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SOCIAL STRESS

Social Stress in Young People with Specific Language Impairment

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Abstract

Social interactions can be a source of social stress for adolescents. Little is known about how adolescents with developmental difficulties, such as specific language impairment (SLI), feel when interacting socially. Participants included 28 adolescents with SLI and 28 adolescents with typical language abilities (TL). Self-report measures of social stress, social skills and social acceptance were obtained. Participants with SLI reported experiencing significantly more social stress than did participants with TL. Both groups judged themselves as having adequate social skills and positive social acceptance. Expressive language ability was negatively associated with social stress, but did not predict social stress when social factors were included in the regression model. Perceived social skills and social acceptance scores predicted social stress, in that poorer scores predicted more social stress. Despite perceiving themselves as having adequate social skills and as being socially accepted, social interactions are nonetheless a source of stress for adolescents with SLI.

Social Stress in Young People with Specific Language Impairment

Social functioning is a major area of concern for the parents of children and teenagers with specific language impairment (Lindsay & Dockrell, 2004; Pratt, Botting, & Conti-Ramsden, 2006). The term specific language impairment (SLI) is used to refer to individuals with significant language impairments, but no clear cognitive, physical or neurological cause underlying the impairment. The estimated prevalence of SLI in young children is 7% (Tomblin et al., 1997). SLI is a developmental language disorder which becomes apparent in childhood but can persist into adolescence and adulthood (Clegg, Hollis, Mawhood, & Rutter, 2005; Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998). Young people with SLI experience a range of social difficulties, including poor social competence and peer relationship problems (Conti-Ramsden & Botting, 2004; Durkin & Conti-Ramsden, 2007; Fujiki, Brinton, & Todd, 1996; Snowling, Bishop, Stothard, Chipchase, & Kaplan, 2006), and these can continue into their twenties and thirties (Clegg et al., 2005; Howlin, Mawhood, & Rutter, 2000). Peer relationships and friendships become particularly significant in adolescence (Giordano, 1995; Hartup, 1993; Vitaro, Boivin, & Bukowski, 2009; Wilkinson, 2009). However, little is known about how adolescents with SLI feel when interacting socially.

Social Stress

Social interactions and situations can be a source of stress for children and adolescents (Armacost, 1989; Kurdek & Krile, 1982; Seiffge-Krenke, 2006; Silverman, La Greca, & Wasserstein, 1995). The term *social stress* is used in this study to refer to the feelings of discomfort or anxiety that individuals may experience in social situations, and the associated tendency to avoid potentially stressful social situations (e.g., Argyle, Furnham, & Graham, 1981; Watson & Friend, 1969). Socially

competent individuals are expected to be able to communicate and converse effectively (Durkin, 1995; Gallagher, 1993). In adolescence, young people with SLI may be particularly vulnerable to feeling stress in social situations as they are expected to participate in wider and often more challenging social relationships within the context of significant language and conversational difficulties (Bishop, 1997; Rice, Sell, & Hadley, 1991; Rutter & Rutter, 1993). To the authors' knowledge, social stress has not been examined directly in young people with SLI. Interestingly (given the parallels between SLI and dyslexia; see Bishop & Snowling, 2004), a recent study has found that compared to typically developing peers, children with dyslexia experience more stress in school, and this stress relates to both their academic progress and peer interactions (Alexander-Passe, 2007).

Behaviours indicative of social stress, such as anxious and withdrawn behaviours, have been observed in children with SLI. An observational study of eight children with language impairments aged between 6 and 10 years found they displayed significantly more withdrawn behaviours than age-matched peers (Fujiki, Brinton, Isaacson, & Summers, 2001). In studies comparing teacher ratings of children with SLI and age-matched peers (5 to 13 years), children with SLI were judged to have significantly higher levels of reticence (motivated to interact but avoid and feel anxious in such interactions) and solitary-passive withdrawn behaviour, and these differences were large (Fujiki, Brinton, Morgan, & Hart, 1999; Fujiki, Spackman, Brinton, & Hall, 2004; Hart, Fujiki, Brinton, & Hart, 2004). Furthermore, adolescents aged 16 and 17 years with SLI rated themselves as significantly more shy (experiencing discomfort and inhibition in the presence of other people) than adolescents with no language impairments, and this effect was large (Wadman, Durkin, & Conti-Ramsden, 2008). The prevalence of anxiety and withdrawal in the

social encounters of children and young people with SLI suggest they may experience increased social stress compared to their typically developing peers. Both language ability and social ability are likely to impact on the social experiences of this vulnerable group, and may contribute to feelings of social stress.

