	—	47.28-52.73 ^b
APEQ	1.69	.47	61	—	2.71 ^c
SWEAA	30.65	5.03	61	—	32.00 ^d
NIAS	3.74	3.75	58	—	18.06 ^e

Note. ED samples consisted of different ED diagnoses

^a *M* taken from study by Wouters & Spek (2011) and Hoekstra et al. (2008)

^b *M* taken from study by Roberts et al. (2011)

^c *M* taken from study by Ellis et al. (2011)

^d *M* taken from study by Karjalainen et al. (2019)

^e *M* taken from study by Zickgraf & Ellis (2018)

Hypothesis 4: “Women with higher autistic traits and higher levels of cognitive inflexibility have more problematic eating behaviors.”

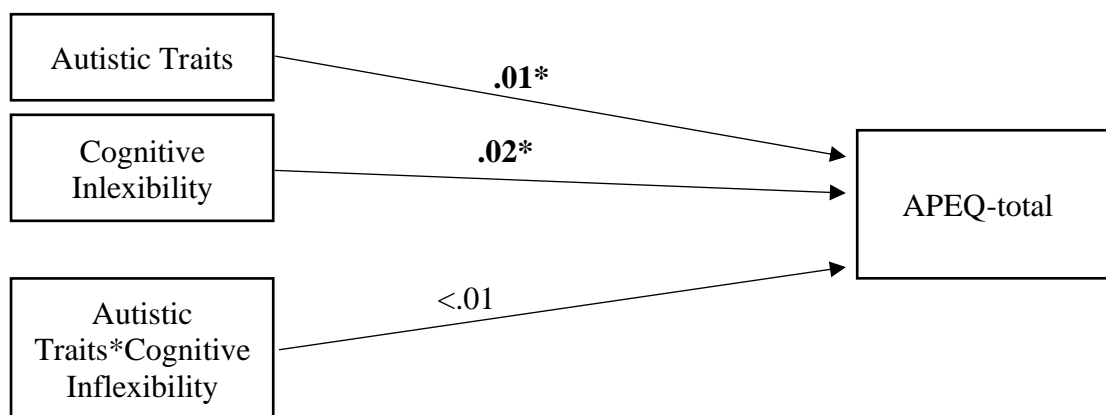
Regression Analysis for Autistic Traits, APEQ, and the Moderator Cognitive Inflexibility

The full model showed that there were one or more significant predictors for problematic eating behavior, which meant that 30% of variance within problematic eating behavior was explained by one or more predictors, $F(3, 57) = 8.29, p < .001, R^2 = .30$. Cohen's *f* for the model was .659, which meant that the variance explained by the two predictors autistic traits and cognitive inflexibility had a large effect size. On its own, autistic traits was as significant predictor which meant that for every 1 unit increase in autistic traits, there was

a .01 increase in problematic eating behavior ($b=.01$, $t(57) = 2.19$, $p=.03$, Figure 2). Cognitive inflexibility was a significant predictor when controlling for autistic traits, which meant that for every 1 unit increase in cognitive inflexibility, there was a .02 increase in problematic eating behavior ($b=.018$, $t(57)=3.21$, $p=.01$, Figure 2). In this moderation analysis the results indicated no significant effect of the interaction term, $b=.0003$, $t(57)=.14$, $p=.89$ (Figure 2). Thus, the effect of autistic traits on problematic eating behavior was not dependent on the level of cognitive inflexibility (Figure 3). Consequently, the insignificant interaction between autistic traits and cognitive inflexibility did not account for more variance in problematic eating behavior than just autistic traits and cognitive inflexibility by themselves $F(1, 57)=.2089$, $p=.6494$, R^2 change= .0026.

Figure 2

Path Analysis Results with APEQ, Autistic Traits, and Cognitive Inflexibility

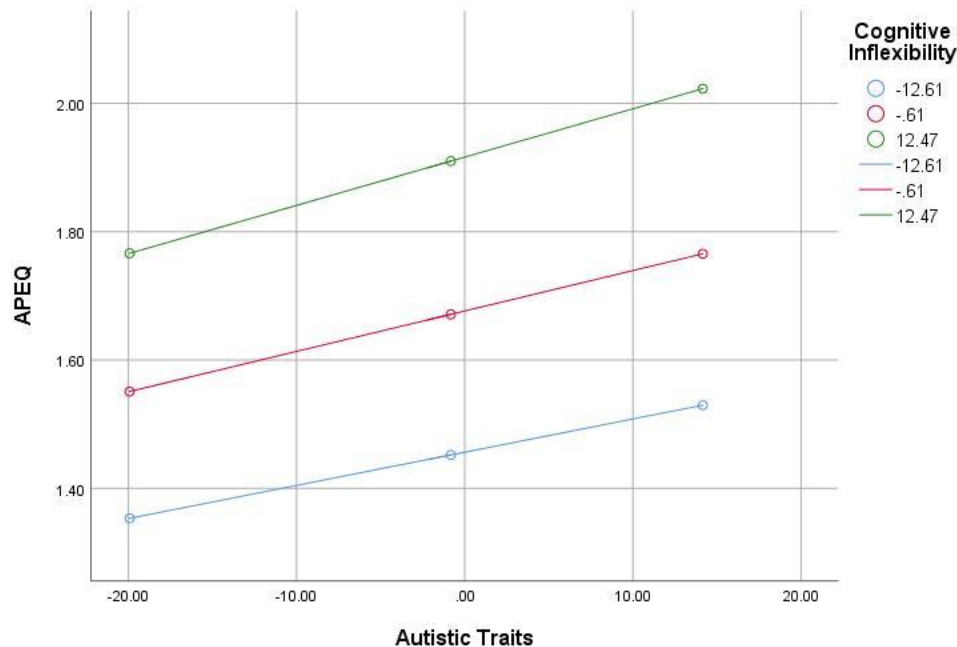


Note. Investigation of the relationship between the predictor (autistic traits,) moderator (cognitive inflexibility), and dependent variable (problematic eating behavior)

* $p < .05$. ** $p < .01$.

Figure 3

Approximate Association of APEQ and Autistic Traits at Different Levels of Cognitive Inflexibility



Note. The interaction between autistic traits and cognitive inflexibility was not significant.

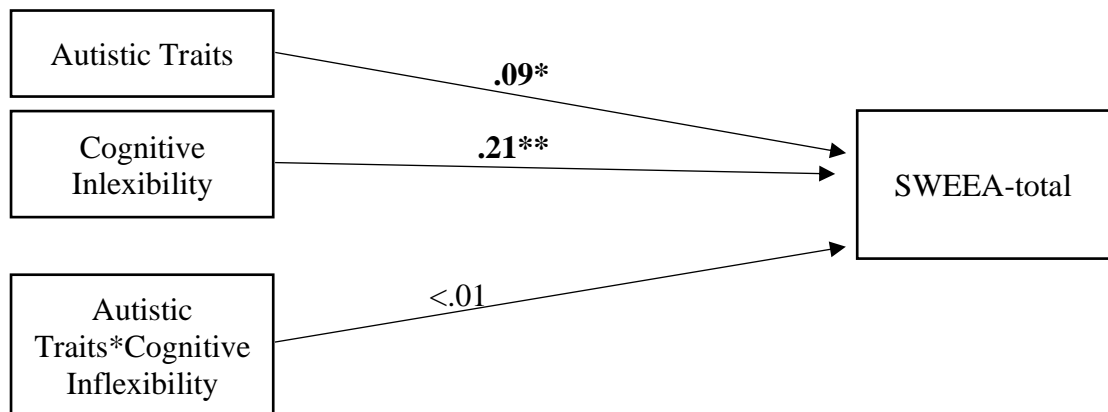
Regression Analysis for Autistic Traits, SWEEA, and the Moderator Cognitive Inflexibility

The full model showed that there were one or more significant predictors for problematic eating behavior, which meant that 38% of variance within problematic eating behavior was explained by one or more predictors, $F(3, 57) = 11.44, p < .0001, R^2 = .38$. Cohen's f for the model was .983, which meant that the variance explained by the two predictors autistic traits and cognitive inflexibility had a large effect size. On its own, autistic traits was a significant predictor which meant that for every 1 unit increase in autistic traits, there was a .09 increase in problematic eating behavior, $b = .086, t(57) = 2.89, p = .01$ (Figure 4). Cognitive inflexibility was a significant predictor when controlling for autistic traits which meant that for every 1 unit increase in cognitive inflexibility, there was a .21 increase in problematic eating behavior, $b = .21, t(57) = 3.56, p < .001$ (Figure 43). In this moderation the results showed no significant effect of the interaction term, $b < .001, t(57) = .14, p = .89$. Thus,

the effect of autistic traits on problematic eating behavior was not dependent on the level of cognitive inflexibility (Figure 5). Consequently, the interaction between autistic traits and cognitive inflexibility did not account for more variance than just autistic traits and cognitive inflexibility by themselves ($F(1, 57)=.0187, p=.89, R^2 \text{ change}=.0002$).

