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Reassurance seeking and depression in adults with mild intellectual disability

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Abstract

Background—Adults with intellectual disability (ID) experience a high prevalence of depression. Yet, little research has investigated interpersonal processes related to depression in this population. In the general population, depressed persons behave in ways that elicit negative and rejecting reactions from others. In particular, excessive reassurance seeking, defined as excessively and persistently seeking assurance from others that one is lovable and worthy, indirectly contributes to depressive symptoms through evoking negative and rejecting social interactions. We examined the relation between excessive reassurance seeking, negative and rejecting social interactions and depression in adults with mild ID.

Method—Eighty-seven adults with mild ID and staff completed the Glasgow Depression Scale for people with a Learning Disorder and the Reassurance-Seeking Scale. In addition, adults with mild ID reported on their experience of negative social interactions, and staff rated their relative preference to interact with the adult with mild ID. A mediational model of the indirect effect of excessive reassurance seeking on depressive symptoms via negative and rejecting social interactions was tested.

Results—Excessive reassurance seeking was positively related to depressive symptoms. Negative and rejecting interactions partially mediated the relation between excessive reassurance seeking and depressive symptoms.

Conclusions—Findings identify an important interpersonal process in depression. Efforts to educate staff and adults with mild ID about excessive reassurance seeking and ways to alter it may be useful in treating depression.

Keywords

depression; intellectual disability; interpersonal; reassurance seeking; social skills

Introduction

Adults with intellectual disability (ID) experience a higher rate of depression than their peers with average intelligence. Indeed, the point prevalence of depression in adults with ID is almost 4%, and the period prevalence is markedly higher (Deb *et al.* 2001; Cooper *et al.* 2007). Yet, there has been little investigation of the interpersonal pathways that contribute to depression in an ID population. In the general population, interpersonal processes play an important role in depression (e.g. Lewinsohn 1974; Coyne 1976a; Segrin & Abramson 1994). Dysphoric and depressed persons behave in ways that elicit negative and rejecting social interactions (Coyne

1976a; Joiner 1994; Joiner & Schmidt 1998). In particular, dysphoric and depressed children and adults engage in excessive reassurance seeking, defined as excessively and persistently seeking assurance from others that one is lovable and worthy (e.g. Potthoff *et al.* 1995; Joiner *et al.* 2001; Abela *et al.* 2005). When this assurance is given, however, its sincerity is doubted and the pattern is repeated. Eventually excessive reassurance seeking leads to negative and rejecting reactions by others, which reduces the dysphoric or depressed person's social support and leads to interpersonal stress. In this way, excessive reassurance seeking is both a consequence of depression and indirect cause of further depressive symptoms through the mediator of negative and rejecting social interactions (e.g. Joiner & Metalsky 1995; Katz & Beach 1997; Joiner *et al.* 1999).

The few studies that have investigated interpersonal processes in an ID population suggest that depressed adults with mild ID are vulnerable to negative social interactions. The self-reported frequency and stress impact of negative social interactions of adults with mild ID is predictive of concurrently assessed depressive symptoms and depressive symptoms that are evident 6 months later (Lunsky & Benson 2001; Hartley & MacLean 2005). Moreover, adults with mild ID diagnosed with a depressive disorder report experiencing more negative social interactions than non-depressed adults with mild ID matched on various subject characteristics (Nezu *et al.* 1995). There is also evidence that caregivers reject depressed adults with mild ID, in that they minimise interactions with these persons. In an early study, Schloss (1982) used an observational measure to record the social interactions of nine adults with moderate ID diagnosed with a depressive disorder and nine adults without a depressive disorder with an equivalent chronological and mental age. As compared with the non-depressed group, caregivers were less likely to approach the depressed adults with moderate ID when there was no specific purpose for the interaction.

Studies have also shown a relation between interpersonal skill difficulties and depression in adults with ID (Benson *et al.* 1985; Reiss & Benson 1985; Laman & Reiss 1987; Helsel & Matson 1988), suggesting that interpersonal processes may contribute to this heightened experience of negative and rejecting social interactions. However, these studies focused broadly on social skills without identifying the specific skill problems associated with depression. Previous studies also neglected to examine the pathways through which interpersonal skill difficulties are related to depressive symptoms. Given the importance of excessive reassurance seeking in typically developing adults, who are similar to adults with mild ID in everyday activities (e.g. hold jobs, do household chores and often have romantic relationships) and children, who are developmentally similar to adults with mild ID (Joiner 1994; Joiner & Metalsky 1995; Joiner *et al.* 2001; Abela *et al.* 2005), this may also be a key interpersonal behaviour in depression in adults with mild ID. As in the typically developing population, excessive reassurance seeking may be indirectly related to depressive symptoms through evoking negative and rejecting social interactions.