Language Ability

Existing models conceptualise the socioemotional difficulties observed in individuals with SLI as either adaptations to the difficulties they face in social situations resulting from their language limitations, or as the result of an underlying socioemotional deficit comorbid with SLI but independent of language ability (Redmond & Rice, 1998). However, research testing these models has not examined the phenomenology of the young people; we know little of the subjective experiences of those with SLI as they deal with the demands of social situations. Adolescents are able to reflect and report on their internal processes and perceived interpersonal experience. Such information is important both for theoretical understanding of how social development in SLI proceeds and for clinical services designed to support these young people. Having language difficulties may cause young people to have doubts about how well they can communicate with others in social situations, leading to feelings of social stress and in some cases full avoidance.

Social Skills and Social Acceptance

Social competence is widely conceptualised as entailing effectiveness in social interactions (Rose-Krasnor, 1997). Within this context, social skills are defined as learned behaviours and abilities that enable an individual to perform competently on a social task (Gresham & Elliott, 1984; McFall, 1982). Children with SLI have been rated by parents and teachers as having poorer social competence than their peers, particularly poor peer social skills (McCabe, 2005). Two specific social skills have

been studied in SLI samples: accessing interactions and conflict resolution.

Observational studies suggest that children with SLI (6 to 12 years) are less effective in accessing an ongoing peer interaction (Brinton, Fujiki, Spencer, & Robinson, 1997; Liiva & Cleave, 2005). In observational studies and studies utilising hypothetical conflict scenarios, children with SLI (compared to typically developing children) were found to resolve fewer conflicts, produce fewer resolution or negotiation strategies, and use resolution strategies that were inappropriate or of a lower developmental level (Brinton, Fujiki, & McKee, 1998; Horowitz, Jansson, Ljungberg, & Hedenbro, 2005; Marton, Abramoff, & Rosenzweig, 2005). These studies suggest that the responses of children with SLI to problematic social situations differ, both qualitatively and quantitatively, from the responses of typically developing children. Social skill difficulties such as these may exacerbate feelings of stress in social situations.

Perceived social acceptance reflects perceptions of social acceptance, and has been linked to sociometric ratings of peer acceptance (Kurdek & Krile, 1982; Patterson, Kupersmidt, & Griesler, 1990) and social competence (Asendorpf & van Aken, 1994). Children with SLI aged between 7 and 10 years were found to have significantly lower perceived social acceptance than their peers on the Culture Free Self-Esteem Inventory, and this difference was large (Marton et al., 2005). In contrast, studies using the Harter Self-Perception scales found younger children with SLI (6 to 9 years) had perceived social acceptance scores comparable to US norms and age-matched peers (Jerome, Fujiki, Brinton, & James, 2002; Lindsay & Dockrell, 2000). There is evidence, however, that older children with SLI (10 to 13 years) have poorer perceived social acceptance compared to typically developing peers (Jerome et al., 2002; Lindsay, Dockrell, Letchford, & Mackie, 2002). Dockrell, Lindsay, Palikara and Cullen (2007) found that from 8 to 17 years of age, young people with SLI had

lower social self-perceptions compared to US norms using the Harter scales.

Therefore, the evidence relating to perceived social acceptance in individuals with SLI is mixed, although there is some suggestion that poor perceived social acceptance may become apparent in older children, or possibly adolescents. A lack of confidence in one's social acceptance may contribute to feelings of social stress.

The Nature of Specific Language Impairment

Children and young people with SLI are diagnosed on the basis of professional judgement, language assessment and several exclusionary criteria. Beyond parents or teachers being concerned about a child's language functioning, there is little consensus as to how best to identify individuals with SLI and the statistical criteria vary. The language criterion used for the identification of SLI range from -1SD (16th percentile) to -2SD (2.5th percentile) below the mean, often with little justification given for the cut-off (Plante, 1998). For a diagnosis of SLI, cognitive ability should be within the "normal" range and thus should not account for the language learning difficulties. Again, there is little consensus as to what level nonverbal cognitive functioning should be for identification of SLI. Some researchers suggest children should be classified as having SLI only if their performance IQ (PIQ) scores are 85 or above (e.g., Leonard, 1998), that is, not less than 1SD below the mean. More recently researchers have questioned the practice of excluding participants from SLI groups in research studies if they have PIQ scores in the lower normal range; 70 – 85 (e.g., DeThorne & Watkins, 2006; Plante, 1998), because this leads to a subset of individuals with language difficulties and lower nonverbal ability being ignored. In addition, there is evidence suggesting that children with lower nonverbal ability and poor language perform in several ways (basic language profile and success of intervention) much like children with SLI with nonverbal IQs of 85 or above

(Leonard, 2003). This may be particularly relevant to studies of adolescents with SLI as PIQ scores in SLI samples are known to drop significantly over time (Botting, 2005; Mawhood, Howlin, & Rutter, 2000; Tomblin, Freese, & Records, 1992). Some authors use different terminology for these two groups of children with language difficulties, i.e. children with specific language impairment (SLI) and children with nonspecific language impairment (N-SLI) (Law, Rush, Schoon, & Parsons, 2009). Furthermore, in the UK, the terms SLI and N-SLI are mainly used in research and clinical practice, whilst schools refer to these children with the more generic term of speech, language and communication needs.