Figure 4

Path Analysis Results with SWEEA, Autistic Traits, and Cognitive Inflexibility

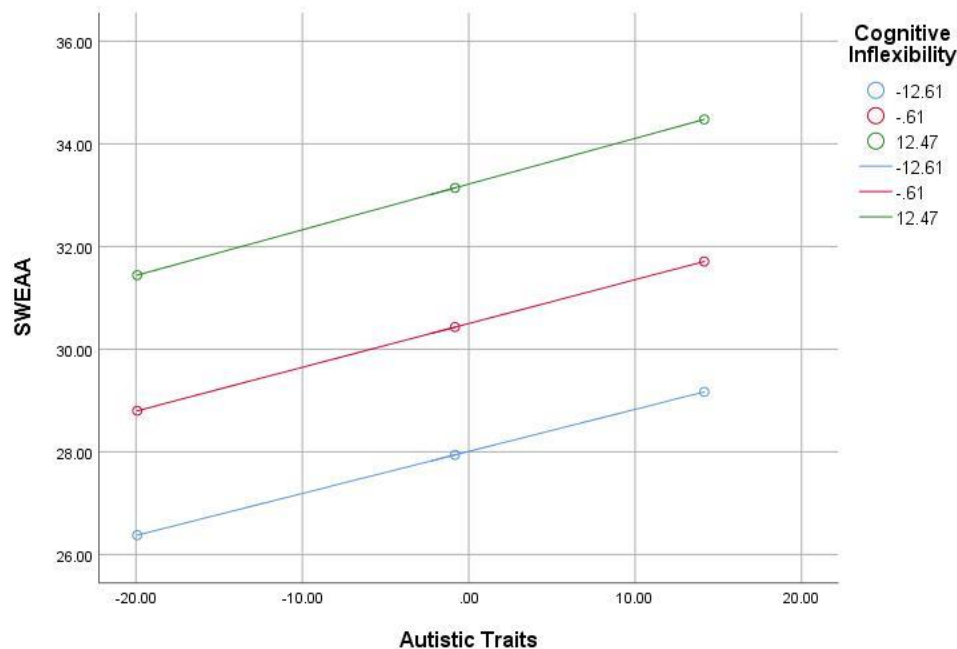


Note. Investigation of the relationship between the predictor (autistic traits,) moderator (cognitive inflexibility), and dependent variable (problematic eating behavior)

* $p < .05$. ** $p < .01$

Figure 5

Approximate Association of SWEAA and Autistic Traits at Different Levels of Cognitive Inflexibility



Note. The interaction between autistic traits and cognitive inflexibility was not significant.

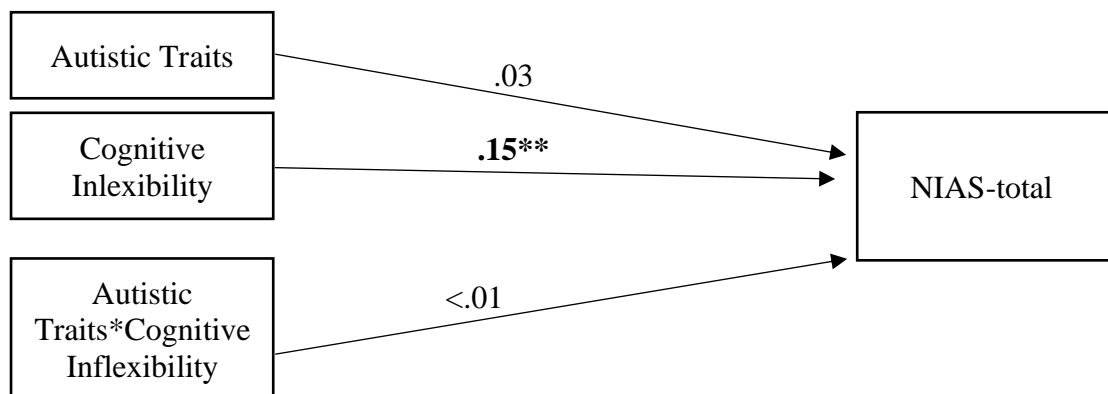
Regression Analysis for Autistic Traits, NIAS, and the Moderator Cognitive Inflexibility

The full model showed that there were one or more significant predictors for problematic eating behavior, which meant that 24% of variance within problematic eating behavior was explained by one or more predictors ($F(3, 54) = 11.44, p = .0019, R^2 = .24$). Cohen's f for the model was .983, which meant that the variance explained by the two predictors autistic traits and cognitive inflexibility had a large effect size. On its own, autistic traits was not a significant predictor of problematic eating behaviors, $b = .03, p = .292, t(54) = 1.16$ (Figure 6). Cognitive inflexibility was a significant predictor on its own which meant that for every 1 unit increase in cognitive inflexibility, there was a .15 increase in problematic eating behaviors $b = .15, t(54) = 3.56, p = .0054$ (Figure 6). In this moderation the results showed no significant effect of adding the interaction term, $b = .001, t(54) = .93, p = .36$ (Figure 6). Thus, the effect of autistic traits on problematic eating behavior was not dependent on the level of

cognitive inflexibility (Figure 7). Consequently, the interaction between autistic traits and cognitive inflexibility did not account for more variance than just autistic traits and cognitive inflexibility by themselves $F(1, 54)=.86, p=.36, R^2\text{ change}=.01$.

Figure 6

Path Analysis Results with NIAS,, Autistic Traits, and Cognitive Inflexibility

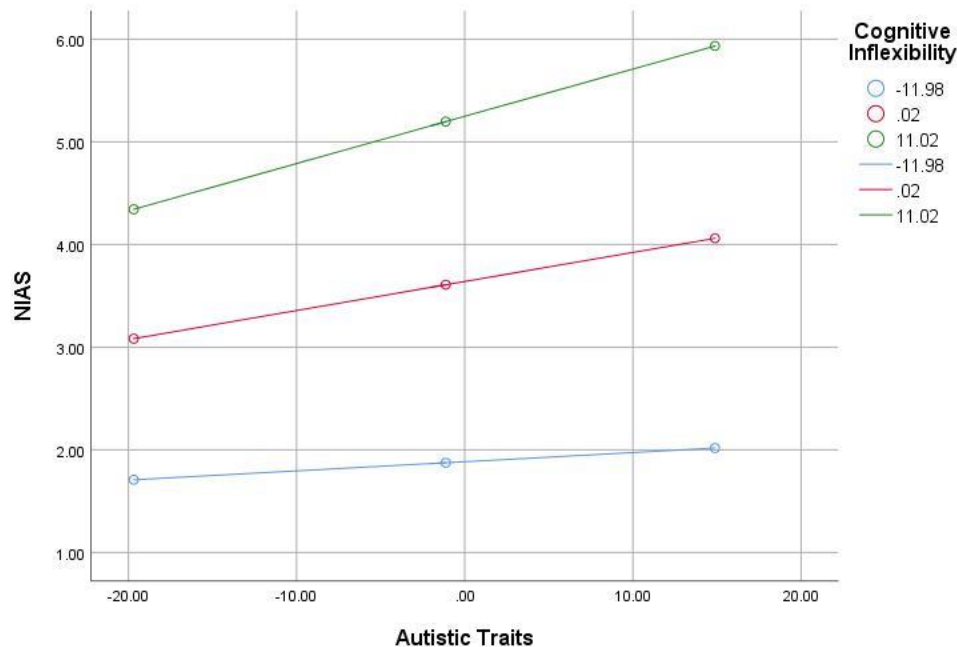


Note. Investigation of the relationship between the predictor (autistic traits,) moderator (cognitive inflexibility), and dependent variable (problematic eating behavior)

* $p < .05$. ** $p < .01$.

Figure 7

Approximate Association of NIAS and Autistic Traits at Different Levels of Cognitive Inflexibility



Note. The interaction between autistic traits and cognitive inflexibility was not significant.

Discussion

This study investigated the relationship between autistic traits and problematic eating behavior (PEB) in women, and examined how cognitive inflexibility (CI) influences the relationship. PEB was investigated by means of three constructs: *picky eating*, *problematic eating behavior frequently associated with autistic traits*, and *ARFID*. The researchers expected more autistic traits to predict more PEB and that CI would enhance this effect.

Autistic Traits and Problematic Eating Behavior

As hypothesized, autistic traits predicted more PEB in this sample for the constructs *picky eating* and *problematic eating behavior frequently associated with autistic traits*, however this was not the case for the construct *ARFID*. This was in line with previous research that has repeatedly found ASD traits to be associated with a wide range of PEBs in

women (Marí-Bauset et al., 2014; Spek et al., 2020; Demartini et al., 2021; Schröder et al., 2022).