Interestingly, excessive reassurance seeking is currently listed as one of several possible criteria needed for a diagnosis of depressive episode in the Diagnostic Criteria for Psychiatric Disorders for use with adults with Learning Disabilities/Mental Retardation (DC-LD; Royal College of Psychiatrists 2001). It is also mentioned as a common behaviour evident in a Major Depressive Episode in adults with mild ID in the Diagnostic Manual-Intellectual Disability (National Association for the Dually Diagnosed 2007). However, there has not been a systematic investigation of whether depressed adults with mild ID engage in more excessive reassurance seeking than non-depressed adults with ID.

The aims of this study are to: (1) determine whether depression is related to excessive reassurance seeking; and (2) investigate the pathway between excessive reassurance seeking, negative and rejecting interactions and depressive symptoms in adults with mild ID. We

predicted that: (1) there would be a positive association between excessive reassurance seeking and depressive symptoms; (2) adults with mild ID with a diagnosis of depression would engage in more excessive reassurance seeking than those without a psychiatric disorder or those with a non-depressive psychiatric disorder; (3) excessive reassurance seeking would be positively related to negative and rejecting interactions; and (4) negative and rejecting interactions would mediate the relationship between excessive reassurance seeking and depressive symptoms.

Method

Participants

Eighty-seven adults with mild ID (IQ 55–70 and concomitant impairments in adaptive behaviour) and adequate oral communication skills (i.e. orally communicate without the aid of another person) aged 20–64 years were recruited from disability service providers in the Rocky Mountain region of the USA to participate in the study. Participants with a diagnosis of autism were excluded given that impaired social functioning is a core aspect of this disorder. In order to be consistent with previous studies of depression in adults with mild ID (e.g. Lunskey & Haverkamp 1999; Lunskey 2003; Hartley & MacLean 2005; Esbensen & Benson 2007), participants had various aetiologies for ID, with the largest portion being of unknown aetiology.

Staff from participants' disability service provider who worked with each participant at least twice a week were also recruited to complete measures. Staff, largely case managers, reported working with the participants for an average of 3.7 years (range 0.50–8.00 years). Forty-five of the staff were female, 42 were male, and their average age was 25.6 years (SD = 5.32 years). One adult with mild ID was unable to pass the pre-test procedure outlined below and thus only staff-completed measures were used for this participant. An additional four participants did not appear to comprehend measurement questions and thus only staff-completed measures were used for these participants as well. Table 1 presents the subject characteristics of the 87 adults with mild ID who participated in the study. We intentionally recruited a large sample of participants with a depressive disorder and thus 21 participants (24.1%) had a current depressive disorder diagnosis from their disability service provider. Twenty-two participants (25.3%) had a non-depressive psychiatric disorder diagnosis by their disability service provider. Of the 43 participants with a depressive or non-depressive psychiatric disorder, 22 (51.2%) had more than one psychiatric disorder diagnosis. The remaining 44 participants did not have a diagnosed psychiatric disorder (see Table 1). The overall prevalence of psychiatric disorders in our sample is consistent with epidemiology research on co-occurring mental health disorders in the ID population (Borthwick-Duffy 1994; White *et al.* 2005).

Measures

Participant characteristics—IQ was assessed with the Kaufman Brief Intelligence Test-second Edition (K-BIT-2; Kaufman & Kaufman 2004), an individually administered measure of verbal and non-verbal cognitive abilities. The K-BIT-2 IQ Composite score has satisfactory internal consistency (0.86–0.96), test–retest reliability (0.88–0.92) and concurrent validity (Kaufman & Kaufman 2004). Staff reported on the age, gender, living status and ethnicity of the participants. Staff also completed the Adaptive Behavior Assessment System-second edition (ABAS-II; Harrison & Oakland 2006). The ABAS-II General Adaptive Composite (GAC) score has adequate internal consistency (0.97–0.99), test–retest reliability (0.86–0.99) and concurrent validity (Harrison & Oakland 2006).