The Present Study

At present there is limited information available about the social difficulties experienced by individuals with SLI in adolescence. This study was designed to provide information in this area, in particular with regard to the level of social stress experienced by adolescents with SLI, as compared to their peers with typical language abilities. We expected the adolescents with SLI to experience higher levels of social stress than their peers. The study also examined the concurrent relationship between social stress and a) language variables (expressive and receptive language), and b) social variables (perceived social skills and perceived social acceptance). Based on previous literature, it was predicted that both language and social functioning would contribute to level of social stress in adolescence.

Method

The participants in this study were recruited from integrated mainstream educational settings and thus had the opportunity to encounter a typical range of social situations and challenges. Self-report measures were used to tap the young people's

feelings in social situations as well as their own perspective regarding their social functioning (perceived social skills, perceived social acceptance).

Participants

Group with specific language impairment (SLI).

The participants were recruited from 15 mainstream secondary schools in the North of England. The schools had significant concerns about the language ability of all the individuals included in the group with SLI, and all these individuals were receiving support at school for language difficulties. These pupils were assessed in relation to the following SLI criteria:

1. Core Language Score, Expressive Language Index or Receptive Language Index below 1.25 SD of the population mean (standard score < 81.25).
2. Performance (non-verbal) IQ score of 85 points and above.
3. Not identified by school as having ASD, ADHD or significant emotional/behavioural problems.
4. English as first language.

These language and PIQ criteria together have been suggested as a “gold standard” for the identification of SLI as they lead to a rate of diagnosis of this condition that is consistent with clinical ratings and epidemiological studies (Tomblin et al., 1997; Tomblin, Records, & Zhang, 1996). We adopted these SLI criteria as the participants were recruited from mainstream secondary schools and had not been referred from speech and language therapists.

Twenty (71%) of the participants met the SLI criteria described above. Of the remaining eight participants, seven did not meet the set PIQ criterion as their nonverbal scores were between 79 and 84 (but their language scores were below -1.25 SD). As mentioned previously, PIQ can be a problematic issue in the study of older

children and adolescents with SLI as their PIQ scores have been found to drop significantly with age (Botting, 2005; Mawhood et al., 2000; Tomblin et al., 1992). These seven participants with nonspecific language impairment (N-SLI) also formed part of the study sample. Finally, one participant had a language score of 83 for expressive language ability (with PIQ of 96). This individual was also included in the group with SLI as her language scores still met the language criterion of -1SD used in much research with these individuals (e.g. Bishop, 1997; Conti-Ramsden, Botting, & Faragher, 2001).

The majority of the results and analyses compare the whole group of 28 participants with language impairments to the group of 28 participants with no language difficulties. For ease of reading we will refer to this group (with differing profiles of impairment) as the group with SLI, but will refer to the seven participants with N-SLI where appropriate. Thus, the final group with SLI included 28 young people; 17 males and 11 females. The age range for this group was 11;3 to 15;6, with a mean age of 13;10.

Typical language ability (TL) group.

Comparison participants with typical language abilities were recruited from the same schools as the group with SLI. In the UK, admission to a particular mainstream secondary school is based on a geographical catchment area such that pupils living in that area have a higher priority for admission than pupils living outside the area. As a result, participants recruited from the same school are likely to be from areas with a similar distribution of SES backgrounds. Schools were asked to identify pupils of a similar age who were not receiving any special educational support. Twenty-eight participants with typical language abilities were matched to the

participants in the group with SLI on chronological age and sex. The age range for the group with TL was 11;5 to 15;11, with a mean age of 14;0.

Psycholinguistic profiles.

The adolescents completed the UK version of the Clinical Evaluation of Language Fundamentals 4, CELF-4 (Semel, Wiig, & Secord, 2006). This standardised test is widely used to identify and examine children and young people with language difficulties, aged between 5;0 and 16;11 years. A battery of six varied language tests provides a core language score, an expressive language index and a receptive language index (all standardised scores). The core language score was designed to identify language disorder, and is derived from the four most discriminating CELF subtests that tap both expressive and receptive language skills: recalling sentences, formulated sentences, word classes and word definitions. The expressive language index is given by performance on recalling sentences, formulated sentences and word classes (expressive). The receptive language index is given by performance on word classes (receptive), understanding spoken paragraphs and semantic relationships.

