



Success in the transition to secondary school: longitudinal, cognitive and cultural perspectives

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ABSTRACT

This study examined children’s peer reputation from three perspectives, within the context of the transition to secondary school. Participants were Year Seven pupils from five secondary schools across England and Wales ($N = 608$), within which a subset had participated in an earlier cross-sectional study and thus formed a longitudinal sample ($N = 105$).

This study investigated:

- 1) To what extent the transition to secondary school is a ‘turning point’ in children’s social experiences, and how this relates to peer reputations in secondary school.
- 2) Whether differences in social understanding explain unique variance in children’s (peer-rated) social profiles, refining previously reported associations between theory of mind and popularity.
- 3) Whether cultural differences in performance on an attribution task corresponded with group differences in how peer reputation is related to peer acceptance / rejection among White British and Asian children.

Results from the longitudinal sample indicated that change in sociometric status across the transition to secondary school was associated with social adjustment and aspects of peer reputation, generally consistent with the notion of a turning point; however predicted associations with theory of mind and aggression were not found. In the wider sample, theory of mind was associated only with leadership, while results from the attribution task showed that cultural differences were confounded by differences in socioeconomic status and showed no significant associations with peer reputation. Finally, exploratory analysis revealed that performance on the attribution task was related to theory of mind ability. Implications are discussed.

KEY WORDS:	TRANSITION TO SECONDARY SCHOOL	PEER REPUTATION	REVISED CLASS PLAY (RCP)	TURNING POINT	CULTURAL ATTRIBUTION
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Introduction

The study of children's peer relationships has a history that stretches back to the 1930s, when Moreno (1934) described the inter-relational principles of attraction, repulsion and indifference, which remain at the heart of modern sociometric categorisation. Traditionally taking place in school settings, children could be classified as 'popular' or 'unpopular' according to the positive nominations of their classmates, while studies such as Gronlund and Anderson (1957) examined the characteristics of individual children in order to understand these choices. In the 1980s Coie, Dodge and Coppotelli (1982; Coie & Dodge, 1983) measured both positive and negative nominations and used standardized scores with statistical cut-offs to create the five sociometric categories commonly recognised today: 'popular' (liked by many, disliked by few), 'rejected' (disliked by many, liked by few), 'neglected' (liked by few, disliked by few), 'controversial' (liked by many, disliked by many), and 'average'. Since then a great many behavioural correlates have been found for each of these sociometric statuses (see Newcomb, Bukowski & Pattee, 1993), again attempting to explain why some children are liked and others disliked. More recently, peer acceptance and peer rejection have been shown to be associated with children's *theory of mind* ability (e.g. Slaughter, Dennis & Pritchard, 2002; Scott, 2009), implying that increased social insight may also help to account for these differences. Thus this area of research then remains fruitful.

Over the past few decades, studies of children's classroom reputations have also borne fruit for a number of decades. The landmark study again came in the 1980s when Masten, Morrison and Pellegrini (1985) adapted Lambert and Bower's (1961) 'Class Play' measure of peer reputation, in which children imagine they are the director of a class play and must 'cast' their classmates into the described roles. The resulting instrument was the *Revised Class Play* (RCP) which comprised 15 positive roles (such as 'good leader') and 15 negative roles (such as 'too bossy'), all relating to social competence. From this Masten and colleagues derived three meaningful dimensions – 'sociability-leadership', 'aggressive-disruptive' and 'sensitive-isolated' – with which to assess social reputation. More recent studies using the RCP have tended to differentiate these scales further, sometimes into several narrow-band scales (Gest, Sesma, Jr., Masten & Tellegen, 2006), but most commonly into four factors, with the sociability-leadership dimension split in two (e.g. Casiglia, Lo Coco & Zappulla, 1998; Zeller, Vannatta, Schafer & Noll, 2003; Realmuto, August & Hektner, 2000). These dimensions have since been used in a variety of ways, for instance to compare reputation profiles of different sociometric status groups (e.g. Casiglia et al, 1998), or to predict adjustment problems (Realmuto et al, 2000) and a range of other outcomes including academic, occupational and romantic competence (Gest et al, 2006). Furthermore, although developed for use with primary school children, the RCP has shown success in early secondary years too (e.g. Zeller et al, 2003). Nevertheless, the period of transition to secondary school has been largely neglected within both sociometric and peer reputation literature. The present study attempts to address this gap.