Depressive symptoms—The Glasgow Depression Scale for people with a Learning Disorder (GDS; Cuthill *et al.* 2003), self-reported and caregiver supplement versions were used. The 20-item self-report GDS and 16-item GDS caregiver supplement are based on criteria for depression in the DC-LD and use a 3-point response set ('Never/no', 'Sometimes' and

‘Always/a lot’). The self-reported version has adequate internal consistency (0.97), test–retest reliability (0.97) and criterion validity (Cuthill *et al.* 2003). The caregiver supplement also has satisfactory inter-rater reliability (0.93), internal consistency (0.88) and test–retest reliability (0.98) (Cuthill *et al.* 2003). In this study, satisfactory internal consistency was found for both the self-reported GDS (0.84) and caregiver supplement GDS (0.85).

Reassurance seeking—The Reassurance-Seeking Scale (RSS; Joiner & Metalsky 1995, 2001) was reworded for use with adults with mild ID (i.e. parents and friends was changed to family, staff or friends) and consisted of four items: ‘I always need to ask my family, staff and friends if they like me’; ‘I always need to ask my family, staff or friends if they really care about me’; ‘Sometimes when I ask people if they like me, they tell me to stop asking’; and ‘Sometimes when I ask people if they like me, they get mad’. Response options included ‘No/not at all’, ‘Sometimes’ and ‘Extremely’. Among typically developing children (aged 6–14 years), the RSS has satisfactory internal consistency (0.78), 1-year test–retest reliability (0.61) and concurrent and criterion validity (Joiner 1999; Joiner *et al.* 2001; Abela *et al.* 2005; Abela *et al.* 2006). In this study, the RSS had adequate internal consistency (0.76) among adults with mild ID.

A staff-reported version of the RSS had a 7-point response set (‘Not at all’ to ‘Extremely’) for four items: ‘Does the adult with mild ID often ask others how they truly feel about them?’; ‘Does the adult with mild ID frequently seek reassurance from others as to whether they really care about them?’; ‘Do others sometimes become irritated with the adult with mild ID for seeking reassurance about whether they really care about them?’; and ‘Do others sometimes get “fed up” with the adult with mild ID for seeking reassurance about whether they really care about them?’. By using these response options, the RSS has adequate internal consistency (0.85–0.95) and discriminant and concurrent validity in the general population (Joiner *et al.* 1992; Joiner 1994; Potthoff *et al.* 1995; Joiner & Metalsky 2001). In this study, satisfactory internal consistency (0.84) was found for the staff-reported RSS, and there was a significant positive correlation between the staff-reported RSS and self-reported RSS ($r = 0.33$, $P < 0.01$).

Inventory of negative social interactions—The Inventory of Negative Social Interactions (INSI; Lakey *et al.* 1994) is a 40-item self-report measure of a variety of negative social situations. Sample items include ‘Said bad things about you’ and ‘Took something of yours without asking’. Among adults with mild ID, the INSI was found to have adequate reliability and criterion validity and was predictive of somatic complaints and depressive symptoms reported 6 months later (Lunsky & Benson 2001; Lunsky & Bramston 2006). In this study, the self-reported INSI had satisfactory internal consistency (0.93).

Interpersonal rejection—In line with past measures of interpersonal rejection (e.g. Coyne 1976b; Gotlib & Robinson 1982; Joiner *et al.* 1992; Joiner & Metalsky 1995), this construct was operationalised as staff’s preference or desirability to interact with the adult with mild ID. Specifically, staff rated their desirability to interact with the adult with mild ID through nine questions (‘I look forward to working with this person more than other clients’; ‘I would like to sit next to this person on a 3-hour bus trip’; ‘I would like to spend time with this person outside of my job’; ‘I expect to have a good time during my interactions with this person’; ‘I am excited to continue to work with this person in the future’; ‘I wish I could spend more time working with this person than with other clients’; ‘I would like to have this person as a neighbor’; ‘I would like to work with this person on a task or project’; ‘I would like to have this person as a close friend’.) using a 7-point scale (‘Not true’ to ‘Very true’). These questions were adapted from measures used in the general population (Coyne 1976b; Gotlib & Robinson 1982). Items on the interpersonal rejection measure were then reversely scored so that higher scores reflected greater interpersonal rejection. In this study, adequate internal consistency was

achieved (0.91), and the interpersonal rejection measure was significantly positively correlated with the INSI ($r = 0.23$, $P = 0.04$).

