

**Can The Negative Non-Verbal Behaviours Of Peers Predict Depression?**

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### Abstract

This study investigated a fragment of the Social Skills Deficit Model (SSDM), specifically, how both rejection, in terms of negative peer non-verbal responses, and negative cognitions, in terms of bias in perceived rejection, could predict future depressive symptoms. The following hypotheses were formulated: (1) The negative non-verbal peer responses, such as less gazing while listening, less gazing while speaking, less smiling and more negative behaviours, predict depression (2) The negative bias in perceived rejection predicts depression (3) The negative bias in perceived rejection mediates the relationship between non-verbal responses from peers and depression (4) Those effects are expected to be more prominent in girls, than boys, and younger adolescents, from 12 to 15 years old, than older adolescents from 15 to 17 years old. In this study, the dependent variable is the highest depression score in waves 2-4. The independent variables are the non-verbal behaviours of peers and bias in perceived rejection. In a longitudinal design, the data was gathered from 170 participants aged 12-17 from two Dutch Secondary Schools in 4 waves approximately nine months apart. The first hypothesis was partially supported, as the results have shown that less peer gazing while listening was a significant predictor of future increase in the depressive symptoms in the respondent. The second, third and fourth hypotheses were not supported by the data, since a bias in perceived rejection was not found to predict depressive symptoms, nor there were any sex or age interactions.

*Keywords:* Social Skills Deficit Model, adolescence, depression, non-verbal behaviours of peers, bias in perceived rejection

### **Can The Negative Non-Verbal Behaviours Of Peers Predict Depression?**

Depression rapidly increases during adolescence, particularly in girls (Wilson & Dumornay, 2022). Moreover, depression is a highly recurrent disorder (Burcusa & Iacono, 2007). Once someone has a depressive episode, they are more likely to have another one. Knowing the underlying social and cognitive mechanisms of the development of depression is essential to prevent recurrent depressive episodes. It could further improve the therapeutic effects and help to understand the underlying mechanisms behind depressive symptoms. Since in adolescence, friendships and romantic relationships become a central part of life, negative peer responses could considerably impact mental health (Backes & Bonnie, 2019). Therefore, this study investigates whether negative non-verbal peer responses and one's bias about peer rejection could predict depression.

A social model that explains the relationship between depression, social skills, rejection, and social cognitions is the Social Skills Deficit Model (SSDM, Sergin et al., 2015). SSDM suggests that individuals with less favourable social skills might experience more rejection from others, leading to negative social cognitions and an increased risk of developing depression. Furthermore, once one is depressed, their optimal social skills might further decrease. Thus, receiving negative responses and rejection from others could predict depression (Nolan et al., 2003).

It is expected that the SSDM for the development of depression is particularly relevant for adolescent girls due to the higher importance of close relationships for their well-being (Rose & Rudolph, 2006). Also, interpersonal stress from social relationships seems more strongly related to depression in girls than in boys (Conley et al., 2012). In addition, it is expected that the SSDM applies in particular to the 12-15 age group, since according to Gutman & Sameroff (2004), the most considerable increase in depressive symptoms occurs during early to mid-adolescence.

One of the ways in which the rejection in the SSDM could be measured, is by the non-verbal responses of peers. APA Dictionary of Psychology (2023) defines non-verbal behaviour as an action that indicates one's attitudes or feelings without using speech. Non-verbal behaviours play an essential role in developing social relationships (DePaulo, 1992). Non-verbal responses are a channel through which we express our connection regarding relatedness (van Beek & Berg, 2019). Therefore, this study focuses on rejection, in terms of non-verbal peer responses.

Peers of mildly depressed adolescents showed less positive social behaviour towards them, such as less smiling and more subtle negative responses (van Beek et al., 2006; van Beek & Berg, 2015). In addition, less optimal non-verbal behaviour elicits negative responses from peers, which could result in depressive symptoms (van Beek & Berg, 2019). Specifically, in girls, less gazing in targets was associated with less gazing responses from peers, which predicted later depressive symptoms in respondents (van Beek & Berg, 2019). Therefore, in this research, the rejection by peers was measured through the subtle, negative non-verbal peer responses, such as less gazing, less smiling and more negative behaviours.