Performance IQ (PIQ) was assessed using the Wechsler Abbreviated Scale of Intelligence, WASI (Wechsler, 1999). The WASI is an intelligence assessment designed for children and adults aged between 6 and 89 years, and was standardised on a large American sample. PIQ scores are given by the block design and matrix reasoning subtests. This measure of PIQ was chosen because of its brevity. The mean scores for the group with SLI and the TL group on the PIQ and language measures are given in Table 1.

The TL participants had mean core, expressive and receptive language scores within the expected range, and the language scores of the participants with SLI fell below the expected range. The participants with SLI had significantly lower PIQ

scores than the participants with TL (medium effect size). However, the mean PIQ scores of both groups fell within the expected range (that is, within 1SD of the mean).

In addition, participants were given a test of word reading ability; Test of Word Reading Efficiency, TOWRE (Torgesen, Wagner, & Rashotte, 1999). The TOWRE is designed for use with young people aged between 6 and 25 years, and has been standardised on a large American sample. A standardised composite score of reading accuracy is provided by the sight word efficiency and phonemic decoding efficiency subtests. The group with SLI had significantly lower reading efficiency scores than the TL group (medium effect size). The scores of both groups indicate that all the participants had a reading age of at least 9 years. Readability statistics (Flesch Reading Ease, FRE; Flesch–Kincaid Grade Level, FKGL) were calculated for the three psychosocial measures and are given in the description of the measures below. These scores indicate broadly that the wording of the scales should be understandable to young people at secondary school (11 – 15 years). Given the lower reading ability scores obtained by the SLI group, it is important to emphasize that the items and response options on the scales were read aloud to all participants.

Psychosocial Measures

Social stress.

The Social Avoidance and Distress Scale was used as a measure of social stress. This scale measures the tendency to avoid social interactions and feel anxious when in them (Watson & Friend, 1969), and is a frequently used and well-validated measure (Leary, 1991). The scale consists of 28 positive and negative items, for example, “I feel relaxed even in unfamiliar social situations”. Participants indicated how true each item was of him or her using a 4-point response scale, from “not at all like me” to “exactly like me”. Total item score ranges from 28 to 112; a high score

indicates more social stress. There is no clinical cut-off score indicated for this scale. The scale was developed with university students, but has been used with adolescents (García-López, Olivares, Hidalgo, Beidel, & Turner, 2001; Warren, Good, & Velten, 1984). Minor wording changes were made to eight items to ensure the suitability of the scale for use with a younger sample. The drawback of changing the wording of a scale is that the nature of the scale is changed so that it is no longer equivalent to the original scale and norms may no longer be appropriate. However, we do not refer to existing norms in this study and instead compare the scores of the group with SLI to the scores of a group of participants with no language difficulties who were given the same revised scale.

This scale had high internal consistency (Cronbach's $\alpha = .90$ in a sample of US university students; Watson & Friend, 1969), and in the present study (Cronbach's $\alpha = .85$). The scale has also been used with samples in the UK (Stopa & Clark, 2001). Watson and Friend (1969) presented evidence of the validity of the Social Avoidance and Distress Scale from its correlations with other relevant measures (e.g. social approval, anxiety). Furthermore, college students with high scores were more likely to choose to work alone rather than return to a group discussion, and participated less in interactions (Watson & Friend, 1969). The readability scores for this scale were FRE = 70.4 and FKGL = 6.0, suggesting the scale could be understood by 11- to 12-year-olds.

Social skills.

The Teenage Inventory of Social Skills is a self-report inventory designed to assess social skills in teenagers (Inderbitzen & Foster, 1992). The inventory has 40 items forming a positive scale (20 items) and a negative scale (20 items). Each item describes a positive or negative social behaviour. Examples include: "I offer to help

classmates do their homework” and “I laugh at other classmates when they make mistakes”. The respondent indicated how much each social behaviour described him or her on a 6-point scale, from “does not describe me at all” to “describes me totally”. The original scale items used the word “guys”, which was replaced with “classmates” for this study. This scale provides a positive social skill score and negative social skill score, each ranging from 20 to 120. The test authors state that a high score on the positive scale indicates the respondent displays many positive social behaviours linked to being liked by peers, and a high score on the negative scale indicates the respondent displays many negative social behaviours linked to being disliked by peers. The positive and negative scales had good internal consistency (Cronbach’s $\alpha = .88$ with a sample of US teenagers; Inderbitzen & Foster, 1992). The TISS has also been translated into Spanish and German, and there is evidence supporting the reliability and construct validity of the translated scale (Inglés, Hidalgo, Méndez, & Inderbitzen, 2003; Pössel & Häußler, 2004). In the present study, both the positive and negative scales had good internal consistency, with Cronbach’s α ’s of .87 and .78 respectively. The authors of the scale provide some evidence of good convergent validity (correlations with self-monitoring data, peer ratings and sociometric data) and discriminant validity (low correlations with socioeconomic status and social desirability). The readability scores for this scale suggest the scale could be understood by children aged 9 or 10 years old (FRE = 83.2 and FKGL = 4.4).