Procedure

Staff were given a packet of materials including the ABAS-II, GDS caregiver supplement, RSS staff rating and interpersonal rejection measure. Once completed, the packets were returned to the researchers via mail, and staff were paid \$20. Adults with mild ID were interviewed at their home or the headquarters of their developmental disability service provider. A pre-test was used to determine whether adults with mild ID could reliably use a 3-point Likert-type scale. In the pre-test, adults with mild ID were required to assign size–order relations among a set of clear containers with varying amounts of coloured water, match the containers to written descriptors ('No' 'Medium' and 'A lot') and a numerical scale of size (0–2), and correctly indicate where their favourite and least favourite food items fell using the containers, numbers or written descriptors. This pre-test has been used in a previous study (Hartley & MacLean 2005) and shown to result in minimal response bias during actual testing. Participants who passed the pre-test were administered the K-BIT-2. Participants were read the GDS self-report, INSI self-report and RSS self-report. In all, the procedure took 40–60 min. Adults with mild ID were paid \$20 for their participation in the study.

Results

Data analysis plan

A one-way analysis of variance (ANOVA) was used to identify differences in the GDS among participants diagnosed with a depressive disorder, participants diagnosed with a non-depressive psychiatric disorder and participants without a psychiatric disorder. The association between excessive reassurance seeking, negative and rejecting interactions and depressive symptoms was examined. One-way ANOVAs were used to identify differences in excessive reassurance seeking and negative and rejecting interactions among participants diagnosed with a depressive disorder, participants diagnosed with a non-depressive psychiatric disorder and participants without a psychiatric disorder diagnosis. Correlations, independent sample *t*-tests and one-way ANOVAs were used to identify subject characteristics related to depressive symptoms, excessive reassurance seeking and negative and rejecting interactions.

Linear regressions were used to investigate the potential indirect effect of negative social interactions and interpersonal rejection (mediators) on the relation between excessive reassurance seeking (independent variable) and depressive symptoms (dependent variable) by using the causal steps outlined by Baron and Kenny (Judd & Kenny 1981; Baron & Kenny 1986). Regressions were run separately for the self-report and staff-rating measures. To establish a mediating effect, the following criteria must be met: (1) a significant association between the independent variable and dependent variable; (2) a significant association between the independent variable and mediator; and (3) the relation between the independent variable and dependent variable decreases significantly with the potential mediator in the model, while the association between the mediator and dependent variable remains. The Baron–Kenny method has several limitations (e.g. low power, greater likelihood of Type I errors and an inability to address suppression effects) and cannot determine whether indirect effects are significantly different from zero. Therefore, we also employed the Sobel (1982) test, which overcomes many of these limitations and can determine whether the indirect effect of reassurance seeking on depression via negative and rejecting interactions was significantly different from zero. Bootstrapping was not used. The Sobel test was calculated by running regression analyses in spss. Table 2 presents the internal consistency values, means, standard deviations, intercorrelations and potential and actual ranges for the measures.

Depressive symptoms

Table 3 presents the means and standard deviations for the participants diagnosed with a depressive disorder ($N = 21$), with a non-depressive psychiatric disorder ($N = 22$) and without a psychiatric disorder ($N = 41$) on the GDS, RSS and negative and rejecting interaction measures. A one-way ANOVA and follow-up Student–Newman–Keuls *post hoc* analyses indicated that the participants diagnosed with a depressive disorder were significantly higher on the GDS caregiver supplement than the participants with a non-depressive psychiatric disorder and the participants without a psychiatric disorder ($F_{2,78} = 8.05$, $P < 0.01$). Similarly, the participants diagnosed with a depressive disorder were significantly higher on the GDS self-report than the participants with a non-depressive psychiatric disorder and the participants without a psychiatric disorder ($F_{2,78} = 14.43$, $P < 0.01$).

Excessive reassurance seeking and depression

As shown in Table 2, there was a significant correlation between the RSS self-report, the RSS staff rating, the GDS self-report and the GDS caregiver supplement. Consistent with our prediction, there was a significant correlation between the RSS self-report and GDS self-report and between the RSS staff rating and GDS caregiver supplement. A one-way ANOVA and follow-up Student–Newman–Keuls *post hoc* analyses indicated that the participants diagnosed with a depressive disorder ($M = 9.50$, $SD = 6.11$) were significantly higher on the RSS staff rating than the participants with a non-depressive psychiatric disorder and the participants without a psychiatric disorder ($F_{2,78} = 3.56$, $P = 0.03$). There was also significant a difference for the RSS self-report ($F_{2,78} = 5.97$, $P < 0.01$). The participants with a depressive disorder were significantly higher on the RSS self-report than the participants without a psychiatric disorder, but were not significantly different from the participants with a non-depressive psychiatric disorder.