Autistic Traits and PEB Frequently Associated with Autistic Traits

In line with the researcher's expectations, autistic traits predicted more *PEB frequently associated with autistic traits* in this sample. This is also supported by the current literature, which found PEB levels to be significantly higher in autistic women compared to those without a diagnosis (Karjalainen et al., 2019; Spek et al., 2020; Schröder et al., 2022; Nisticó et al., 2022).

Autistic Traits and Picky Eating

As hypothesized, autistic traits predicted more picky eating (PE) in this sample. There is limited research in children which found PE to be more common in autistic individuals compared to those without a diagnosis (Fodstad et al., 2008; Zickgraf et al., 2020; Baraskewich et al., 2021).

Autistic Traits and ARFID

Autistic traits did not predict ARFID behaviors. This was not in line with the researcher's hypothesis. Research indicated that autistic children are at higher risk for developing ARFID (Bourne et al., 2021). That is to say, autistic individuals were more likely to display food selectivity and preferences for mealtime rituals, both known to be possible drivers of ARFID (Lucarelli et al., 2017; Sharp et al., 2018; Bourne et al., 2021).

Underlying Mechanisms: Autistic Traits and Problematic Eating Behavior

One common characteristic of ASD, sensory sensitivity, has been found to be frequently related to PEB (Margari et al., 2020). Margari et al. (2020) proposed that individuals with high levels of sensory sensitivity might find sensory stimuli during mealtime to be overwhelming due to the great variety of sensory input from food (e.g. texture) which can cause autistic individuals to refuse certain foods. (Christol et al., 2017).

Moreover, autistic individuals commonly display restricted and repetitive behavior (Bitsika & Sharpley; Schröder et al., 2022). This can result in preferences for eating rituals and food-related routines in autistic individuals, such as cooking the same meals or preparing meals in a strict order (Pooni et al., 2012; Bitsika & Sharpley, 2017; Schröder et al., 2022)

Further, research suggests that the common social difficulties autistic individuals face can lead them to encounter problems during social mealtime situations that causes them to avoid social food-related situations, such as restaurant visits (Bora & Kose, 2016; Spek et al., 2020).

Autistic individuals also show deficits in daily living skills that are related to food and mealtimes (Kuschner et al., 2015). This is in line with Spek et al.'s (2020) findings that autistic men who received no housing support reported eating rituals and a strong preferences for certain foods whereas autistic men who did receive housing support reported none of these difficulties. These findings demonstrate that autistic individuals might be in need of assistance with regards to daily functioning in order to maintain healthy eating behavior.

Furthermore, multitasking skills and simultaneous capacity have been found to be challenging for autistic individuals, as it those skill are frequently needed in tasks around mealtime (Mannion & Leader, 2013; Rajendran et al. 2011; Karlsson et al., 2013; Spek et al., 2020). Thus, autistic individuals might refrain from tasks that require multitasking, such as meal preparation, where an individual needs to focus on the preparation of several ingredients or when chewing and cutting simultaneously (Karlsson et al. 2013; Spek et al., 2020)

Cognitive Inflexibility and Problematic Eating Behavior

As hypothesized, CI predicted more PEB in this sample for *picky eating, problematic eating behavior frequently associated with autistic traits*, and *ARFID*. Previous research reported a significant relationship between CI and several PEB (Roberts et al., 2011; Treasure & Schmidt, 2013; Buzzichelli et al., 2018; Roberts et al., 2007; Zickgraf et al., 2020; Arlt et

al. 2016), however, the relationship between CI and PEB has been studied scarcely and inferences need to be treated with caution (Roberts et al., 2011; Tchanturia et al., 2012; Schröder et al., 2022).

Cognitive Inflexibility and PEB Frequently Associated with Autistic Traits

As hypothesized, CI predicted more *PEB frequently associated with autistic traits* in this sample. Although there is no research investigating the relationship between CI and *PEB frequently associated with autistic traits* specifically, there is limited research suggesting that CI does play a role in EDs that could fall under autism-related PEB, such as ARFID (Roberts et al., 2001; Treasure & Schmidt, 2013).

Cognitive Inflexibility and Picky Eating

As hypothesized, CI predicted more *picky eating* (PE) in his sample. There is limited research suggesting a significant relationship between higher CI and more PE in children, adolescents, and young adults (Zickgraf et al., 2020). However, research is scarce and little is known about the relationship in older adults.

Cognitive Inflexibility and ARFID

As hypothesized, CI predicted more ARFID traits in this sample. Since ARFID is a relatively new construct, research is still scarce, with some researchers suggesting an important role of CI in the development ARFID symptoms, as CI might enhance food selectivity, which is a core driver of ARFID (Zickgraf et al., 2020; Lucarely et al., 2017).

Autistic Traits, Cognitive Inflexibility, and Problematic Eating Behavior

While autistic traits and CI both predicted PEB separately, CI did not enhance the effect of autistic traits on PEB and did therefore not support the researcher's expectation. However, in line with the researchers' expectations, autistic traits and CI showed a positive association.

While autistic individuals have shown inconsistent CI skills in experimental tasks,

most autistic individuals show consistent CI deficits relating to every-day tasks. This inconsistency can be partly attributed to differences in CI instruments that measure different conceptualizations of CI (Geurts et al., 2009; Leung & Zakanis, 2014). Van Eylen et al. (2011) proposed that there is CI in autistic individuals, but that it only becomes apparent under every-day conditions. That is to say, autistic individuals seem to struggle with lower degrees of *explicit task instructions* and higher degrees of *rule switching* (van Eylen et al., 2011). We propose that the need for explicit task instructions could therefore relate to the need for structure and rules in autistic individuals, expressing itself in eating rituals, or preferences for sameness with regards to foods.

Problems with rule switching could relate to autistic individuals showing difficulties in social mealtime situations (Spek et al., 2020), as they require individuals to grasp and apply social rules and behavior depending on the social context (Geurts et al., 2009).

In conclusion, lower levels of CI might lower the overall level of PEB in autistic individuals and could therefore serve as a “buffer” for the development of PEB in autistic individuals.

The Role of Gender in ASD and Problematic Eating Behavior

With regards to gender similarities, autistic men and women display multitasking problems during mealtime (Spek et al., 2020). Both genders show difficulties with adapting their social behavior during mealtime, and report the preference to spend mealtime situations alone (Spek et al., 2020).

When considering gender differences, Spek et al. (2020) found autistic women to have more food-related sensory difficulties than autistic men, suggesting that autistic women might be at higher risk for developing PEB (Lai et al., 2015; Spek et al., 2020).

Furthermore, Spek et al. (2020) reported large differences in PEB levels between women with ASD compared to controls. They further pointed out that autistic women

showed more eating rituals, social problems during mealtime, and problems with multitasking compared to autistic men. Women might use camouflaging techniques to mask their social difficulties, making it harder to recognize these problems (Lai et al., 2015). Autism-related PEB in women might therefore be less recognizable, as the female ASD phenotype is likely to go unnoticed by current diagnostic tools (Hull et al., 2020).

Limitations

ASD in the DSM-5 and ADOS-2 was validated using the male phenotype, resulting in a diagnostic bias that makes males more likely to receive a diagnosis (Westwood & Tchanturia, 2018). The questionnaires used in this study might therefore be based on typically male characteristics of autistic traits, therefore disregarding the female phenotype (Hull et al., 2020). In future studies, researchers can make use of questionnaires that were validated based on female characteristics of autism, such as the M-ASD (Bezemer & Blijd-Hoogewys, 2016).

For the SWEEA, zero variance ($M=0$) was found for item *Pica*, which measured whether participants engaged in eating inedible things. This item is likely to be more common in ASD patients with an intellectual disability, which did not apply to this sample (Karlsson et al., 2013).

Social desirability could have led participants to report less autistic traits, CI, and PEB. Additionally, a small sample size ($N=61$) and convenience sampling might have resulted in low external validity. Further, our sample consisted of non-clinical participants with regards to PEB and autistic traits. Consequently, effects might be lower or different from clinical populations.

Zickgraf & Ellis (2018) pointed out that the two ARFID eating pattern subtypes, *fear of consequences from eating* and *lack of appetite*, do not exist at a subclinical level, whereas

the third subtype, *PE*, is normally distributed within the population. Therefore, insignificant results in the NIAS analysis could be due to subclinical scores within the sample (Table 3).

Clinical Implications

Future treatment of PEB and EDs needs to consider the role of autistic traits. Special attention needs to be paid to autistic gender phenotypes, as they require different diagnostic tools. Further, as suggested by Huke et al. (2013) interventions that target cognitive flexibility skills might be crucial in the treatment of PEB and EDs, as CI seems to enhance PEB. Moreover, autistic individuals might need support in their daily functioning, as it can reduce PEB (Spek et al., 2020).