Social acceptance.

The Self-Perception Profile for Adolescents taps judgments of competence in eight specific domains of functioning and global self-worth (Harter, 1988). This measure has previously been used in the UK with adolescents with language impairments (Lindsay, Dockrell, & Palikara, 2009). For this study, the five-item

social acceptance subscale was used as a measure of perceived social acceptance. For each item, participants were presented with two statements describing teenagers, for example, “Some teenagers are popular with others their age BUT other teenagers are not very popular”. The participant indicated which teenager most resembled him or her, and to what extent (“really true of me” or “sort of true of me”). Scores ranged from 4 (most adequate self-judgment) to 1 (least adequate self-judgment). A self-perceived social acceptance score was given by averaging the responses on the five items. The social acceptance subscale had Cronbach’s α values ranging from .77 to .90 with samples of teenagers (Harter, 1988). The internal reliability of the subscale in this study was acceptable, Cronbach’s $\alpha = .69$. The scale as a whole lacks validity research, but has good theoretical grounding. A confirmatory factor analysis found that the specific subscales defined their own factors with substantial factor loadings. This suggests that the separate subscales do tap distinct domains of self-perception. The readability scores for this scale were FRE = 60.1 and FKGL = 8.7, indicating the wording could be understood by a 13-year-old.

Procedure

Each participant gave informed consent to take part in the study and was individually assessed in his or her school, in a quiet room. The standardised language and IQ assessments were completed in the first session, and were administered according to instructions provided in the test manuals. The self-report social measures were administered in the second session. As some of the participants in the SLI group had poor receptive language ability (problems understanding spoken language), the questions for each scale were read aloud to all participants in addition to being presented written down. The response options were carefully explained and accompanied by visual aids for clarification. Participants were able to respond to the

scales verbally or by pointing to the response options presented visually. Care was taken to ensure all the young people understood the scale items and responses, and clarification/examples were given where necessary (though very few interventions of this kind were required). Inconsistent and unexpected responses were checked for meaning, particularly when the items were negatively worded. Ethical approval for this study was obtained from the School of Psychological Sciences Ethics Committee (The University of Manchester).

Results

Perceived Social Stress, Social Skills and Perceived Social Acceptance

The mean scores for the group with SLI and the TL group are given in Table 2. ANOVAs reveal that the groups did not differ significantly in their positive social skills, $F(1, 54) = 1.16, p = .29$, or their negative social skills, $F(1, 54) = 0.04, p = .83$. The mean perceived social acceptance scores of the group with SLI and the TL group were above the midpoint of the scale, and did not differ significantly, $F(1, 52) = 0.14, p = .72$. The adolescents with SLI and the adolescents with TL were similar in their perceived social skills and both groups had positive perceived social acceptance. However, adolescents with SLI reported experiencing significantly more social stress than the adolescents with TL, $F(1, 52) = 6.33, p = .02, \eta^2 = .11$. The effect of group was medium, accounting for 11% of the variance in social stress.

We then calculated the mean social stress score for the group with SLI, excluding the seven participants who could be classified as N-SLI (thus $n = 21$); $M = 56.67, SD = 10.67$. This mean was virtually identical to that obtained when the seven N-SLI participants were included in the analysis, along with the 21 participants with SLI ($M = 56.50, SD = 10.37$). The remainder of the analyses are conducted the whole group of participants with language impairments ($n = 28$).

Given the significant group difference in PIQ, these analyses were repeated including PIQ as a covariate (ANCOVA). The pattern of findings reported above remained; there was a significant group difference in social stress $F(1, 51) = 3.12, p = .05, \eta^2 = .11$. The group differences in positive and negative social skills and perceived social acceptance remained non-significant.

We considered the possibility that a subset of the participants with SLI, with especially poor self-perceptions of social skills and/or social acceptance, might experience higher levels of social stress and thus exaggerate the overall between group difference. The analysis of social stress (ANOVA) was repeated excluding participants with scores more than one standard deviation below the TL group mean (on the social skills, and then the social acceptance measures). When the participants with SLI and TL participants with perceived social skills scores within the expected range or above were compared (SLI $n = 21$; TL $n = 23$), the participants with SLI still had a higher mean social stress score compared to the TL group; $F(1, 40) = 4.34, p = .044, \eta^2 = .10$. Similarly, the significant difference in social stress remained when those participants with adequate-to-high perceived social acceptance (SLI $n = 23$; TL $n = 23$) were compared, $F(1, 43) = 6.94, p = .012, \eta^2 = .14$.