Non-verbal behaviours signal either positive or negative relatedness. Gazing while listening to a conversational partner is an other-oriented behaviour and indicates positive interest in another person, while gazing when speaking is more self-oriented and shows dominance (Dovidio & Ellyson, 1982). Smiling indicates positive interest, whereas subtle, negative, non-verbal cues, such as boredom or tension, might indicate rejection. Adolescents, who are already mildly depressed, receive less smiling and more subtle negative responses from their peers (van Beek et al., 2006; Schreur & van Beek, *subm.*). However, it is not yet fully explored whether these behaviours predict the development of depression. It is expected that in the sample of the current study, the more negative responses the participants receive, the more likely the depressive symptoms will increase.

Moreover, this study investigates a possible bias in perceived rejection as a predictor and mediator of depressive symptoms, since rejection sensitivity during adolescence is linked to depression (Marston et al., 2010). Rejection sensitivity could be defined as oversensitivity to social rejection (Gao et al., 2019). According to Ayduk et al. (2001), not only "true" rejection but also the anticipation of rejection could predict depression. Thus, developing high rejection sensitivity might be a risk factor for depressive symptoms. Individuals with high rejection sensitivity are also more likely to have negative behavioural tendencies and interpersonal difficulties (Liu et al., 2014). This negative bias in the perceived rejection could result from previous negative peer experiences. Furthermore, this relationship could work both ways, like a self-fulfilling prophecy, where individuals with negative cognitions about perceived rejection could also act more defensively towards others, consequently increasing the risk of actual rejection (Downey et al., 1998).

Being rejected by peers might be especially impactful in adolescence when social relationships are essential. In response to rejection, peers might develop negative cognitions about rejection and social relationships, such as increased rejection sensitivity. According to Wang et al. (2012), peer rejection in the 8th grade predicted an increase in rejection sensitivity in the 9th grade. As the SSDM hypothesises, negative cognitions, such as rejection sensitivity during adolescence, are linked to the development of depression (Marston et al., 2010). This study investigates the negative cognitions as a bias in perceived rejection.

The current study has a slightly different approach to investigating the negative biases about rejection and their development compared to most studies investigating rejection sensitivity. Most studies measure rejection sensitivity using standardised questionnaires (Columbia University, 2023). However, this study measures the negative bias about perceived rejection using decoding tasks with drawings of facial expressions. The premise for using a decoding task was to include the interpretation of the non-verbal language of others

and perceived rejection. The decoding task is a more objective measure of unconscious bias. An earlier study found a positive relationship between anger perception and depressive symptoms (van Beek et al., 2008). That relationship was stronger for girls than for boys, since girls attributed more anger to both basic and non-basic facial expressions and showed a general negative bias in decoding facial expressions compared to boys (van Beek & Dubas, 2008). As anger is an emotion that signals rejection (Hess et al., 2000), it is expected that this study finds a similar relationship with bias in perceived rejection and depressive symptoms. In general, the perceived intensity of several emotions in basic and non-basic facial expressions is higher in girls, meaning that it could also predict the development of depression, with a higher likelihood for girls (van Beek et al., 2008).

What is novel in the current study is the investigation of the bias in perceived rejection, as a mediator between non-verbal peer responses, and the development of later depression. Negative bias in perceived rejection shows how from a cognitive perspective, one interprets information from their environment. Furthermore, the bias in perceived rejection can be influenced by how relevant the social relationships are for someone (Wang et al., 2012). The SSDM (Sergin et al., 2015) suggests that receiving negative peer responses could lead to negative cognitions, such as negative bias in perceived rejection, which might lead to increased depressive symptoms.

This study investigates whether non-verbal peer responses and one's negative bias about perceived rejection could predict depressive symptoms and explore the differences between boys and girls and between the age groups of 12-15 years and 15-17 years.