Starting secondary school is, for many children, an important life event and a major source of change for their peer experiences. During this time friendship groups may change and peer reputations may be shaken, for better or worse. Yet, while some

researchers have presented the transition as a potentially wide-ranging turning point (e.g. Tonkin & Watt, 2003; Pratt & George, 2005), others have highlighted more social continuities across the transition, particularly for children attending the modal secondary school for their cohort (e.g. Weller, 2007). McDougall and Hymel (1998) emphasise that while there is great variation in how well individuals adjust to the transition, social adjustment both before and after the transition appears to be the strongest predictor of child's transition experience. In this sense loneliness and low self-esteem in primary school may lead to more of the same in secondary school. But this is not a foregone conclusion. In a study of the mechanisms of stability and change among rejected children, Sandstrom and Coie (1999) found that some did manage to escape rejection, and that those who remained consistently rejected tended to deny their own role in the rejection and instead blamed the 'unfair' peer group. It appears then that the transition can also be a time of opportunity and that perhaps social insight into the reasons for their previous rejection may enable an individual to improve their social position. Moreover, Scott (2009) observed that theory of mind was positively associated with a self-reported competence at making friends. Mentalising ability may therefore help children to succeed in their new setting as well as making sense of their old one. Rejected or neglected children who manage to improve their peer status across this transition period might therefore be expected to show better theory of mind skills than those who remain continually rejected or neglected. On the other hand, Landsford (2009) suggests that adolescents who sense a fall in their social standing may engage in behaviours to try to increase it, particularly involving aggression. Yet, surprisingly, Sandstrom and Coie (1999) found that aggression was positively associated with sociometric improvement over a two-year period. One explanation offered for this is that a shift in social norms may occur during the early stages of adolescence, after which aggression may be seen as more socially acceptable and potentially even socially desirable.

This raises an important point. While children's personality and chosen behaviours do to an extent create their reputation, "the way in which a child is perceived by his or her age-mates is [also] a function of the age-mates' attributional, social, cognitive, and affective schemas" (Casiglia et al, 1998, p.723). As this study highlighted, culture is another source of expectations and values that may be linked to differences in schemas. Although the RCP has shown relatively high cross-cultural validity, certain items in particular have been interpreted differently within different cultural frameworks. For example Krispin, Stenberg and Lamb (1992) observed that certain items relating to politeness and fairness which were viewed as prosocial by North American children were seen as sly and manipulative by an Israeli sample. Similarly, Chen, Rubin and Sun (1992) found that Canadian and Chinese samples differed in their interpretation of items relating to inhibition and sensitivity. While Canadian children saw these as indicative of social problems and isolation, Chinese children viewed these traits as representing good behaviour and competence. It appears then that the same set of social behaviours may be interpreted differently within different cultural settings, perhaps even within the same country. Thus it is useful to be able to assess whether a difference exists in the social attribution of two different cultures. One goal of the present study was to address this possibility in relation to two types of British community: White British children attending schools with a White British majority and British Asian children attending schools with an Asian majority.

Specifically, this study builds upon findings of dual cognitive perspectives among Chinese American adults. Using a series of tasks, including a set of scenarios in which participants were asked to explain the behaviour of animated fish, Morris and Peng (1994) found that while US participants tended to attribute perceived behaviours to the individual fish in question. Chinese participants were more likely to attribute the behaviour to the will of the group. This is supposedly in line with the idea that China is a more 'collectivist' society and the US is more 'individualistic'. Hong, Morris, Chiu and Benet-Martínez (2000) later examined the concept of 'frame switching' among Chinese-Americans, using a range of tasks including an adapted and simplified fish task. Hong et al found that the participants appeared to switch between Chinese and American attributional schemas depending on which national identity was primed. This frame-switching effect has also been found in Greek-Dutch children using the same fish task (Verkuyten & Pouliasi, 2002). Therefore it might be interesting to apply these same principles to Asian children living in Britain. Since India has also been described as 'collectivist' (Triandis et al, 1993), a similar distinction might be expected between White British and Asians as between US and Chinese. However it is also possible, as Vadher & Barrett (2009) found with Indian and Pakistani teenagers, that the school context may increase the salience of the children's British identity over their Asian identity, in which case the attribution style of the Asian children may resemble that of British children. Nevertheless, if a difference is found, this may also be associated with a difference in the way RCP profiles are received. It was therefore hypothesised that cultural differences in attribution would be reflected in the association between peer reputation and peer acceptance / rejection. It was further hypothesised that peer reputation would be related to theory of mind ability. Finally, the transition to secondary school was expected to be a turning point for children's social experiences, and it was predicted that differences in transition experience would be associated with differences in peer reputation and theory of mind.