What is Associated with Social Stress?

Pearson's correlation coefficients were calculated to examine to what extent social stress was associated with language ability and PIQ, and the social factors (perceived social skills and perceived social acceptance). The correlations (for both groups combined) are given in Table 3. Social stress was negatively correlated with expressive language, and this association was small but significant. The correlation between receptive language and social stress was not significant ($p = .07$). PIQ was not significantly correlated with social stress. Social stress had a medium negative

correlation with perceived positive social skills. There was a large negative correlation with perceived social acceptance. Higher social stress was associated with poorer expressive language ability, lower positive social skills scores and lower perceived social acceptance scores.

When these correlations were calculated for the group with SLI and the group with TL separately, the significant, originally medium strength associations between social stress and perceived positive social skills, and social stress and perceived social acceptance remained. However, the smaller associations observed between language and social stress when the groups were examined together did not remain once each group was analysed separately (expressive language was not significantly correlated with social stress in either group: SLI $r = -.01, p = .95$; TL $r = -.11, p = .59$). This is not surprising given the loss of power when doing separate analyses. The correlations between receptive language and social stress were non-significant in the SLI group ($r = -.02, p = .91$) and the TL group ($r = .02, p = .93$). PIQ was not significantly correlated with social stress in the SLI group or the TL group.

Predicting Social Stress

A hierarchical regression examined the possible concurrent predictors of social stress for the group with SLI and the group with TL combined (Table 4). The first block of the regression included expressive language only. The second block added positive social skills and perceived social acceptance. These three variables were included in the regression model as they were found to be significantly and negatively associated with social stress. At the final step the regression model was significant, $F(3, 49) = 12.88, p < .01$.

At step 1 expressive language was a significant predictor, accounting for 8% of the variance in social stress ($\text{adj.}R^2 = .08$). The effect size attributable to expressive

language was small ($f^2 = .11$). Including social skills and social acceptance added significantly to the model, which at step 2 accounted for 41% of the variance in social stress ($\text{adj.}R^2 = .41$). The effect size attributable to the addition of perceived social skills and perceived social acceptance to the model (35% of the variance) was large ($f^2 = .62$). The standardised beta values at this step suggest that perceived social acceptance was the most influential factor in the model, followed by perceived social skills. The contribution of expressive language to predicting social stress was not significant ($p = .11$) when perceived social skills and perceived social acceptance were included.

A second regression analysis was carried out, with group status included as a dummy variable (SLI group coded 1, TL group coded 0) in the third and final step. The effect size attributable to including group status in the model (4% of the variance) was small, and the contribution of group status to the model was borderline significant ($\beta = .37, p = .054$). Social skill and social acceptance were significant predictors of social stress in this final step, but expressive language was not. The standardised beta values indicate that again perceived social acceptance was the most influential factor in the regression model predicting social stress.

Discussion

Adolescents with SLI reported experiencing significantly more stress in social situations compared to adolescents with typical language abilities. Nonetheless, the majority of adolescents with SLI who participated in this study perceived themselves as having adequate social skills and positive social acceptance, comparable to the typically developing adolescents. Previous studies using parent and teaching ratings or researcher observations have found that children and adolescents with SLI do have poor social skills and peer problems, compared to peers (Dockrell et al., 2007; Liiva

& Cleave, 2005; Marton et al., 2005; McCabe, 2005). In this study, most of the adolescents with SLI had positive perceptions of their social competence. It may be that while parents and teachers often judge the social abilities of individuals to be poor (perhaps because their obvious language difficulties), the young people themselves have more positive perceptions of their own social skills. Alternatively, it may be that by adolescence, the social skills of individuals with SLI have improved. However, other studies examining social functioning in adolescents with SLI have found these young people do report having difficulties in social situations (Snowling et al., 2006) and have an increased vulnerability of being bullied (Knox & Conti-Ramsden, 2007). Further research examining social functioning over time in individuals with SLI would therefore be useful.

It is notable that the young people with SLI had a tendency to feel stress in and avoid social interactions, given that as a group they scored favourably on the perceived social skills and perceived social acceptance measures. Furthermore, when the social stress scores of the participants in the group with SLI and the participants in the TL group with adequate-to-high perceived social skills and social acceptance were compared, the adolescents with SLI still experienced more stress in social situations compared to their peers. It should be noted that the present study had a small sample size and group status accounted for only 11% of the variance in social stress. Nonetheless, the findings regarding social stress in this study add to previous SLI research examining similar social characteristics, which has observed anxious, distressed and inhibited social behaviour in young people with SLI (Fujiki et al., 1999; Fujiki et al., 2004; Hart et al., 2004). Thus, social stress appears to be an important issue for young people with SLI, even for those who perceive themselves as being relatively socially skilled and accepted. What is less clear is why.