This study explores the following questions: Do negative non-verbal peer responses, such as less gazing while listening, less gazing while talking, less smiling and more negative behaviours, predict depression? Do negative biases in perceived rejection predict depression? Does the negative bias in perceived rejection in facial expressions mediate the relationship

between non-verbal responses from peers and depression? Are those effects more prominent for girls than boys, and younger adolescents (12-15 years old), than and older adolescents (15-17 years old)?

This study will test the following hypotheses: (1) The negative non-verbal peer responses, such as less gazing behaviour while listening, less gazing behaviour while speaking, less smiling, and more negative behaviours, predict depression. (2) The negative biases in perceived rejection predict depression. (3) The negative bias in perceived rejection in facial expressions mediates the relationship between non-verbal responses from peers and depression. (4) Those effects are expected to be particularly prominent in girls, than boys and, younger adolescents, from 12 to 15 years old, than older adolescents from 15 to 17 years old.

## **Methods**

### **Participants**

In this study, 170 participants were selected from two Dutch secondary schools. They were obtained from a larger sample of 606 students on the basis that they were not depressed at wave 1 of the study (below score 13 on the Children's Depression Inventory) and that the observations of non-verbal behaviours were available for them. This study employed a non-probability sampling, namely purposive sampling. The participants and the schools were informed about the global goals of the study. All the participants and their parents signed an informed consent, were debriefed and informed that participation is voluntary, and that the data is protected and can be withdrawn upon request. The age of the participants varies from 12 to 17 years old at wave 1 ( $M = 14.60$ ,  $SD = 1.01$ ). The sample includes 82 females (48%) and 88 males (52%).

## **Instruments**

### ***Questionnaires***

In this study two questionnaires were used.

#### **Dutch Version of the Children's Depression Inventory.**

A Dutch version of the Children's Depression Inventory was used to measure depressive symptoms (van Beek et al., 2012). This self-report questionnaire consists of 28 questions with three answer options (0 = not depressed, 1 = slightly/mildly depressed, and 2 = severely depressed). A person is considered mildly depressed when the score on the questionnaire is 13 or above and severely depressed when the score is 21 or higher. The reliability of this scale was assessed as good (Cronbach's alpha .81, van Beek et al., 2012).

#### **Decoding Task with Drawings of Facial Expressions.**

The Decoding Task with Drawings of Facial Expressions, varying in intensity and ambiguity of several emotions, was used to measure negative bias in the perception of rejection (van Beek & Dubas, 2008) (Figure 1). The version of the questionnaire with 30 items was used, containing 15 male and 15 female faces with the same expressions (see Appendix). The question "Suppose you were talking to this person. How much does this person like talking to you?" was asked. The answer was assessed on a 7-point scale, where 1 is "does not like at all" and 7 is "likes very much". The reliability of this scale is good (Cronbach's alpha .82)



**Figure 1.** 6 Examples of Facial Expressions from the Task***Observations***

A 5-minute semi-structured interview was recorded and then coded to measure non-verbal peer responses, such as peer gazing while listening, peer gazing while talking, peer frequency of smiling, peer sum of negative behaviours (see van Beek & Berg, 2019 for a more extensive description). Gazing while listening is the duration of direct looking at the face of the speaking partner. Gazing while talking is the duration of direct looking at the face of the conversational partner during speaking. For smiling, the frequency per minute of this behaviour was measured. The sum of negative behaviours includes subtle non-verbal signs of distress, anxiety, frustration, and subtle displeasure cues, such as slumped or slightly turned away position, biting on lips or cheeks, fidgeting, explicitly chewing gum, monotonous speech (van Beek & Berg, 2019). For this study, only the non-verbal responses of the conversational partner were used. The videos were coded using the Observer XT (Version 11), by several trained master students, with high inter-rater reliability. The reliability score of the students was first tested on the same 20 golden-standard videos. The rater could only code the videos if they reached a Cohen's Kappa of at least .70. Inter-rater reliability of all

scales and coded behaviours are good, with Pearson's  $r$  ranging between .81 and .98 ( $M = .90$ ) and Kappa ranging between .61 and .92 ( $M = .74$ ).