Negative and rejecting interactions and depression

As shown in Table 2, was a significant positive correlation between the INSI self-report, the GDS self-report and the GDS caregiver supplement. There was also a significant positive correlation between the interpersonal rejection staff rating, the GDS self-report and the GDS caregiver supplement. Participants without a psychiatric disorder were significantly lower on the INSI self-report than the participants with a depressive disorder and the participants with a non-depressive psychiatric disorder ($F_{2,78} = 11.45$, $P < 0.01$). There was not significant difference on the INSI between the participants with a depressive disorder and those with a non-depressive psychiatric disorder. There was not a significant a difference on the interpersonal rejection staff rating among the participants without a psychiatric disorder, those with a depressive disorder and those with a non-depressive psychiatric disorder ($F_{2,78} = 0.68$, $P = 0.41$).

Subject characteristics and GDS, RSS, and negative and rejecting interactions

Correlations were conducted between the GDS caregiver supplement and age (years), IQ, (K-BIT-2 Composite standard score) and adaptive behaviour (ABAS-II GAC standard score). There was not a significant correlation between the GDS caregiver supplement and age ($r = 0.12$, $P = 0.23$), IQ ($r = -0.07$, $P = 0.50$) or adaptive behaviour ($r = -0.13$, $P = 0.24$). Independent samples *t*-tests indicated that the GDS caregiver supplement did not significantly differ by gender [$t(86) = 0.96$, $P = 0.34$] or Caucasian versus non-Caucasian ethnicity [$t(86) = -0.21$, $P = 0.83$]. A one-way ANOVA indicated that the GDS caregiver supplement did not significantly differ by living status (group home, alone or with one other, and family) ($F_{2,79} = 0.56$, $P = 0.58$). Similarly, there was not a significant correlation between the GDS self-report and age ($r = -0.08$, $P = 0.47$), IQ ($r = -0.08$, $P = 0.47$), or adaptive behaviour ($r = -0.09$, $P = 0.42$). The GDS self-report did not significantly differ by gender [$t(86) = 1.41$, $P = 0.16$] or

Caucasian versus non-Caucasian ethnicity [$t(86) = -0.25, P = 0.88$]. The GDS self-report did not significantly differ by living status ($F_{2,79} = 1.08, P = 0.32$).

There was not a significant correlation between the RSS staff rating and age ($r = -0.06, P = 0.58$), IQ ($r = 0.15, P = 0.16$) or adaptive behaviour ($r = 0.01, P = 0.99$). The RSS staff rating did not significantly differ by gender [$t(86) = 1.45, P = 0.16$] or Caucasian versus non-Caucasian ethnicity [$t(86) = 0.95, P = 0.35$]. The RSS staff rating also did not significantly differ by living status ($F_{2,79} = 0.05, P = 0.95$). Similarly, there was not a significant correlation between the RSS self-report and age ($r = -0.06, P = 0.59$), IQ ($r = -0.15, P = 0.17$) or adaptive behaviour ($r = -0.08, P = 0.50$). The RSS self-report did not significantly differ by gender [$t(86) = 0.86, p = 0.39$] or Caucasian versus non-Caucasian ethnicity [$t(86) = 0.15, P = 0.88$]. The RSS self-report also did not significantly differ by living status ($F_{2,79} = 0.02, P = 0.98$).

There was not a significant correlation between the INSI self-report and age ($r = -0.20, P = 0.08$), IQ ($r = -0.09, P = 0.42$) or adaptive behaviour ($r = -0.06, P = 0.59$). The INSI self-report did not significantly differ by gender [$t(86) = 1.13, P = 0.26$] or Caucasian versus non-Caucasian ethnicity [$t(86) = 0.55, P = 0.58$]. The INSI self-report also did not significantly differ by living status ($F_{2,79} = 1.24, P = 0.30$). Similarly, there was not a significant correlation between the interpersonal rejection staff rating and age ($r = -0.08, P = 0.59$), IQ ($r = -0.12, P = 0.27$) or adaptive behaviour ($r = -0.05, P = 0.67$). The interpersonal rejection staff report did not significantly differ by gender [$t(86) = 0.90, P = 0.37$] or Caucasian versus non-Caucasian ethnicity [$t(86) = 1.19, P = 0.24$]. The interpersonal rejection staff rating also did not significantly differ by living status ($F_{2,79} = 0.83, P = 0.44$).