Conclusion

Autistic traits and cognitive inflexibility seem to play a significant role in the development and maintenance of different PEBs. Although related, autistic traits and CI seem to be distinct constructs and might therefore have different effects on PEB. Results for ARFID were inconsistent and as existing research is limited, the construct needs to be further investigated. Our results indicated that future research needs to evaluate the specific mechanisms that might cause the effects autistic traits and CI have on PEB. Clinicians will have to develop and adjust interventions according to individuals' and deficits with regards to ASD-related traits, cognitive inflexibility, and attention needs to be paid to gender differences in ASD.

References

- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596/>.
- Aspen, V., Weisman, H., Vannucci, A., Nafiz, N., Gredysa, D., Kass, A. E., Trockel, M., Jacobi, C., Wilfley, D. E., Taylor, C. B. (2014). Psychiatric co-morbidity in women presenting across the continuum of disordered eating. *Eating Behaviors*, *15*(4), 686–93. doi: 10.1016/j.eatbeh.2014.08.023
- Arlt, J., Yiu, A., Eneva, K., Dryman, M. T., Heimberg, R. G. & Chen, E. Y. (2016). Contributions of cognitive inflexibility to eating disorder and social anxiety symptoms. *Eating Behaviors*, *21*, 30–32. <https://doi.org/10.1016/j.eatbeh.2015.12.008>
- Bandini, L. G., Anderson, S. E., Curtin, C., Cermak, S., Evans, E. W., Scampini, R., Maslin, M., & Must, A. (2010). Food selectivity in children with autism spectrum disorders and typically developing children. *The Journal of Pediatrics*, *157*(2), 259–264. <https://doi.org/10.1016/j.jpeds.2010.02.013>
- Baraskewich, J., von Ranson, K. M., McCrimmon, A., & McMorris, C. A. (2021). Feeding and eating problems in children and adolescents with autism: A scoping review. *Autism*, *25*(6), 1505–1519. <https://doi.org/10.1177/1362361321995631>
- Bargiela, S., Steward, R. & Mandy, W. (2016). The Experiences of Late-diagnosed Women with Autism Spectrum Conditions: An Investigation of the Female Autism Phenotype. *Journal of Autism Developmental Disorders*, *46*, 3281–3294. <https://doi.org/10.1007/s10803-016-2872-8>
- Baron-Cohen, S., Wheelwright, S., Skinner, R., Martin, J., & Clubley, E. (2001). The autism-spectrum quotient (A.Q.): Evidence from Asperger syndrome/high-functioning autism, males and females, scientists and mathematicians. *Journal of Autism and*

Developmental disorders, 31(1), 5–17. [https://doi.org/0162-3257/01/0200-0005\\$19.50/0](https://doi.org/0162-3257/01/0200-0005$19.50/0)

Begeer, S., Mandell, D., Wijnker-Holmes, B., Venderbosch, S., Rem, D., Stekelenburg, F. & Koot, H. M. (2013). Sex differences in the timing of identification among children and adults with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 43(5), 1151–1156. <https://doi.org/10.1007/s10803-012-1656-z>

Bezemer, M.L., & Blijd–Hoogewys, E.M.A. (2016). Miss ASD. Groningen: INTER–PSY.

Bitsika, V., & Sharpley, C. F. (2018). Specific aspects of repetitive and restricted behaviours are of greater significance than sensory processing difficulties in eating disturbances in high-functioning young girls with ASD. *Journal of Developmental and Physical Disabilities*, 30(2), 259–267. <https://doi.org/10.1007/s10882-017-9583-8>

Bora, E. & Kose, S., (2016). Meta-analysis of theory of mind in anorexia nervosa and bulimia nervosa: a specific impairment of cognitive perspective taking in anorexia nervosa? *International Journal of Eating Disorders*, 49, 739–740. <https://doi.org/10.1002/eat.22572>

Bourne, L., Mandy, W., & Bryant-Waugh, R. (2022). Avoidant/ restrictive food intake disorder and severe food selectivity in children and young people with autism: A scoping review. *Developmental Medicine and Child Neurology*, 64(6), 691–700. <https://doi.org/10.1111/dmcn.15139>

Brereton, A.V., Tonge, B.J., & Einfeld, S.L. (2006). Psychopathology in children and adolescents with autism compared to young people with intellectual disability. *Journal of Autism and Developmental Disorders*, 36, 863–870. <https://doi.org/10.1007/s10803-006-0125-y>

Buzzichelli, S., Marzola, E., Amianto, F., Fassino, S., & Abbate-Daga, G. (2018). Perfectionism and cognitive rigidity in anorexia nervosa: Is there an

association?. *European Eating Disorders Review*, 26(4), 360–366.

<https://doi.org/10.1002/erv.2591>

Cermak, S. A., Curtin, C., & Bandini, L. G. (2010). Food selectivity and sensory sensitivity

In children with autism spectrum disorders. *Journal of the American Dietetic*

Association, 110(2), 238–246. <https://doi.org/10.1016/j.jada.2009.10.032>

Curtin, C., Hubbard, K., Anderson, S. E., Mick, E., Must, A., & Bandini, L. G. (2015). Food

selectivity, mealtime behavior problems, spousal stress, and family food choices in

children with and without autism spectrum disorder. *Journal of Autism and*

Developmental Disorders, 45(10), 3308–3315. [https://doi.org/10.1007/s10803-015-](https://doi.org/10.1007/s10803-015-2490-x)

2490-x

Danner, U. N., Sanders, N., Smeets, P. A., van Meer, F., Adan, R. A., Hoek, H. W., & van

Elburg, A. A. (2012). Neuropsychological weaknesses in Sanorexia nervosa: Set-

shifting, central coherence, and decision making in currently ill and recovered

women. *International Journal of Eating Disorders*, 45(5), 685–694. doi:

10.1002/eat.22007

Demartini, B., Nisticò, V., Bertino, V., Tedesco, R., Faggioli, R., Priori, A., & Gambini, O.

(2021). Eating disturbances in adults with autism spectrum disorder without

intellectual disabilities. *Autism Research*, 14(7), 1434–1443.

<https://doi.org/10.1002/aur.2500>

DeFilippis, M., (2018). Depression in children and adolescents with autism spectrum dis-

order. *Children*, 5, 112. <https://doi.org/10.3390/children5090112>

Dingemans, A. E., Visser, H., Paul, L., & van Furth, E. F. (2015). Set-shifting abilities, mood

and loss of control over eating in binge eating disorder: An experimental study.

Psychiatry Research, 230(2), 242–248.

<https://doi.org/10.1016/j.psychres.2015.09.001>

- Ellis, J. M., Galloway, A. T., Webb, R. M., & Martz, D. M. (2016). Measuring Adult Picky Eating: The Development of a Multidimensional Self-Report Instrument. *Psychological Assessment, 29*(8), 955–966. <https://doi.org/10.1037/pas0000387>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*(4), 1149–1160. <https://doi.org/10.3758/brm.41.4.1149>
- Fodstad, J. C., & Matson, J. L. (2008). A comparison of feeding and mealtime problems in adults with intellectual disabilities with and without autism. *Journal of Developmental and Physical Disabilities, 20*(6), 541–550. <https://doi.org/10.1007/s10882-008-9116-6>
- Fombonne E. (2009). Epidemiology of pervasive developmental disorders. *Pediatric Research, 65*, 591-598. doi: 10.1203/PDR.0b013e31819e7203
- Geurts, H. M., Corbett, B., & Solomon, M. (2009). The paradox of cognitive flexibility in autism. *Trends in Cognitive Sciences, 13*(2), 74–82. <https://doi.org/10.1016/j.tics.2008.11.006>
- Greenleaf, C., Petrie, T. A., Carter, J., & Reel, J. J. (2009). Female collegiate athletes: Prevalence of eating disorders and disordered eating behaviors. *Journal of American College Health, 57*(5), 489–496. <https://doi.org/10.3200/JACH.57.5.489-496>
- Happé, F., Booth, R., Charlton, R., & Hughes, C. (2006). Executive function deficits in autism spectrum disorders and attention-deficit/hyperactivity disorder: Examining profiles across domains and ages. *Brain and Cognition, 61*, 25–39. <https://doi.org/10.1111/jcpp.13176>
- Hayes, A. F. (2022). *Introduction to Mediation, Moderation, and Conditional Process Analysis, Third Edition: A Regression-Based Approach (Methodology in the Social Sciences)* (3rd ed.). The Guilford Press.