The videos featured conversations of two peers, of the same sex, age, and school level. The participants in the video might have known each other, but they were not friends to avoid the confounding variable of relatedness. Their task was to discuss a social dilemma concerning relationships with peers (e.g. "What would you do if you saw your close friend stealing something from someone?"). Each conversation lasted until the participants reached a common decision, approximately within 5 minutes. If they agreed on their decision in time shorter than 5 minutes, the researcher asked for a top 5 ranking (e.g. about favourite teachers). Participants were informed about the aim of the study after the observations.

### **Study design**

The proposed SSDM was tested in the general school population. This study employed longitudinal design. The data was gathered in 4 waves, approximately 9 months apart. This was done to explore the potential development of (sub)clinical depressive symptoms in the later waves. The dependent variable in this study is the highest depression score of an individual at wave 2, 3 or 4, corrected for wave 1 depression score. The independent variables in this study are the non-verbal responses of peers, such as gazing while listening, gazing while talking, frequency of smiling and the sum of negative behaviours. The second independent variable is the bias in the perceived rejection.

### **Statistical Analysis**

First, the data set was investigated for the missing values. As this study uses the same data set as the van Beek & Berg (2019) study, in terms of the highest depression score or peer non-verbal behaviours, there were no missing values. Additionally, the data was examined for the missing values in bias in perceived rejection, as this is a new variable in this study. There were no missing values, and the 170 participants remained in the sample.

The age variable was coded for two categorical groups, 12-15 and 15-17 years old, since the increase of depressive symptoms in the young adolescent group (12-15) is known to be the largest (Gutman & Sameroff, 2004). Then, the descriptive statistics were performed for age groups (12-15 and 15-17 ) and sex (boys and girls). The means and standard deviations were investigated for the variables, such as highest depressive score, peer non-verbal responses and bias in perceived rejection.

Following that, the variables, such as peer gazing while talking, peer gazing while listening, peer smiling, peer negative behaviours and bias in perceived rejection, were centred. Then, the interactions of those variables with age and sex were created: age with sex, age with peer gazing while talking, age with peer gazing while listening, age with peer smiling, age with peer negative behaviours, age with bias in perceived rejection, sex with peer gazing while talking, sex with peer gazing while listening, sex with peer smiling, sex with peer negative behaviours, sex with bias in perceived rejection. A significance level of .05 was adapted for this analysis.

Next, to test the first and second hypotheses, whether the negative non-verbal peer responses and bias in perceived rejection predict depression, the forward stepwise linear regression was performed, correcting for wave one depression scores. The predictor variables were the non-verbal behaviours of peers, such as gazing while listening, gazing while speaking, frequency of smiling and negative behaviours, the bias of perceived rejection of the participant, and the interactions of age and sex. The dependent variable was the highest depression score in waves 2 – 4.

In the first step of the stepwise regression, the variables, such as age, sex and depression at wave one, were added to the model. In the next step, the interaction of age and sex was added. However, since it was insignificant, it was removed from the model to maintain the power of the analysis. Then, the non-verbal peer responses were investigated,

such as the peer gazing behaviour while listening and the peer gazing behaviour while speaking. After that, in the next step, the following interactions were added to the model: interaction of age and peer gazing while listening, interaction of age and peer gazing while speaking, interaction of sex and peer gazing while listening, and interaction of sex and peer gazing while speaking. Since those interactions were not significant, they were removed. Next, the frequency of smiling was added. Following that, the interaction of age with peer smiling, and interaction of sex with peer smiling was added. Similarly, the interactions were not found significant. Therefore, they were withdrawn from the model. Then, the peer's sum of negative behaviours was analysed. In the next step, the interaction of age with peer negative behaviours, and interaction of sex with peer negative behaviours was inserted. Those interactions were not significant and removed from the model. After that, the bias in perceived rejection was added. Following that, the interaction of bias with age and bias with sex was analysed. The interactions were not found significant. The analysis was checked for the model's overall significance and specific predictors' significance. All the analyses were performed in the Statistical Package for the Social Sciences 27 (SPSS 27).