Mediation analyses

As shown in Table 2, there was a significant positive association between the RSS staff rating and the interpersonal rejection staff rating. There was also a significant positive association between the RSS self-report and the INSI self-report. Table 4 presents the results of the regression analyses for the associations among the RSS, INSI, interpersonal rejection and GDS. The RSS self-report was significantly associated with the GDS self-report, there was a significant association between the RSS self-report and the INSI self-report, and the INSI self-report was significantly associated with the GDS self-report. In addition, the relation between the RSS self-report and the GDS self-report decreased when the INSI self-report was entered into the model, while the association between the INSI self-report and the GDS self-report remained (Fig. 1). The Sobel test for mediation yielded a significant result, indicating that the association between self-reported reassurance seeking and depressive symptoms was significantly reduced by the inclusion of negative social interactions (Sobel = 3.32, $P < 0.01$). Negative social interactions are considered to be a partial mediator of depressive symptoms given that the RSS self-report was still significantly associated with the GDS self-report when controlling for INSI.

The RSS staff rating was also significantly associated with interpersonal rejection staff rating, and interpersonal rejection staff rating was significantly associated with the GDS caregiver supplement. Finally, the relation between the RSS staff rating and the GDS caregiver supplement decreased when interpersonal rejection staff rating was entered into the model, while the association between the RSS staff rating and the GDS caregiver supplement remained (Fig. 2). The Sobel test for mediation yielded a significant result, indicating that the association between reassurance seeking and depression was significantly reduced by the inclusion of interpersonal rejection (Sobel = 2.54, $P = 0.01$). Interpersonal rejection is considered to be a partial mediator of depressive symptoms given that the RSS staff rating was still significantly associated with the GDS caregiver supplement when controlling for interpersonal rejection.

Discussion

Depression is one of the most prevalent psychiatric disorders among adults with ID (Deb *et al.* 2001; Cooper *et al.* 2007), yet there is little research regarding interpersonal processes contributing to depression. We investigated the relation between excessive reassurance seeking, depressive symptoms and the negative and rejecting interactions of adults with mild ID. Excessive reassurance seeking, assessed through both self- and staff-rated measures, was positively associated with depressive symptoms. Moreover, adults with mild ID diagnosed with a depressive disorder engaged in more excessive reassurance seeking than adults with mild ID without a psychiatric disorder. When rated by staff, excessive reassurance seeking also distinguished adults with mild ID who had a depressive disorder from those with other types of psychiatric disorders. Thus, as in typically developing adults and children (Joiner & Metalsky 1995; Joiner & Schmidt 1998; Joiner *et al.* 2001; Abela *et al.* 2005), excessive reassurance seeking appears to be part of the depressive presentation in adults with mild ID. These findings add support for the current inclusion of excessive reassurance seeking in the diagnostic criteria for depressive disorders in the DC-LD and Diagnostic Manual-Intellectual Disability. However, additional research using alternative measures of depression and samples of adults with mild ID is needed before strong conclusions regarding the appropriateness of this criterion for depressive disorders can be reached.

In support of previous studies (Schloss 1982; Nezu *et al.* 1995; Lunskey & Benson 2001; Hartley & MacLean 2005), experiencing negative and rejecting interactions was positively related to depressive symptoms, and adults with mild ID who had a depressive disorder experienced more negative social interactions than adults without a psychiatric disorder. Mediation analyses indicated that the relation between excessive reassurance seeking and depressive symptoms was partially mediated by negative and rejecting social interactions in adults with mild ID. This is consistent with findings in the general population (Joiner & Metalsky 1995; Potthoff *et al.* 1995; Katz & Beach 1997; Joiner *et al.* 1999) and suggests that excessive reassurance seeking is a critical behaviour in creating negative and rejecting interactions, which reduce the positive social support and increase the interpersonal stress of dysphoric and depressed adults with mild ID. In this way, excessive reassurance seeking may be an important interpersonal process through which depression is maintained over time in adults with mild ID.

It is interesting to note that the association between depressive symptoms and excessive reassurance seeking was relatively high when both were rated by self-report or both by staff rating. In contrast, self-report and staff ratings of depressive symptoms and excessive reassurance seeking had small, albeit often significant, associations. Previous research of both typically developing children and adults with mild ID has also found small associations between self-report and informant ratings of emotional and behavioural problems (e.g. Lunskey & Bramston 2006; Vierhaus & Lohaus 2008; Zimmerman & Enderman 2008). The lack of a strong association between self-report and informant ratings is often attributed to differences in the experience of these problems. The subjective experience of depression or excessive reassurance seeking as rated by adults with mild ID likely differs from the experience of staff who observe these problems. However, both experiences add meaningful information for understanding the interpersonal behaviours of depressed adults with mild ID. A strength of this study is that relation between excessive reassurance seeking and depressive symptoms was partially mediated by negative and rejecting social interactions by using both self-report and staff-rating measures.