- Hoekstra, R. A., Bartels, M., Cath, D. C., & Boomsma, D. I. (2008). Factor Structure, Reliability and Criterion Validity of the Autism-Spectrum Quotient (AQ): A Study in Dutch Population and Patient Groups. *Journal of Autism and Developmental Disorders*, 38(8), 1555–1566. <https://doi.org/10.1007/s10803-008-0538-x>
- Huke, V., Turk, J., Saeidi, S., Kent, A., & Morgan, John. F. (2013). Autism Spectrum Disorders in Eating Disorder Populations: A Systematic Review: Autism Spectrum Disorders in Eating Disorders. *European Eating Disorders Review*, 21(5), 345–351. <https://doi.org/10.1002/erv.2244>
- Hull, L., Lai, M.-C., Baron-Cohen, S., Allison, C., Smith, P., Petrides, K., & Mandy, W. (2020). Gender differences in self-reported camouflaging in autistic and non-autistic adults. *Autism*, 24(2), 352–363. <https://doi.org/10.1177/1362361319864804>
- Hyman, S. L., Levy, S. E., Myers, S.C. (2020) Identification, evaluation, and management of children with autism spectrum disorder. *Pediatrics*, 145(1). e20193447. <https://doi.org/10.1542/peds.2019-3447>
- Karjalainen, L., Råstam, M., Paulson-Karlsson, G., & Wentz, E. (2019). Do autism spectrum disorder and anorexia nervosa have some eating disturbances in common? *European Child and Adolescent Psychiatry*, 28(1), 69–78. <https://doi.org/10.1007/s00787-018-1188-y>
- Karlsson, L., Råstam, M., & Wentz, E. (2013). The Swedish Eating Assessment for Autism spectrum disorders (SWEAA)—Validation of a self-report questionnaire targeting eating disturbances within the autism spectrum. *Research in Developmental Disabilities*, 34(7), 2224–2233. <https://doi.org/10.1016/j.ridd.2013.03.03>
- Kerr-Gaffney, J., Harrison, A., & Tchanturia, K. (2020). Autism spectrum disorder traits are associated with empathic abilities in adults with anorexia nervosa. *Journal of Affective Disorders*, 266, 273–281. <https://doi.org/10.1016/j.jad.2020.01.169>

- Kinnaird, E., Norton, C., Stewart, C., & Tchanturia, K. (2019). Same behaviours, different reasons: What do patients with co-occurring anorexia and autism want from treatment? *International Review of Psychiatry, 31*(4), 308–317.
<https://doi.org/10.1080/09540261.2018.1531831>
- Kuschner, E. S., Eisenberg, I. W., Orionzi, B., Simmons, W. K., Kenworthy, L., Martin, A., & Wallace, G. L. (2015). A preliminary study of self-reported food selectivity in adolescents and young adults with autism spectrum disorder. *Research in autism spectrum disorders, 15*, 53-59. <https://doi.org/10.1016/j.rasd.2015.04.005>
- Lai, M. C., Lombardo, M. V., Auyeung, B., Chakrabarti, B., & Baron-Cohen, S. (2015). Sex/gender differences and autism: Setting the scene for future research. *Journal of the American Academy of Child and Adolescent Psychiatry, 54*(1), 11–24.
<https://doi.org/10.1016/j.jaac.2014.10.003>
- Lehnhardt, F. G., Gawronski, A., Volpert, K., Schillbach, L., Tepest, R. & Vogeley, K. (2012). Psychosocial functioning of adults with late diagnosed autism spectrum disorders--a retrospective study. *Fortschritte der Neurologie-psychiatrie, 80*(2), 88–97. doi: 10.1055/s-0031-1281642
- Leung, R. C., & Zakzanis, K. K. (2014). Brief report: cognitive flexibility in autism spectrum disorders: a quantitative review. *Journal of autism and developmental disorders, 44*(10), 2628–2645. <https://doi.org/10.1007/s10803-014-2136-4>
- Lord, C., Risi, S., DiLavore, P. S., Shulman, C., Thurm, A., & Pickles, A. (2006). Autism from 2 to 9 years of age. *Archives of general psychiatry, 63*(6), 694–701.
doi:10.1001/archpsyc.63.6.694
- Lundqvist, L. O., & Lindner, H. (2017). Is the Autism-Spectrum Quotient a Valid Measure of Traits Associated with the Autism Spectrum? A Rasch Validation in Adults with and

- Without Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders*, 47(7), 2080–2091. <https://doi.org/10.1007/s10803-017-3128-y>
- Marí-Bauset, S., Zazpe, I., Mari-Sanchis, A., Llopis-González, A., & Morales-Suárez-Varela, M. (2014). Food selectivity in autism spectrum disorders: a systematic review. *Journal of child neurology*, 29(11), 1554–1561. <https://doi.org/10.1177/0883073813498821>
- Margari, L., Marzulli, L., Gabellone, A., & de Giambattista, C. (2020). Eating and mealtime behaviors in patients with autism spectrum disorder: Current perspectives. *Neuropsychiatric Disease and Treatment*, 16, 2083–2102. <https://doi.org/10.2147/ndt.s224779>
- Mandy, W., & Tchanturia, K. (2015). Do women with eating disorders who have social and flexibility difficulties really have autism? A case series. *Molecular Autism*, 6(1), 6. <https://doi.org/10.1186/2040-2392-6-6>
- Mannion, A., & Leader, G. (2013). Comorbidity in autism spectrum disorder: A review. *Research in Autism Spectrum Disorders*, 7(12), 1595–1616. <https://doi.org/10.1016/j.rasd.2013.09.006>
- Matson, J. L., & Cervantes, P. E. (2014). Commonly studied comorbid psychopathologies among persons with autism spectrum disorder. *Research in developmental disabilities*, 35(5), 952–962. <https://doi.org/10.1016/j.ridd.2014.02.012>
- May, T., Cornish, K., & Rinehart, N. J. (2012). Gender profiles of behavioral attention in children with autism spectrum disorder. *Journal of Attention Disorders*, 20(7), 627–635. doi:10.1177/1087054712455502
- Mayes, S. D., & Zickgraf, H. (2019). Atypical eating behaviors in children and adolescents with autism, ADHD, other disorders, and typical development. *Research in Autism Spectrum Disorders*, 64, 76–83. <https://doi.org/10.1016/j.rasd.2019.04.002>

- Morales-Hidalgo, P., Hernández-Martínez, C., Voltas, N., & Canals, J. (2017). EDUTEA: A DSM-5 teacher screening questionnaire for autism spectrum disorder and social pragmatic communication disorder. *International Journal of Clinical and Health Psychology, 17*(3), 269–281. <https://doi.org/10.1016/j.ijchp.2017.05.002>
- Nickel, K., Maier, S., Endres, D., Joos, A., Maier, V., Tebartz van Elst, L., & Zeeck, A. (2019). Systematic Review: Overlap Between Eating, Autism Spectrum, and Attention- Deficit/Hyperactivity Disorder. *Frontiers in Psychiatry, 10*, 708. <https://doi.org/10.3389/fpsy.2019.00708>
- Mulkens, Kroes, & Neimeijer (2019). *Nine Item Avoidant/restrictive food intake disorder Screening (NIAS)*. Embloom. <https://www.embloom.nl/content/nias/>
- Nisticò, V., Faggioli, R., Bertelli, S., Priori, A., Gambini, O., & Demartini, B. (2022). Eating disturbances in eating disorders and in high-functioning autism spectrum disorders: A pre- liminary study. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity, 27*(4), 1555–1561. <https://doi.org/10.1007/s40519-021-01225-1>
- Oswald, T. M., Winter-Messiers, M. A., Gibson, B., Schmidt, A. M., Herr, C. M., & Solomon, M. (2016). Sex differences in internalizing problems during adolescence in autism spectrum disorder. *Journal of Autism and Developmental Disorders, 46*(2), 624– 636. <https://doi.org/10.1007/s10803-015-2608-1>
- Padgett, F.E., Miltsiou, E., Tiffin, P.A., (2010). The co-occurrence of nonaffective psychosis and the pervasive developmental disorders: a systematic review. *Journal of Intellectual and Developmental Disabilities, 35*, 187–198. <https://doi.org/10.3109/13668250.2010.494596>
- Rajendran, G., Las, A. S., Logie, R. H., Van der Meulen, M., Fraser, D., & Corley, M. (2011). Investigating multitasking in high-functioning adolescents with autism