In sum, this report examines children's peer reputation from three different perspectives. The first section explores to what extent the transition to secondary school is a 'turning point' in children's lives, focusing on peer reputation, self-reported loneliness, and associations with theory of mind ability. The second section examines individual differences in peer reputation in secondary school, looking closely at the role of social understanding and its relationship with peer reputation. Finally the third section takes a group perspective, assessing cultural differences in social attribution between White British and Asian children and investigating what this might mean for peer reputation.

Method

Participants

This study adopted a nested design, to include analyses of both a large-scale cross-sectional sample and a sub-group of children for whom longitudinal data were available.

Full Sample (Cross-sectional)

This sample was recruited as part of a larger research project conducted in collaboration with another Part IIB student. Specifically, data were obtained from Year Seven children, all 11-13 years old ($M_{age} = 11.9$), in five secondary schools (three English, two Welsh) spanning four different local authority areas. All five schools were in the state sector, but one was a selective all-girls school. Twenty four classrooms provided data, with class sizes ranging from 24 to 32 pupils ($M = 29$) and participation rates between 67 and 100% ($M = 89\%$). Seventy nine children did not participate, leaving a total of 608 participants (59% female). Information regarding free school meals (FSM) was collected as an index of socioeconomic status (SES) and the percentage of individuals who reported claiming FSM ranged from 0%-74% across classrooms ($M = 24\%$). The main ethnic make-up of the sample was White British (54%) and Asian (32%). Ethnic minorities were White other (4%), Dual Heritage (4%), Black African (3%) and Black Caribbean (2%).

Longitudinal Sample

Within the full sample described above, 114 children had taken part in a previous cross-sectional study (Mills', 2009). Nine of these did not participate, leaving a total of 105 participants (51% male). Twenty two of these reported claiming FSM (21% of those who reported), which is comparable to the cross-sectional sample. Likewise the ethnic make-up resembled the larger sample: 53% White British, 30% Asian, 4% White other, 3% Black African, and 2% Dual Heritage.

Procedure

The following describes the procedure used at Time 2 (Winter of Year Seven). The procedure used at Time 1 (Winter of Year Six) was very similar but was entirely paper-based and included fewer measures; for details, see Mills (2009).

Recruitment and Consent (see Appendix 1)

Seven schools were sent information about the study and invited to take part. Parents/caregivers and children were then informed by letter and by teachers respectively, including assurances of confidentiality and right to withdraw. In line with recent trends (e.g. Viding, Simmonds, Petrides & Frederickson, 2009), the children were deemed old enough to actively assent to their own participation, providing caregivers had given passive consent¹ (see Carroll-Lind, Chapman, Gregory & Maxwell, 2006). Caregivers wishing to opt out of the study did so by returning a form to the child's school. Although the exact number of parents who opted out is not known, schools reported that very few chose to do so. Participants signed and took home a simple consent form to confirm that they were fully informed about important aspects of the

¹ This procedure was deemed appropriate for two reasons. Firstly incidences of losing or forgetting to return forms in active consent procedures can often result in children being denied participation despite parents holding no objection (Carroll-Lind et al., 2006), which was undesirable since a high participation rate was necessary for sociometric analysis. Secondly the range of response rates reported by Mills (2009) indicated that children of this age were quite capable of deciding for themselves.

study (such as freedom to omit questions) and also confirmed this consent at the beginning of the survey, so that both parents and researchers had copies of consent. Questions and comments were welcomed throughout the process from all involved but only two parents contacted us directly.