Findings from this study have important implications for designing intervention strategies to treat depression in an ID population. Adults with mild ID receiving disability services have frequent and often intimate interactions with staff at their day programmes, jobs or group homes. They are therefore likely to seek reassurance from staff, and staff are likely to react in

negative and rejecting ways. This provides a unique opportunity to train staff at disability service providers about this interpersonal process. Interventions aimed at educating staff about excessive reassurance seeking and teaching strategies for not getting frustrated or aggravated by this behaviour (e.g. taking a break, reminding yourself that this behaviour is common among people who are depressed or using reassurance seeking as a cue to give the client more positive support) may be helpful in treating depression in adults with mild ID. Similarly, it may be feasible to develop interventions aimed at altering the interpersonal behaviours of dysphoric or depressed adults with mild ID. Such interventions could educate adults with mild ID about the ill effect of excessive reassurance seeking and teach them alternative strategies for managing their self-doubt.

There are several limitations to this study. A cross-sectional approach was used to investigate the association between excessive reassurance seeking, negative and rejecting interactions and depressive symptoms at one time point. This methodology cannot provide direct evidence on causal processes or determine the direction of the relation between excessive reassurance seeking, negative and rejecting interactions and depressive symptoms. A longitudinal study of the time-order relation between these variables is needed to determine whether reassurance seeking precedes negative and rejecting interactions, and the experience of negative and rejecting interactions then causes an increase in depressive symptoms, as is described in the typically developing literature. Alternatively, it may be that negative and rejecting interactions occur first and cause an increase in both excessive reassurance seeking and depressive symptoms. Further research is needed to rule out this possibility.

Another limitation to this study is that we focused on one potential mediator of the association between negative and rejecting interactions and depression. Other maladaptive interpersonal behaviours (e.g. poor eye contact, talking about negative content, self-focused talk or lack of intonation in speech) seen in the typically developing population (e.g. for review see Segrin 2000) may also be present in adults with mild ID and indirectly contribute to depressive symptoms via evoking negative or rejecting responses by others. Future research is needed to determine whether depressed adults with mild ID also demonstrate these interpersonal behaviours and, if so, their relation to perpetuating depression.

For many adults with mild ID family or friends may be more important and familiar than staff and thus a study of excessive reassurance seeking by using alternative categories of important others is also needed. In line with research in the typically developing population (Coyne 1976b; Joiner *et al.* 1992), interpersonal rejection was assessed through staff ratings of desirability or preference to interact with the adult with mild ID. Further studies are needed to determine whether staff behaviour is consistent with their stated preferences (i.e. interact less with depressed than non-depressed adults with mild ID). To date, only one study has used an observational measure of staff's interaction with depressed and non-depressed adults with mild ID (Schloss 1982); however, this study did not include staff ratings of their desirability to interact with depressed and non-depressed adults with ID. Given that staff are employed to care for the adult with mild ID, their desirability ratings may not match their actual interaction patterns to the same extent as in the general population.

Overall, this study broadens our understanding of the role of interpersonal behaviours, and specifically excessive reassurance seeking, in depression in adults with mild ID. This study also illuminated the potential pathway between excessive reassurance seeking and depressive symptoms to provide a basis for understanding how this social behaviour may maintain or exacerbate depression over time. Findings have relevance for directing future research studies of interpersonal pathways contributing to depression and designing interventions to treat depression in an ID population. Efforts to educate staff and adults with mild ID about the

interpersonal pattern of excessive reassurance seeking and ways to alter it may be helpful in treating depression.

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Figure 1.

Mediation model of the Reassurance-Seeking Scale (RSS), Inventory of Negative Social Interactions (INSI) and the Glasgow Depression Scale for People with a Learning Disorder (GDS) by using self-report measures. The two β s at the bottom represent the β before (above line) and after (below line) the introduction of the mediator into the regression model. $*P \leq 0.05$, $**P \leq 0.01$.

Figure 2.

Mediation model of the Reassurance-Seeking Scale (RSS), interpersonal rejection and the Glasgow Depression Scale for People with a Learning Disorder (GDS) by using staff-reported measures. The two β s at the bottom of each figure represent the β before (above line) and after (below line) the introduction of the mediator into the regression model. $**P \leq 0.01$.