- spectrum disorders using the Virtual Errands Task. *Journal of Autism and Developmental Disorders*, 41(11), 1445–1454
- Roberts, M. E., Tchanturia, K., Stahl, D., Southgate, L., & Treasure, J. (2007). A systematic review and meta-analysis of set-shifting ability in eating disorders. *Psychological Medicine*, 37(8), 1075–1084. <https://doi.org/10.1017/s0033291707009877>
- Roberts, M. E., Barthel, F. M. S., Lopez, C., Tchanturia, K., & Treasure, J. L. (2011). Development and validation of the Detail and Flexibility Questionnaire (DFlex) in eating disorders. *Eating Behaviors*, 12(3), 168–174. <https://doi.org/10.1016/j.eatbeh.2011.04.001>
- Schreck, K.A., Williams, K. & Smith, A.F. A. (2004). Comparison of Eating Behaviors Between Children with and Without Autism. *Journal of Autism and Developmental Disorders*, 34, 433–438. <https://doi.org/10.1023/B:JADD.0000037419.78531.86>
- Schreck, K. A., & Williams, K. (2006). Food preferences and factors influencing food selectivity for children with autism spectrum disorders. *Research in developmental disabilities*, 27(4), 353–363. <https://doi.org/10.1016/j.ridd.2005.03.005>
- Schröder, S. S., Danner, U. N., Spek, A. A., & van Elburg, A. A. (2022). Problematic eating behaviours of autistic women—A scoping review. *European Eating Disorders Review*, 30(5), 510–537. <https://doi.org/10.1002/erv.2932>
- Rynkiewicz, A., Schuller, B., Marchi, E., Piana, S., Camurri, A., Lassalle, A., & Baron-Cohen, S. (2016). An investigation of the ‘female camouflage effect’ in autism using a computerized ADOS-2 and a test of sex/gender differences. *Molecular Autism*, 7(1), 10. <https://doi.org/10.1186/s13229-016-0073-0>
- Spek, A. A., van Rijnsoever, W., van Laarhoven, L., & Kiep, M. (2020). Eating problems in men and women with an autism spectrum disorder. *Journal of Autism and*

Developmental Disorders, 50(5), 1748–1755. <https://doi.org/10.1007/s10803-019-03931-3>

Sternheim, L. C. , van Passel, B.,Dingemans, A., Cath, D., Danner, U.N. (2022). Cognitive and Experienced Flexibility in Patients With Anorexia Nervosa and Obsessive Compulsive Disorder. *Front Psychiatry*, 9, 13. doi: 10.3389/fpsy.2022.868921

Sun, C., Xia, W., Zhao, Y., Li, N., Zhao, D., & Wu, L. (2013). Nutritional status survey of children with autism and typically developing children aged 4–6 years in Heilongjiang Province, China. *Journal of Nutrition Sciences*, 2, e16. <https://doi.org/10.1017/jns.2013.9>

Touchette, E., Henegar, A., Godart, N. T., Pryor, L., Falissard, B., Tremblay, R. E., & Côté, S. M. (2011). Subclinical eating disorders and their comorbidity with mood and anxiety disorders in adolescent girls. *Psychiatry Research*, 185(1-2), 185–192. <https://doi.org/10.1016/j.psychres.2010.04.005>

Treasure, J., & Schmidt, U. (2013). The cognitive-interpersonal maintenance model of anorexia nervosa revisited: a summary of the evidence for cognitive, socio-emotional and interpersonal predisposing and perpetuating factors. *Journal of Eating Disorders*, 1(1), 1–10. <https://doi.org/10.1186/2050-2974-1-13>

Treasure, J. (2013). Coherence and other autistic spectrum traits and eating disorders: Building from mechanism to treatment. The Birgit Olsson lecture. *Nordic Journal of Psychiatry*, 67(1). <https://doi.org/10.3109/08039488.2012.674554>

Van Eylen, L., Boets, B., Steyaert, J., Evers, K., Wagemans, J., & Noens, I. (2011). Cognitive flexibility in autism spectrum disorder: Explaining the inconsistencies?. *Research in Autism Spectrum Disorders*, 5(4), 1390–1401. <https://doi.org/10.1016/j.rasd.2011.01.025>

- van Hoeken, D., & Hoek, H. W. (2020). Review of the burden of eating disorders: mortality, disability, costs, quality of life, and family burden. *Current Opinion in Psychiatry*, 33(6), 521–527. <https://doi.org/10.1097/YCO.0000000000000641>
- van Steensel, F.J.A., Bögels, S.M. & Perrin, S., 2011. Anxiety disorders in children and adolescents with autistic spectrum disorders: a meta-analysis. *Clinical Child and Family Psychology Review*, 14, 302–317. <https://doi.org/10.1007/s10567-011-0097-0>
- Vermeirsch, J., Verhaeghe, L., Casaer, A., Faes, F., Oostra, A. & Roeyers, H. (2021). Diagnosing Autism Spectrum Disorder in Toddlers Born Very Preterm: Estimated Prevalence and Usefulness of Screeners and the Autism Diagnostic Observation Schedule (ADOS). *Journal of Autism and Developmental Disorders*, 51, 1508–1527. <https://doi.org/10.1007/s10803-020-04573-6>
- Wang, S. B., Gray, E. K., Coniglio, K. A., Murray, H. B., Stone, M., Becker, K. R., Thomas, J. J. & Eddy, K. T. (2019). Cognitive rigidity and heightened attention to detail occur transdiagnostically in adolescents with eating disorders. *The Journal of Treatment & Prevention*, 29(4), 408–420. <https://doi.org/10.1080/10640266.2019.1656470>
- Westwood, H., Mandy, W., Simic, M., & Tchanturia, K. (2018). Assessing ASD in Adolescent Females with Anorexia Nervosa using Clinical and Developmental Measures: A Preliminary Investigation. *Journal of Abnormal Child Psychology*, 46(1), 183–192. <https://doi.org/10.1007/s10802-017-0301-x>
- Wouters, S. G., & Spek, A. A. (2011). The use of the Autism-spectrum Quotient in differentiating high-functioning adults with autism, adults with schizophrenia and a neurotypical adult control group. *Research in Autism Spectrum Disorders*, 5(3), 1169–1175. <https://doi.org/10.1016/j.rasd.2011.01.002>
- Zickgraf, H.F. & Ellis, J.M. (2018). Initial validation of the Nine Item Avoidant/Restrictive

Food Intake disorder screen (NIAS): A measure of three restrictive eating patterns.

Appetite, 123, 32–42. <https://doi.org/10.1016/j.appet.2017.11.111>

Zickgraf, H. F., Richard, E., Zucker, N. L., & Wallace, G. L. (2020). Rigidity and sensory sensitivity: Independent contributions to selective eating in children, adolescents, and young adults. *Journal of Clinical Child & Adolescent Psychology*, 1-13.

<https://doi.org/10.1080/15374416.2020.1738236>

Appendix A

Adult Picky Eating Questionnaire

Naam:.....

Datum:.....

Hierna vind je 16 uitspraken over jouw eetgedrag.
Geef bij elke uitspraak aan in hoeverre deze op jou van toepassing

is. 1 = nooit, 2 = zelden, 3 = soms, 4 = vaak, 5 = altijd

1.		1	2	3	4	5
1.	Ik heb een sterke voorkeur voor een specifieke presentatie van voedsel					
2.	Ik eet een beperkt aantal items van elke voedselgroep					
3.	Ik ben doorgaans afwezig/onbetrokken aan tafel tijdens etenstijd					
4.	Ik wijs bitter eten af, zelfs als het maar licht bitter is					
5.	Ik prefereer voedsel met een bepaalde kleur					
6.	Mijn gewoonlijke dieet mist verscheidenheid van voedselgroepen					
7.	Ik heb doorgaans het gevoel iets beters te doen te hebben dan eten					
8.	Ik wijs zuur eten af					
9.	Ik krimp ineem, huil of kokhals na het zien of eten van bepaald voedsel					
10.	Ik houd er niet van om nieuw eten te proberen					
11.	Ik vermijd maaltijden (maaltijden in de zin van de hele gebeurtenis van etenstijd en niet alleen de maaltijd)					
12.	Ik ben verdrietig of teleurgesteld wanneer voedsel niet op de "juiste manier" is klaargemaakt/gekookt					
13.	Ik eet uit een zeer beperkt assortiment aan voedsel (minder dan 10 verschillende voedingsmiddelen)					
14.	Ik ben onmiddellijk wantrouwend van voedsel en voel de behoefte om het meeste voedsel zorgvuldig te inspecteren					
15.	Ik eet voedsel in een specifieke volgorde					

16.	Ik zal voedsel niet eten wanneer ik iemand anders het zag aanraken					
-----	--	--	--	--	--	--

B.	Nooit	zelden	soms	meestal	altijd
	waar	waar	waar	waar	waar
1. Ik vind het moeilijk om te kauwen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Ik kwijl tijdens de maaltijd.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Ik krijg eten rondom mijn mond terwijl ik aan het eten ben.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Ik vind het moeilijk om (door) te slikken.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Ik mors wanneer ik eet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Ik heb goede tafelmanieren.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Ik drink uit een glas zonder te morsen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C.	Nooit	zelden	soms	meestal	altijd
	waar	waar	waar	waar	waar
1. Ik doe boodschappen bij een specifieke supermarkt/winkelketen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Mijn eten moet van een specifiek merk zijn.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Als ik eten koop samen met iemand anders, dan wil ik controleren wat er gekocht wordt.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D.	Nooit	zelden	soms	meestal	altijd
	waar	waar	waar	waar	waar
1. Ik geef de voorkeur aan bepaald voedsel, afhankelijk van de kleur van dat voedsel.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Ik eet elke dag hetzelfde eten.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Ik vermijd het uitproberen van nieuw voedsel/nieuwe gerechten.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Ik eet een beperkt aantal gerechten, maximaal tien.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Ik eet kleinere hoeveelheden voedsel dan anderen.