Classroom Procedure

An online survey was created using Qulatricks™ software and was administered in a whole-class setting during a normal lesson in January / February 2010. Online methods were chosen for ease of distribution and data collection as well as environmental benefits; however one school requested a paper booklet version of the questionnaire because of limited ICT resources. Although the order was changed slightly, the nature and form of questions remained the same and responses did not differ significantly because of this. Teachers first read the consent form aloud and resolved any issues of understanding that the children had. They were then on-hand throughout the survey to provide help with reading. Teachers were instructed to encourage personal responses rather than ‘correct’ answers. Class lists were also given out so that individual ID numbers could be recorded instead of names when answering sociometric questions. All sessions were completed within a single school lesson. Pupils not participating were given alternative tasks.

Measures

Sociometric Status

Coie et al.’s (1982) limited nomination procedure was employed at both time points, asking children for up to three classmates² they ‘MOST liked to play with’ and up to three they ‘LEAST liked to play with’. ‘Most liked’ and ‘least liked’ scores were created by counting participants’ positive and negative nominations and then standardizing these within each classroom to account for variation in class size. Children were then categorised as ‘popular’, ‘rejected’, ‘neglected’, or ‘controversial’ using the statistical cut-offs described by Coie and Dodge (1983; see Table 1). Those remaining were classified as ‘average’.

Table 1.
Criteria for Sociometric Statuses (Based on Coie & Dodge, 1983)

Sociometric Status	Criteria			
	$z\ ML - z\ LL$	$z\ ML + z\ LL$	$z\ ML$	$z\ LL$
Popular	> 1	--	> 0	< 0
Rejected	< -1	--	< 0	> 0
Neglected	--	< -1	--	--
Controversial	--	> 1	> 0	> 0

Note: zML = standardized ‘most liked’ score, zLL = standardized ‘least liked’ score

² Recording just the ID numbers, not the names

Table 2.
Classification of Sociometric Transition Status

Sociometric Status		Sociometric Transition Status
Time 1	Time 2	
Popular or Average	Popular or Average	Consistently High
Popular or Average	Rejected or Neglected	Falling
Rejected or Neglected	Popular or Average	Rising
Rejected or Neglected	Rejected or Neglected	Consistently Low

Sociometric Transition Status

Children were grouped on the basis of how their sociometric status changed between Times 1 and 2. ‘Popular’ and ‘average’ statuses were seen as ‘high’, indicating relative social success, while ‘rejected’ and ‘neglected’ statuses were regarded as ‘low’ because of their negative associations. Individuals were therefore classified as either ‘consistently high’, ‘rising’, ‘falling’ or ‘consistently low’ (see Table 2). Individuals that received ‘controversial’ status at either time point were not classified.

Loneliness

Self-reported loneliness was measured at both time points using the Cassidy and Asher (1992) version of the 24-item Loneliness and Social Dissatisfaction Questionnaire (Asher & Wheeler, 1985). Eight filler questions (e.g. “Do you like music?”) were interspersed among sixteen target questions (e.g. “Are you lonely at school?”), to which children responded “0” for ‘No’, “1” for ‘Sometimes’ or “2” for ‘Yes’. Responses to the target questions were subjected to confirmatory factor analysis at Time 2.

In addition, loneliness at Time 1 was subtracted from loneliness at Time 2 and this change in loneliness and social dissatisfaction was used as an index of social adjustment to the transition to secondary school.

Peer Reputation

Peer reputation was examined at Time 2 using Masten et al’s (1985) Revised Class Play (RCP), which consisted of 30 roles. Children were asked to nominate the classmate³ best suited to play the part described by each role. They were told that only one child could be chosen for each role, however each child could be cast multiple times. The number of nominations each child received for each role was counted and z-scores were taken within each classroom to adjust for variations in class size.

Theory of Mind

Theory of mind ability was assessed at Time 2 using a test battery of nine age-appropriate tasks, which took the form of short vignettes presented with accompanying pictures. These included four of Happé’s (1994) most demanding ‘strange stories’, which required an understanding of persuasion, white lie, misunderstanding, and double bluff; and five of Corcoran, Mercer and Frith’s (1995) ‘hinting tasks’, designed to test participants’ inferences of the intentions behind indirect speech utterances. For each strange story children were asked to justify a non-literal utterance made by a character.