Table 1

Subject characteristics of participants

Gender (<i>n</i>)	
Female	45
Male	42
Age in years, M (SD)	40.1 (14.1)
Ethnicity (<i>n</i>)	
Caucasian	76
Hispanic	3
African-American	4
Native American	2
Asian	2
Living status (<i>n</i>)	
Alone or with 1 roommate	17
Group home	64
Family/host family	6
Composite IQ, M (SD)	62.9 (8.8)
Adaptive GAC, M (SD)	63.0 (12.1)
Psychiatric disorder (<i>n</i>)*	
None	44
Depressive disorder	21
Other	22
Bipolar disorder	4
Anxiety disorder	8
Psychotic disorder	4
Conduct disorder	4
Personality disorder	5
ADHD	4
Adjustment	1
Kleptomania	1
Alcohol dependence/abuse	2
Paedophilia	1

* Of the participants diagnosed with a psychiatric disorder, 51.2% had more than one diagnosed psychiatric disorder.

GAC, General Adaptive Composite; ADHD, attention deficit hyperactivity disorder.

Table 2

Intercorrelation, descriptive and internal consistency values for study measures

	1	2	3	4	5	6
GDS						
1. Caregiver supplement	(0.85)					
2. Self-report	0.45**	(0.84)				
RSS						
3. Staff rating	0.46**	0.21*	(0.84)			
4. Self-report	0.20	0.40**	0.33**	(0.76)		
Negative and rejecting interactions						
5. INSI self-report	0.30**	0.55**	0.20	0.42**	(0.93)	
6. Interpersonal rejection staff report	0.50**	0.25*	0.34**	0.20	0.23*	(0.91)
Mean	9.45	15.01	7.08	3.29	31.01	29.52
Standard deviation	6.14	6.56	5.81	2.36	21.32	11.91
Potential range	0–32	0–40	0–24	0–8	0–80	0–54
Actual range	0–28	1–29	0–22	0–8	0–74	4–54

GDS, Glasgow Depression Scale for people with a Learning Disorder; RSS, Reassurance-Seeking Scale; INSI, Inventory of Negative Social Interactions.

* $P \leq 0.05$,

** $P \leq 0.01$.

Table 3

Means and standard deviation in parentheses on measures for participants with a depressive disorder ($N = 21$), a non-depressive psychiatric disorder ($N = 22$) and no psychiatric disorders ($N = 44$)

	Depression	Non-depressive psychiatric disorder	No psychiatric disorders
GDS			
Caregiver supplement	12.50 (6.77) ^{*†}	9.70 (5.30)	6.54 (5.50)
Self-report	19.92 (6.04) ^{*†}	15.73 (5.95)	12.14 (5.46)
RSS			
Staff rating	9.50 (6.11) ^{*†}	6.44 (5.30)	5.62 (5.58)
Self-report	4.63 (1.79) [†]	3.96 (2.10)	2.71 (2.36)
Negative and rejecting interactions			
INSI self-report	42.21 (18.48) [†]	37.00 (21.05)	20.28 (18.27)
Interpersonal rejection staff rating	31.16 (13.28)	30.50 (10.29)	27.34 (12.12)

GDS, Glasgow Depression Scale for people with a Learning Disorder; RSS, Reassurance-Seeking Scale; INSI, Inventory of Negative Social Interactions.

* Significantly higher at $P < 0.05$ than Non-Depressive Psychiatric Disorder group.

[†] Significantly higher at $P < 0.05$ than No Psychiatric Disorder group.

Table 4

Mediation analyses

Regression model	Mean square	d.f.	B	SE β	β	Sobel test
Self-report measures						
GDS						
Model 1	619.30	1				
RSS			1.14	0.28	0.40**	
Model 2	680.50	2				3.32**
RSS			0.57	0.28	0.20*	
INSI			0.16	0.03	0.48**	
Staff-report measures						
GDS						
Model 1	708.33	1				
RSS			0.49	0.10	0.46**	
Model 2	529.12	2				2.54**
RSS			0.33	0.10	0.31**	
Interpersonal rejection			0.20	0.05	0.39**	

GDS, Glasgow Depression Scale for people with a Learning Disorder; INSI, Inventory of Negative Social Interactions; RSS, Reassurance-Seeking Scale; SE, standard error.

* $P \leq 0.05$

** $P \leq 0.01$.