6. Ik drink overmatig vloeistoffen (zoals water of frisdrank).

	Nooit	zelden	soms	meestal	altijd
E.	waar	waar	waar	waar	waar

- | | | | | | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Ik vereis dat het glas, bord en bestek op een bepaalde manier geplaatst zijn, anders dan hoe normaal gesproken de tafel wordt gedekt. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Ik vind het moeilijk om van zitplaats te wisselen aan de eettafel. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Ik heb bepaalde rituelen rondom de maaltijden. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Ik krijg (emotionele of woede-)uitbarstingen aan de eettafel. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Ik zeur aan de eettafel. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Ik vind het moeilijk om te eten op school/werk/of op een soortgelijke plek. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Ik vind het moeilijk om met familieleden te eten. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Ik vind het moeilijk om te eten met vrienden. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Ik vind het moeilijk om te eten in een café. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Ik vind het moeilijk om te eten in een restaurant. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Ik vind het moeilijk om te eten als ik in het buitenland ben. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

	Nooit	zelden	soms	meestal	altijd
F.	waar	waar	waar	waar	waar

- | | | | | | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Ik eet samen met de mensen met wie ik leef. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Ik eet in mijn slaapkamer. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Ik pas mijn gedrag aan, op de anderen met wie ik aan tafel zit (bijvoorbeeld qua tafelmanieren en in gesprekken). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Ik hou van gezelschap tijdens een maaltijd. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Ik praat tijdens de maaltijd. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Ik kijk het grootste deel van de tijd omlaag naar mijn eten, tijdens de maaltijd. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Ik zeg het wanneer ik het eten goed vind (als ik uitgenodigd ben voor een maaltijd). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Ik bedank mensen voor het eten (als ik uitgenodigd ben voor een maaltijd). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

9. Ik eet met mes en vork.

10. Ik verlaat de eettafel als het eten op is.

	Nooit	zelden	soms	meestal	altijd
G.	waar	waar	waar	waar	waar

-
- | | | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Ik wek braken op na de maaltijd. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Ik gebruik plastabletten. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Ik gebruik dieetpillen. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Ik lijn zelfs als andere mensen denken dat ik te dun ben. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Ik vast (vasten betekent zich geheel of gedeeltelijk onthouden van eten of drinken voor een bepaalde periode). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Ik vervang maaltijden door maaltijdvervangers (zoals drankjes en poeders/shakes). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Het is belangrijk dat een en dezelfde persoon mijn voedsel klaar maakt. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Ik weiger te eten. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

	Nooit	zelden	soms	meestal	altijd
H.	waar	waar	waar	waar	waar

-
- | | | | | | |
|------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Ik voel het als ik hongerig ben | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Ik voel het als ik vol zit | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

	Nooit	zelden	soms	meestal	altijd
I.	waar	waar	waar	waar	waar

-
- | | | | | | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Ik vind het moeilijk om twee dingen tegelijk te doen tijdens een maaltijd, bijvoorbeeld kauwen en eten snijden. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|

	Nooit	zelden	soms	meestal	altijd
J.	waar	waar	waar	waar	waar

-
- | | | | | | |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Ik eet dingen die anderen als oneetbaar beschouwen (bijvoorbeeld cement of aarde). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|

K1. Ik ben op dieet vanwege de volgende ziekten:**Ja****Nee**

Diabetes type 1

Diabetes type 2

Gluten intolerantie

Lactose intolerantie

Andere voedsel intolerantie

Ander, namelijk:

K2. Ik ben op dieet want ik heb:**Ja****Nee**

Overgewicht

Ondergewicht

K3. Ik vermijd het eten van:**Ja****Nee**

Zuivel

Rundvlees en varkensvlees (bijvoorbeeld biefstuk, hamburgers of varkenskarbonades)

Gevogelte (bijvoorbeeld kip)

Vis en zeevruchten

Groenten

Fruit

Anders, namelijk:

K4. Ik volg een specifiek dieet vanuit een geloofsovertuiging:**Ja****Nee**

Halal

Koosjer

Anders, namelijk:

K4. Ik volg een specifiek dieet vanuit persoonlijke overtuigingen:**Ja****Nee**

Biologisch

Vegetarisch

Veganistisch

Anders, namelijk:

L1. Ik heb een of meer van de volgende diagnoses gekregen:	Ja	Nee
ADHD	<input type="checkbox"/>	<input type="checkbox"/>
Stoornis van Asperger	<input type="checkbox"/>	<input type="checkbox"/>
Autisme/autistische stoornis	<input type="checkbox"/>	<input type="checkbox"/>
Autistiforme stoornis/Atypische autisme	<input type="checkbox"/>	<input type="checkbox"/>
Syndroom van Tourette	<input type="checkbox"/>	<input type="checkbox"/>
Obsessief-compulsieve stoornis	<input type="checkbox"/>	<input type="checkbox"/>
Anorexia nervosa	<input type="checkbox"/>	<input type="checkbox"/>
Boulimia nervosa	<input type="checkbox"/>	<input type="checkbox"/>
Andere eetstoornis zoals eetbuienstoornis	<input type="checkbox"/>	<input type="checkbox"/>
Depressie	<input type="checkbox"/>	<input type="checkbox"/>
Andere psychiatrische stoornis, namelijk:		
Te snel werkende schildklier	<input type="checkbox"/>	<input type="checkbox"/>
Diabetes type 1	<input type="checkbox"/>	<input type="checkbox"/>
Diabetes type 2	<input type="checkbox"/>	<input type="checkbox"/>
Gluten intolerantie	<input type="checkbox"/>	<input type="checkbox"/>
Lactose intolerantie	<input type="checkbox"/>	<input type="checkbox"/>
Andere voedsel intolerantie		
Darmziekte, namelijk:		

L2. Ik ben behandeld met de volgende medicatie:**Ja****Nee**

Groeihormonen

Pubertijdsremmers (bijvoorbeeld: Decapeptyl, Suprefact of Neupropeline)

Antidepressiva (bijvoorbeeld: Fluoxetine, Prozac, Setraline, Zoloft, Citalopram of Cipramil)

ADHD medicatie (bijvoorbeeld: Concerta, Ritalin of Strattera)

Antipsychotica (bijvoorbeeld: Risperidon, Risperdal, Olanzapine, Zyprexa of Seroquel)

Anders, namelijk:

--

Apendix C

Nine Item Arfid Screening

Naam:.....

Datum:.....

Hierna vind je 9 uitspraken over jouw eetgedrag.

Geef bij elke uitspraak aan in hoeverre deze op jou van toepassing is.

0 = helemaal mee oneens

1 = mee oneens

2 = een beetje oneens

3 = een beetje mee eens

4 = mee eens

5 = helemaal mee eens

1.	Ik ben een kieskeurige eter	0	1	2	3	4	5
2.	Ik vind de meeste voedingsmiddelen die andere mensen wél eten, niet lekker	0	1	2	3	4	5
3.	De lijst met etenswaren die ik lekker vind en zal eten is korter dan de lijst met etenswaren die ik niet eet	0	1	2	3	4	5
4.	Ik ben niet erg geïnteresseerd in eten; het lijkt wel alsof ik een kleinere eetlust heb dan andere mensen	0	1	2	3	4	5
5.	Ik moet mezelf dwingen om regelmatig te eten door de dag heen, of om voldoende te eten tijdens de maaltijden	0	1	2	3	4	5
6.	Zelfs als ik voedsel eet dat ik echt lekker vind, vind ik het moeilijk om er voldoende van te eten tijdens de maaltijd	0	1	2	3	4	5
7.	Ik vermijd eten of stel eten uit omdat ik bang ben voor een onaangenaam gevoel in mijn maag of darmen, of om te stikken, of om over te geven	0	1	2	3	4	5
8.	Ik beperk mezelf tot bepaalde voedingsmiddelen omdat ik bang ben dat andere voedingsmiddelen een vervelend gevoel in mijn maag of darmen zullen veroorzaken, of dat ik zal stikken of overgeven	0	1	2	3	4	5
9.	Ik eet kleine porties omdat ik bang ben voor een vervelend gevoel in mijn maag of darmen, of om te stikken, of om over te geven	0	1	2	3	4	5

Appendix D

Detail and Flexibility Questionnaire

Hieronder worden een aantal stellingen genoemd. Omcirkel het antwoord dat het beste omschrijft in welke mate je het eens of oneens bent met de stelling.