## **Results**

### **Descriptive Analyses**

The descriptive analyses were performed to explore the differences in the means of the highest scores of depression wave 2-4, non-verbal peer responses and bias in perceived rejection in the groups such as sex (boys and girls) and age (12-15 and 15-17). The descriptive analyses for the both sex (boys and girls), and age groups (12-15 years and 15-17 years) are included in Table 1. The two-sample t-test was performed to compare the differences between girls and boys, as well as age groups 12-15 and 15-17 on the predictor variables, included in Table 1.

There was a significant difference in the following variables. The higher score of peer gazing while listening was found in girls ( $M = 57.98$ ,  $SD = 22.16$ ) compared with boys ( $M = 42.49$ ,  $SD = 25.32$ );  $t(168) = 4.23$ ,  $p < .001$ . Boys ( $M = 11.46$ ,  $SD = 2.89$ ) showed more peer negative behaviours, than girls ( $M = 9.63$ ,  $SD = 2.64$ );  $t(168) = -4.30$ ,  $p < .001$ . Furthermore, girls ( $M = -.53$ ,  $SD = .39$ ) showed more negative bias in perceived rejection, than boys ( $M = -.36$ ,  $SD = .34$ );  $t(168) = -3.03$ ,  $p = .003$ .

A two-sample t-test was performed to explore the differences between the age groups of 12-15 years and 15-17 years. The older age group 15-17 years ( $M = 11.25$ ,  $SD = 3.29$ ), showed more peer negative behaviours than younger group 12-15 years ( $M = 10.11$ ,  $SD = 2.54$ );  $t(168) = -2.57$ ,  $p = .011$ .

The descriptive analysis has shown that 12.9% of participants who are not depressed at wave 1 develop depression in later waves.

**Table 1.** Descriptive Statistics of sex and age groups (12-15 years, 15-17 years, girls, and boys)

Group	<i>N</i>		CDI 1	Highest depression score (wave 2-4)	%Peer gazing while listening	%Peer gazing while speaking	Peer frequency laughing per minute	Peer all negative behaviour rs	Bias in perceived rejection
12-15	100	Mean	3.72	7.93	51.28	34.52	2.41	10.11	-.41
		Std. Deviation	2.91	7.83	26.19	21.72	1.23	2.54	.38
15-17	70	Mean	3.86	6.01	48.08	29.68	2.64	11.28	-.48
		Std. Deviation	3.23	7.23	23.27	19.93	1.17	3.29	.36
Girl	82	Mean	3.92	6.58	57.98	35.13	2.65	9.63	-.53
		Std. Deviation	3.01	6.38	22.16	18.84	1.21	2.64	.39
Boy	89	Mean	3.65	7.67	42.49	30.10	2.37	11.47	-.36
		Std. Deviation	3.07	8.63	25.32	22.80	1.20	2.90	.34
Total	170	Mean	3.78	7.14	49.96	32.53	2.50	10.59	-.44
		Std. Deviation	3.04	7.63	25.00	21.08	1.20	2.92	.37

### **Inferential Analysis**

The forward stepwise linear regression was performed to identify the possible predictors of the highest depressive score in waves 2-4. The predictors in the model included negative non-verbal peer responses, such as peer gazing while talking, peer gazing while listening, peer frequency of smiling, peer sum of negative behaviours, and bias in perceived rejection, and the interactions effects of those variables with age and sex (Table 2). A significance level of .05 was adapted for this analysis. The regression equation was found to be significant  $F(10, 159) = 2.74, p = .004$ . In the Table 2, predictors of the highest depression scores are visible. The outcome of the analysis illustrated that less peer gazing while listening significantly predicts later depression in a respondent.