³ Again, recording just the ID numbers.

Responses were coded on a scale of 0-2 (0 = Incorrect, 1 = Correct but minimal, 2 = Correct and clearly understood; for scoring criteria see White, Hill, Happé, and Frith, 2009). In each hinting task children were asked to judge what a character really meant by a particular utterance (such as “those toffees look delicious”). Responses were scored on a 0-1 scale (0 = Incorrect, 1 = Correct).

Ethnic Identity

In the full sample, White British children from classrooms with a White British majority⁴ ($n = 205$) and Asian children from classrooms with an Asian majority ($n = 105$) were selected as being the best representatives of contrasting ethnic identities. Cultural differences were assessed by comparing these two groups.

Cultural Differences in Attribution

Children’s attribution style was measured at using an adaptation of Hong et al’s (2000) fish task. Children were presented with a looped animation of fish swimming in formation with one fish consistently out in front of the others (see image). Children were told to imagine they were telling a story about the fish and were then asked what they would say about the fish on the right. This open-ended question was designed to test children’s natural responses without influencing them in any way. Responses were coded as ‘leader’ (behaviour attributed internally to the single fish), ‘outcast’ (behaviour attributed externally to group pressure), or ‘other’ (no anthropomorphism or no clear attribution made, such as “stripy” or “fast”)⁵. Individuals were grouped on this basis to create the categorical variable Fish Attribution, which was used as an index of default attribution style.



Children were then presented with two statements saying: ‘Some children your age have said they think the fish on the right is [the leader / an outcast]’ and asked how much they agree with each description on a scale of 1 (totally agree) to 6 (totally disagree). A Fish Judgement variable was created by subtracting the leader agreement score from the outcast agreement score; hence a score of 5 would indicate the opinion that the fish is definitely the leader and definitely not an outcast, while a score of -5 would indicate the reverse.

Analytic Strategy

At the data cleaning stage, confirmatory factor analysis (CFA) was used with self-reported loneliness and theory of mind data. CFA was chosen because it is hypothesis-driven and is therefore the most powerful procedure for establishing simple-structured models (Brown, 2006). However it was decided that the RCP data may not fit such a simple structure since small secondary loadings may also be meaningful because of variations in how some items may be interpreted. Therefore Procrustes rotation was

⁴ Defined as over 60%

⁵ See Appendix 2 for examples of responses and coding.

used as an alternative method of theory-driven data reduction (see McCrae, Zonderman, Costa, Bond & Paunonen, 1996). Casiglia et al's (1998) factor structure was selected as a target matrix firstly because it was used with a similarly aged sample (whereas Masten et al (1985) studied younger children for instance), and secondly because more recent studies have indicated that a four-factor solution may have greater validity than Masten et al's (1985) original three factors.

Throughout the study, parametric tests were preferred because of their greater statistical power; but chi-squared tests were used to assess the distributions of categorical data. For continuous variables, means were compared between groups using a t-test and a variety of univariate and multivariate analyses of variance, while analyses of covariance were employed to assess the influence of potential confounding variables. Finally, Pearson's correlations were used to examine relationships between pairs of continuous variables and z-scores were used to assess whether these relationships differed between two groups. To insure against Type I errors, more conservative values of alpha were used whenever assumptions of tests were violated. Serious violations of normality were generally tackled by transforming problem scales into variables with platykurtic distribution, making them suitable for use with parametric tests such as analyses of variance (Tabachnick & Fidell, 2007). Eta-squared is reported as the effect size for t-tests and univariate analyses of variance, while partial eta-squared is reported for multivariate analyses of variance since this is adjusted for repeated measures.

Results

Data Cleaning

Revised Class Play (RCP) Scales

A principal components analysis with varimax rotation was performed on the standardized count data, with four factors accounting for over half (51%) of the variance in peer reputation. These four principal components were then subjected to Procrustes rotation using Casiglia et al's (1998) principal components analysis as a target structure. Factor, variable and total congruences were then calculated to assess this fit. Initial inspection of variable congruences showed that two items (12 - "Everyone listens to" and 17 - "Can't get others to listen") fell below the lowest acceptable threshold of .80 (Lorenzo-Seva & Ten Berge, 2006) and thus could not be seen as matching. After removing these two items, 24 out of 28 variable congruences were greater than .90 and factor congruences ranged between .90 and .96 (see Table 3). This can be considered evidence of good factor replication among the remaining 28 items (McCrae et al, 1996). The final structure of these four factors is displayed in Table 3.