1= sterk mee oneens

2= oneens

3= gedeeltelijk mee oneens

4= gedeeltelijk mee eens

5= mee eens

6= sterk mee eens

1. Ik word boos als mensen dingen niet op mijn manier doen
2. Ik verveel soms andere mensen als ik te lang op zaken doorga
3. Ik raak van slag als anderen mijn plannen voor de dag verstoren door te laat te komen
4. Ik heb moeite met het maken van keuzes
5. Als anderen voorstellen om iets op een andere (nieuwe) manier te doen, raak ik van slag
6. Ik vind het moeilijk om de lijn van het verhaal van een film, toneelstuk of boek te onthouden, maar specifieke scènes kan ik me tot in detail herinneren
7. Als ik emotioneel ben, bijvoorbeeld boos of verdrietig, vind ik het moeilijk om te kalmeren
8. Ik besteed even veel tijd aan belangrijke zaken als aan minder belangrijke zaken
9. Ik vind het leuk om plannen te maken voor complexe zaken, zoals reizen en projecten op het werk.
10. Ik kan in details blijven hangen als ik aan het lezen ben, waardoor ik de grote lijn mis
11. Ik heb een hoog angstniveau/gevoel van ongemak. Ik kan zien/voelen/proeven dat dingen misschien niet helemaal goed zijn
12. Ik neig ernaar om me op één ding te richten, waardoor het uit verhouding raakt bij de totale situatie
13. Ik vind het prettig om dingen in een bepaalde volgorde of routine te doen
14. Ik kan verzanden in details en het echte doel van een taak uit het oog verliezen

15. Anderen vinden me soms koppig of eenzijdig omdat het moeilijk is om van het ene naar het andere gezichtspunt over te schakelen
16. Ik vind het moeilijk om meerdere dingen tegelijk te doen (multi-tasken)
17. Ik heb helderheid en regels nodig als ik in een nieuwe situatie terecht kom. Zonder regels voel ik me snel onthand
18. Ik vind het moeilijk om verschillende perspectieven van een situatie te zien
19. Ik raak erg gestrest als plannen op het laatste moment veranderen
20. Ik kan overspoeld raken door te veel details
21. Ik hou niet van verandering
22. Ik heb anderen nodig om me te helpen zaken in perspectief te zien, omdat ik een nogal wisselende kijk op dingen in mijn leven heb
23. Ik voel me vaak kwetsbaarder en onveilig omdat ik niet in staat ben bedreigingen (en kansen) te zien die buiten mijn gezichtsveld liggen
24. Ik vind het moeilijk om kort en bondig te schrijven: ik overschrijd vaak de limiet van het maximum aantal woorden en ik vind het moeilijk om te bepalen welke details weggelaten kunnen worden

Appendix E

The Autism Spectrum Quotient

Vragenlijst naar Gedrag en Persoonlijkheid

Dit is een vragenlijst over uzelf. Deze lijst is anoniem, alle informatie wordt strikt vertrouwelijk behandeld.

Sekse: V M

Geboortedatum: _____/_____/_____ (dag/maand/jaar)

Datum vandaag: _____/_____/_____ (dag/maand/jaar)

Deze lijst bestaat uit een aantal uitspraken waarmee u het eens of oneens kunt zijn. Lees iedere uitspraak zorgvuldig en kruis dan het antwoord aan dat het meest op u van toepassing is. Voor iedere uitspraak is een viertal antwoordmogelijkheden gegeven:

1 = geheel mee eens 2 = enigszins mee eens 3 = enigszins mee oneens 4 = geheel mee oneens

1. Ik doe dingen liever met anderen dan alleen.	1 2 3 4	11. Ik vind sociale situaties gemakkelijk.	1 2 3 4
2. Ik doe dingen het liefst steedsweer op dezelfde manier.	1 2 3 4	12. Mij vallen vaak details op die anderen niet zien.	1 2 3 4
3. Als ik me iets probeer voor te stellen, kan ik me makkelijk een beeld voor de geest halen.	1 2 3 4	13. Ik zou liever naar een bibliotheek gaan dan naar een feest.	1 2 3 4
4. Ik word vaak zo door iets in beslag genomen, dat ik anderezaken uit het oog verlies.	1 2 3 4	14. Ik vind het gemakkelijk om verhalen te verzinnen.	1 2 3 4
5. Ik merk vaak geluidjes op die anderen niet opvallen.	1 2 3 4	15. Ik voel me meer aangetrokken tot mensen dan tot dingen.	1 2 3 4
6. Mijn aandacht wordt vaak getrokken door nummerplaten van auto's, of soortgelijke rijtjes.	1 2 3 4	16. Ik neig ernaar zeer sterke interesses te hebben, en ik raak vanstreek als ik die niet kan naleven.	1 2 3 4
7. Andere mensen zeggen me vaak dat het ongeleefd is wat ik heb gezegd, terwijl ik zelf denk ongeleefd te zijn.	1 2 3 4	17. Ik geniet van praten over koetjes en kalfjes.	1 2 3 4
8. Als ik een verhaal lees, kan ik me gemakkelijk voorstellen hoe de personages eruit zouden kunnen zien.	1 2 3 4	18. Als ik praat, is het voor anderen niet altijd gemakkelijk om er een woord tussen te krijgen.	1 2 3 4
9. Ik word gefascineerd door jaartallen en data.	1 2 3 4	19. Ik word gefascineerd door getallen.	1 2 3 4

10. In een groep mensen kan ik gemakkelijk verschillende gesprekken tegelijk volgen.	1 2 3 4	20. Als ik een verhaal lees, vind ik het moeilijk om achter de bedoelingen van de personages te komen.	1 2 3 4
21. Ik ben niet echt een liefhebber van het lezen van romans.	1 2 3 4	36. Ik vind het gemakkelijk om erachter te komen wat iemand denkt of voelt, alleen door naar zijn of haar gezicht te kijken.	1 2 3 4
22. Ik vind het moeilijk om nieuwe vrienden te maken.	1 2 3 4	37. Na een onderbreking kan ik heel snel terugschakelen naar waar ik mee bezig was.	1 2 3 4
23. Ik merk steeds patronen op in dingen die ik zie.	1 2 3 4	38. Ik ben goed in praten over koetjes en kalfjes.	1 2 3 4
24. Ik zou liever naar het theater gaan dan naar een museum.	1 2 3 4	39. Mensen vertellen me vaak dat ik maar door blijf gaan over hetzelfde onderwerp.	1 2 3 4
25. Ik raak niet van streek als mijn dagelijkse routine wordt verstoord.	1 2 3 4	40. Toen ik klein was, vond ik het leuk om 'doen-alsof'-spelletjes met andere kinderen te spelen.	1 2 3 4
26. Ik merk vaak dat ik niet weet hoe ik een conversatie gaande moet houden.	1 2 3 4	41. Ik vind het leuk om informatie te verzamelen over bepaalde categorieën van dingen (bijv. automerken, vogel-, trein-, plantensoorten, etc.)	1 2 3 4
27. Ik vind het gemakkelijk om 'tussen de regels door te luisteren' als iemand tegen mij praat.	1 2 3 4	42. Ik vind het moeilijk om me voor te stellen hoe het zou zijn als ik iemand anders was.	1 2 3 4
28. Gewoonlijk concentreer ik me meer op het hele beeld dan op de kleine details.	1 2 3 4	43. Ik vind het prettig om alle activiteiten, waaraan ik deelneem, zorgvuldig te plannen.	1 2 3 4
29. Ik ben niet erg goed in het onthouden van telefoonnummers.	1 2 3 4	44. Ik geniet van sociale gebeurtenissen.	1 2 3 4
30. Kleine veranderingen in situaties, of in hoe iemand eruit ziet, merk ik meestal niet op.	1 2 3 4	45. Ik vind het moeilijk om achter de bedoelingen van anderen te komen.	1 2 3 4
31. Ik kan merken wanneer iemand die naar me luistert, verveeld raakt.	1 2 3 4	46. Nieuwe situaties maken me angstig.	1 2 3 4
32. Ik vind het gemakkelijk om meer dan één ding tegelijk te doen.	1 2 3 4	47. Ik vind het leuk om nieuwe mensen te ontmoeten.	1 2 3 4
33. Als ik telefoneer, ben ik er niet zeker van wanneer het mijn beurt is om iets te zeggen.	1 2 3 4	48. Ik ben een goede diplomaat.	1 2 3 4
34. Ik vind het leuk spontaan iets te ondernemen.	1 2 3 4	49. Ik ben er niet erg goed in de geboortedata van anderen te onthouden.	1 2 3 4
35. Ik ben vaak de laatste die de clou van een grap begrijpt.	1 2 3 4	50. Ik vind het erg gemakkelijk om 'doen-alsof'-spelletjes met kinderen te spelen.	1 2 3 4