Moreover, the table depicts that peer gazing while listening explains 5% of the variation in the highest depression score in waves 2-4. After step 2, the  $R^2$  change is no longer significant (Table 2). The mediation effect of the bias in perceived rejection between non-verbal behaviours and later depressive symptoms was not checked since the main effect and the interaction effect of bias in perceived rejection was not found in the analysis.

**Table 2.** The predictors of the highest depression score in Stepwise Regression

Step	Variable	Standardised Coefficients			$R^2$	$R^2$ change
		$\beta$	$t$	Sig.*		
1	Age	-.14	-1.89	.061	.08	.08
	Sex	.10	1.32	.189		
	Depression wave 1	.25	3.32	.001		
(removed step)	Age with Sex (Interaction)	.10	.41	.683	.90	.00
2	Peer gazing while listening	-.24	-2.14	<b>.034</b>	.13	<b>.05</b>
	Peer gazing while talking	.00	.03	.997		
(removed step)	Age with peer gazing while listening (interaction)	.13	.75	.451	.15	.01
	Age with peer gazing while talking (interaction)	-.09	-.51	.611		
	Sex with peer gazing while listening (interaction)	.32	1.00	.320		
	Sex with peer gazing while talking (interaction)	-.05	-.16	.871		
3	Peer Frequency of Smiling	.02	.25	.806	.13	.00
(removed step)	Age with peer frequency of smiling (interaction)	.16	.67	.503	.14	.00
	Sex with peer frequency of smiling (interaction)	-.15	-.68	.498		
4	Peer's Sum of negative behaviours	-.03	-.37	.712	.14	.00
5	Bias in perceived rejection	.01	1.21	.228	.14	.01
6	Bias with age (interaction)	.11	.87	.383	.15	.00
	Bias with sex (interaction)	.07	.08	.939		

\*Note.  $p < .05$

### Discussion and Conclusion

The results of this study have partially supported the Social Skills Deficit Model (SSDM). The results supported the hypothesis that the non-verbal responses of peers predict depression. Relatively low levels of peer gazing while listening were a significant predictor of future depression in respondents, meaning that this finding partially supports the first hypothesis. This finding is in line with the van Beek & Berg (2019) study. The bias in perceived rejection was not a significant predictor of depressive symptoms, implying that the

second hypothesis was not supported. The third hypothesis that the bias in perceived rejection is a mediator between peer non-verbal responses and depression was not checked since the main effect and the interaction effect of the bias were not found. Furthermore, neither age nor sex were found to be significant predictors of later depression, and the difference between age groups and sexes in the means of the highest depression score was not significant. The interaction effects of age and sex with other predictor variables were not significant, meaning that the fourth hypothesis is not supported.

The interaction effects of sex and age, with other predictors in this study, were not found to be significant. One of the reasons behind that finding is that this sample of participants was controlled for depression at wave 1, meaning that all the participants who were selected were not depressed, which does not resemble the general population. Moreover, Gutman & Sameroff (2004) showed that the highest increase in depressive symptoms occurs in early adolescence. The sample of this study included older adolescents (age group 15-17), who did not show any depressive symptoms yet, what is a contrast to the general population. Due to this fact the interaction effects might not have been found.

Why does the peer gazing while listening predict depression while peer gazing while speaking is not a significant predictor of later depressive symptoms? Gazing while listening indicates positive interest in another person and is an other-oriented behaviour (Dovidio & Ellyson, 1982). Therefore, changes in this peer response might influence later changes in depression. On the other hand, gazing while speaking is related to the dominance and confidence of the speaker (Dovidio & Ellyson, 1982), thus it might not signal disinterest or rejection, and therefore it does not have such an effect on the development of depressive symptoms in the receiver.