The variables 'Leadership', 'Aggressive-Disruptive', 'Sensitive-Isolated' and 'Sociability' were created by taking the mean of the items loading onto each factor. Intercorrelations between these scales in both samples were very low to low (Cohen, 1988), which suggests that these were valid distinctions (see Table 4). Correlations were also reassuringly similar between the two samples. In both samples Sociability was positively associated with Leadership and Disruptive, and negatively with Isolated.

Table 3.
Factor Loadings and Congruences for RCP Factors after Procrustes Rotation to Casiglia et al's (1998) Italian Factor Structure

RCP	Factor				Variable Congruence
	I	II	III	IV	
I. Leadership					
23. Helps other people when they need it	.72	-.16	-.08	.06	.99
01. Good leader	.64	.13	-.12	.27	.93
04. Good ideas for things to do	.64	.02	-.17	.16	.81
19. Polite	.60	-.16	.16	-.25	.87
10. Will wait their turn	.58	-.23	.21	-.23	.97
13. Plays fair	.57	-.16	-.11	-.12	.93
26. Can get things going	.51	.27	-.10	.39	.80
07. Someone you can trust	.45	-.24	-.15	.10	.93
II. Aggressive-Disruptive					
27. Teases other children too much	-.18	.77	-.10	.06	1.00
02. Gets into a lot of fights	-.12	.77	.00	.00	.98
29. Picks on other kids	-.14	.76	-.07	.01	1.00
05. Loses temper easily	-.05	.71	.06	-.17	.95
08. Interrupts when other children are speaking	-.06	.70	.03	.13	1.00
21. Too bossy	.14	.63	-.04	.11	.94
06. Shows off a lot	.01	.63	-.05	.33	.95
15. Acts like a little kid	-.14	.40	.23	.20	.85
III. Sensitive-Isolated					
22. Often left out	-.15	.02	.86	-.08	.99
03. Rather play alone than with others	-.08	-.03	.84	-.06	.99
24. Usually sad	-.07	.08	.83	-.11	.98
14. Has trouble making friends	-.17	.20	.79	-.03	.97
11. Feelings get hurt easily	-.01	.19	.55	-.17	.94
18. Very shy	-.01	-.15	.42	-.23	.94
IV. Sociability					
20. Makes new friends easily	.14	-.03	-.18	.73	.99
25. Everyone likes to be with	.32	.04	-.16	.67	.96
09. Has many friends	.24	.12	-.15	.64	.96
16. Good sense of humour	.02	.07	-.14	.63	.97
28. Usually happy	.17	-.04	.03	.53	.93
30. Likes to play with others rather than alone	-.05	.09	.13	.53	.92
Factor / Total Congruence	.96	.95	.95	.90	.94

Note: $N = 687$. These are Procrustes-rotated principal components. Loadings of .40 or greater are in bold. Items 12 and 17 removed because of low variable congruences.

Table 4.
Intercorrelations between RCP Scales

Scale	Pearson's <i>r</i>			
	I	II	III	IV
I. Leadership	--	-.15 ***	-.14 ***	.29 ***
II. Aggressive-Disruptive	-.19 *	--	.06	.18 ***
III. Sensitive-Isolated	-.04	-.03	--	-.25 ***
IV. Sociability	.24 *	.27 **	-.25 **	--

Note: Longitudinal sample is below the diagonal ($N = 114$), cross-sectional sample is above ($N = 687$).

* $p < .05$. ** $p < .01$. *** $p < .001$ (all ps given for two-tailed)

Likewise Leadership was associated negatively with Disruptive in both samples and negatively with Isolated only in the cross-sectional sample. No association was found between Isolated and Disruptive. Thus children with lots of friends were statistically more likely to lead other children and less likely to be seen as social outcasts; however they were also more likely to play up to the attention and be aggressive to others. Meanwhile the negative association between leadership and disruptiveness, and very weak relationship with isolation, may reflect the loading of prosocial items onto the leadership scale. These correlations are consistent with those reported by Casiglia et al (1998).