Expressive language ability was negatively correlated with social stress, and was concurrently predictive of social stress when included in the regression model alone (although this was a small effect size, accounting for 8% of variance). If a young person struggles to converse effectively in social interactions, he or she may find these social exchanges onerous. For example, individuals with SLI may find their (sometimes) unsuccessful attempts at expressing themselves effectively to be a source of anxiety in interactions. However, expressive language ability did not predict social stress when perceived social skills and perceived social acceptance were included in the regression. Furthermore, receptive language was not associated with social stress. This suggests that the increased social stress experienced by adolescents with SLI cannot simply be attributed to their concurrent language difficulties.

Perceived social skills and perceived social acceptance were each negatively correlated with, and concurrently predictive of, social stress. These variables accounted for a considerable proportion of the variance in social stress (41%). If an adolescent perceives him- or herself as having poorer social skills, it appears that he/she finds social interactions more stressful. Poor social skills can affect the success of social interactions generally (Ladd, 1999), and negative social self-perceptions have been linked to social withdrawal and increased social anxiety (Caldwell, Rudolph, Troop-Gordon, & Kim, 2004; Hymel, Rubin, Rowden, & LeMare, 1990). So, negative social factors, in the form of having poorer perceived social skills and poorer perceived social acceptance, appear likely to contribute to social stress. What this study clarifies is that for the adolescents with SLI who participated in this study, social encounters continue to be stressful, even though these individuals perceived that they were well-equipped to interact socially. So, poor perceived social skills and

poor perceived social acceptance do not fully account for the increased level of social stress experienced by adolescents with SLI in comparison to their peers.

It is possible that young people with SLI experience more social stress because they feel vulnerable in social situations as a result of having a special educational need in a mainstream educational setting. Thus, experiencing increased social stress may not be unique to teenagers with SLI and could be a characteristic of other groups with special educational needs. There is evidence that children with dyslexia (many of whom also have language difficulties, e.g. McArthur, Hogben, Edwards, Heath & Mengler, 2000) experience stress related to their peer interactions (Alexander-Passe, 2007). Experiencing stress in the school environment is also recognised as a problem amongst children and adolescents with learning difficulties, who also can have language difficulties (Bender, Rosenkrans, & Crane, 1999; Wenz-Gross & Siperstein, 1998). It may be that language difficulties represent a common link amongst young people with special educational needs who also experience stress in social situations and at school. However, there may be other factors associated with having a learning difficulty in a mainstream educational setting which could contribute to social stress, such as the expectations and biases of peers, the level of social support available, or having a high expectation of failure including social failure.

In the Introduction we considered some of the issues and debate surrounding identifying individuals with SLI. Seven of the participants with language impairments in this study had nonverbal IQ scores more than 1SD below the mean and as such could be classified as having non-specific language impairment (N-SLI). Given the small number of participants with N-SLI, we included these seven individuals in the SLI group for the majority of the analyses in this study. Importantly, the results for the key variable of social stress were robust when the analysis included or excluded the

N-SLI participants. However, we did not have enough N-SLI participants to examine in detail potential similarities and differences between these two groups. Thus, our findings need to be interpreted with some caution. Further research comparing social functioning in adolescents classified as N-SLI to adolescents classified as SLI is likely to be informative.

This study focused on the adolescents' own perceptions of their social skills, social acceptance and social stress. This raises the issue of the extent to which adolescents with language impairments are aware of their social successes and failures and therefore whether their self-reports of social skills, social acceptance and social stress are accurate. Although inaccurate perceptions are a possibility, it seems unlikely that the pattern of perceived social ability (adequate social skills and social acceptance) at the same time as perception of problems regarding social interactions (high social stress) would emerge if the adolescents with language impairments were consistently under-reporting or over-reporting their difficulties in social functioning, due to a lack of self-awareness. This explanation would predict that the scores of the group with SLI on all three self-report social measures should be more closely related to each other than was found here. However, if SLI adolescents have a dissociation among elements comprising social functioning rather than a more unified and relational social functioning construct, then self-report social measures might not emerge in research as being closely related. Further research in this area may benefit from using other measures of social functioning (e.g. peer-, parent-, or teacher-report) alongside the self-report measures in order to triangulate the latter findings.

A second issue related to the use of self-report measures is the extent to which the adolescents with language impairments understood the questionnaire items (although steps were taken to try to ensure they did). This is particularly the case for

the social stress measure used, which was developed with university students. Future research using self-report measures with young people with SLI could usefully include developing methodologies that allow for further access to information for individuals with SLI in the more severe range of reading and language comprehension difficulties.