The frequency of peer smiling and negative behaviours did not significantly predict depression. The difference between gazing, smiling and negative behaviours is that gazing



constantly occur during a conversation, however, smiling and negative behaviours are more situational and depend on the context of the discussion. Another explanation why the negative peer behaviours were not found to be a significant predictor of later depression is that the participants knew that they were being recorded, and there was a high chance of demand characteristics. It is possible that the participants purposely withheld many negative behaviours while the researcher was recording them. In addition, videos of the conversations were only 5 minutes long, so capturing differences in occurrences of less frequently emitted behaviours might be problematic. On the other hand, the study of van Beek et al. (2006), found that the peers showed less smiling and more negative behaviours towards the mildly depressed adolescents, also in 5-minute recordings. The reason of the difference in findings, might be explained by the fact that receiving negative non-verbal peer responses could result from developing depressive symptoms. The potential suggestion for the continuation of this research might be to investigate specifically the 12.9% of participants in this sample who did develop depression at later waves of the research, and check whether peer responses towards them become more negative.

The bias in perceived rejection in facial expressions was not a significant predictor of future depressive symptoms. Other studies, for example, Marston et al. (2010) found that high rejection sensitivity is a risk factor for developing depression. The study by van Beek & Dubas (2008) found that the higher the perceived intensity of anger, the more depressed the adolescents were. Moreover, girls attributed more negative meaning to several emotional cues than boys (van Beek & Dubas, 2008). The current study found that girls have more negative bias in perceived rejection than boys. However, the results of this study did not show that the bias in perceived rejection predicts depression. It might be because the sample of this study was very selective and does not represent the general population. Furthermore, the bias in perceived rejection, as the SSDM suggests, could also be the consequence of

developing depressive symptoms. Therefore, as a continuation of this research, it would be advantageous to investigate participants from this sample, who developed depression in the later waves of the research to explore whether their bias of perceived rejection changed due to the developed depression. In the present study, in the Decoding Task, the faces of boys and girls were taken together, but it could be further investigated if studying boys' and girls' faces separately would result in different findings.

The societal importance of this study is the understanding of the mechanisms by which the non-verbal behaviours of peers could predict depression, since it could help to create detection and therapeutic interventions. As depression is a highly recurrent disorder (Burcusa & Iacono, 2007), even in individuals under psychotherapy, understanding the social aspects of developing depression could prevent future episodes. Non-verbal behaviours are sensitive measures of negative peer responses, nevertheless they are usually not included in the therapeutic process. Peer non-verbal the responses explain 5% of variation in the future depressive symptoms. It is crucial information for preventing the recurrence of depression, since non-verbal communication could be improved in the course of therapy. Furthermore, the research can have educational purposes. By integrating this research into school curricula and community initiatives, the educational culture that prioritises mental health and reduces the stigma around it, can be created. School environment would be crucial to target, as adolescents spend the majority of their days at school among peers.

The longitudinal design is an advantage of this research. The development of depressive symptoms can be seen in the sample of participants who were not depressed in wave 1. However, in the next step of this research, it would be beneficial to predict the development of depression over time with more complex longitudinal analysis like multilevel analysis.

The sample in this study involved only Dutch adolescents. Thus, one of the suggestions for further research would be to consider a multicultural perspective to explore the differences in non-verbal behaviours and their interpretation among various cultures. For example, the significance and meaning of gazing and eye contact could differ in various parts of the world. In some cultures, direct eye contact could be perceived as a sign of interest or respect, however other cultures could read prolonged gazing as intrusiveness or disrespect. Moreover, it would be interesting to research other intercultural differences in non-verbal behaviour and its role in predicting depression.

In conclusion, the research partially supports the Social Skills Deficit Model (SSDM, Sergin et al., 2015), since it provides the evidence that non-verbal peer responses, such as less gazing while listening, predict future depression in the respondent. This study highlights the importance of non-verbal responses in predicting and developing depression. Since depression is a highly recurrent disorder (Burcusa & Iacono, 2007), that recurs even after therapy, targeting non-verbal peer responses and possible reasons for those responses could be a crucial step towards successful prevention and quality relationships of adolescents. The findings of this research could have an impact on creating early detection and therapeutic interventions to help adolescents in danger of developing depressive symptoms.

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**Appendix. Decoding Task with Facial Expressions**