The relationship between social factors and language ability is complex and the development of social difficulties is likely to be the result of several transactional and developmental processes. A number of factors, not accounted for in the present study, may have a part to play in the pattern of social difficulties observed. This was not a longitudinal study and we lacked information about the history of the individuals in the group with SLI, for instance, speech and language therapy input, educational placements and support, history of speech difficulties, and family history of difficulties with language and/or social functioning. Future research should consider additional factors such as these, which may influence the development of social stress and means of coping with it.

The findings of this study suggest that adolescents with language impairment may experience more stress in social situations than their typically developing counterparts. This study adds to a growing body of research examining the social and emotional difficulties encountered by individuals with language impairments, particularly as the study focuses on adolescents with SLI, a group that has received relatively little attention to date. Interestingly, we found that language ability did not predict social stress when two other social factors were accounted for. This suggests that the link between language impairment and associated social difficulties is not a straightforward one.

For individuals with SLI, the tendency to feel stress in and avoid social interactions may have an adverse impact on other areas of their lives. For example, in a classroom situation adolescents with SLI may avoid group work and class discussion, and may be inhibited when asking for help. Thus, feelings of social stress may be a barrier to education, and present extra challenges to teachers of young people with SLI (e.g., Dockrell & Lindsay, 2001). Furthermore, feelings of social stress combined with language difficulties may be a substantial barrier to employment and career development for older adolescents with SLI. As noted by other researchers, the support for young people with language impairments should focus not only on linguistic ability, but also social and relationship issues (Howlin et al., 2000; Fujiki et al., 1999). School-based interventions aimed at reducing feelings of stress and anxiety in social situations, combined with enhancing social skills, may be valuable to young people with language impairments (e.g. support based on Skills for Academic and Social Success, SASS, Masia-Warner, Fisher, Shrout, Rathor, & Klein, 2007).

By the time they reach adolescence, young people with SLI, although able and willing to interact socially (Wadman et al., 2008), find it a more stressful experience than their typically developing peers. This study provides a first step in examining how adolescents with SLI feel when interacting socially. It was interesting, for example, that the increased social stress reported by adolescents with SLI cannot merely be ascribed to their language difficulties. There is a need for a larger scale study which can examine social stress in individuals with SLI at different points in development (i.e., compare early, mid and late adolescence). A longitudinal study would be particularly valuable, and could for example examine the longer term predictors of social stress. What the present study highlights is that social stress may

be an important factor when considering the well-being of young people with SLI in mainstream secondary schools.

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Table 1

Means, Standard Deviations and Group Comparisons for IQ, Language and Reading

	Group with SLI	Group with TL	<i>F</i>	η^2
	<i>M(SD)</i>	<i>M(SD)</i>		
Performance IQ	91.04 (8.39)	105.39 (11.85)	27.38**	.34
Core Language	76.89 (6.92)	104.54 (11.13)	124.51**	.70
Expressive Language	77.21 (8.84)	104.14 (9.86)	115.70**	.68
Receptive Language	77.18 (13.07)	107.43 (14.07)	69.51**	.56
Word Reading Efficiency	78.82 (13.64)	99.71 (17.48)	24.87**	.32

** $p < .01$

Table 2

Means and Standard Deviations for Self-Report Social Measures

	Group with SLI	Group with TL
	<i>M(SD)</i>	<i>M(SD)</i>
Positive social skills	80.21 (18.26)	85.00 (14.88)
Negative social skills	41.14 (11.19)	46.43 (14.54)
Social acceptance	3.30 (0.67)	3.09 (0.67)
Social stress	56.50 (10.37)	49.15 (11.08)

Table 3

Correlations Between Social Stress, Perceived Social Skills, Perceived Social Acceptance, Language and IQ Variables

	Social stress	Expressive language	Receptive language	Performance IQ	Positive social skills	Negative social skills	Social acceptance
Social stress	1	-.31*	-.25 ^a	-.21	-.48**	.01	-.56**
Expressive language	-	1	.73**	.59**	.20	.01	.18
Receptive language	-	-	1	.66*	.20	.00	-.02
Performance IQ	-	-	-	1	.19	.10	.07
Positive social skills	-	-	-	-	1	-.02	.31*
Negative social skills	-	-	-	-	-	1	.23
Social acceptance	-	-	-	-	-	-	1

* $p < .05$, ** $p < .01$, ^a $p = .07$

Table 4

Regression Analysis Predicting Social Stress from Concurrent Variables

Variable	Unadj. R^2	ΔR^2	f^2	B	$SE B$	B
Step 1	.10		.11			
Expressive language				-.21	.09	-.31*
Step 2	.44	.35	.62			
Expressive language				-.12	.07	-.18
Social skills				-.21	.08	-.31*
Social acceptance				-7.42	1.99	-.43**

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