Loneliness and Social Dissatisfaction

A confirmatory factor analysis (CFA) was performed on the self-reported loneliness data. A single-factor model was specified based on the factor structure of Mills (2009) in order to maximise the consistency of measures within the longitudinal sample. With this in mind, goodness-of-fit was assessed using Browne and Cudeck's (1993) criteria for reasonable fit (RMSEA between .05 and .08) and Kline's (1998) threshold for CFI and TLI ($\geq .90$). The chi-squared statistic was not used to evaluate the model because of its known unreliability with large samples (McCrae et al, 1996). Similarly SRMR appears not to perform well in CFAs with categorical indicators (Yu, 2002) and so was not considered either. Finally, all measurement error was assumed to be uncorrelated.

Goodness-of-fit indices suggested that a one-factor solution comprising 15 items⁶ fit the data adequately, CFI = .918, TLI = .980, RMSEA = .073. Consequently the loneliness variable was created by summing these 15 items, with higher scores (max 30) indicating greater self-reported social inclusion and lower scores indicating greater loneliness. Cases missing data for more than one item were removed⁷.

⁶ Cassidy and Asher's (1992) 16 target items minus 'Are you good at working with other children at school?', which was excluded by Mills (2009) because of its low factor loading.

⁷ For cases missing one item, the mean of the remaining 14 items was multiplied by 15. This was true for 51 cases.

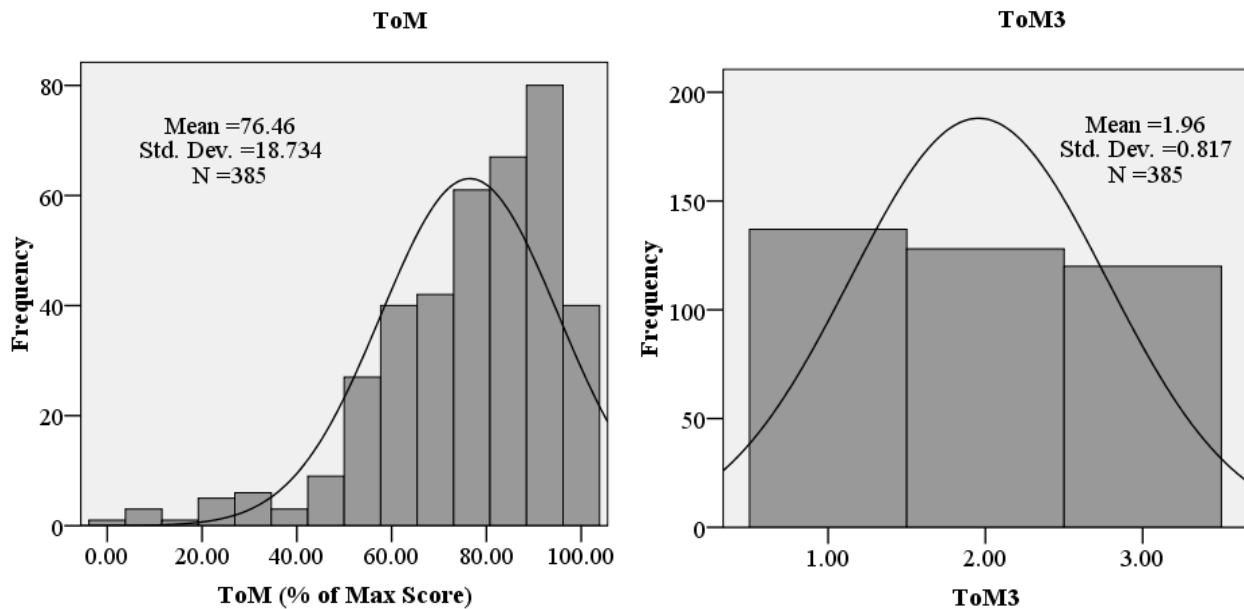


Figure 1. Distributions of theory of mind scores before and after recoding.

Theory of Mind

A composite theory of mind score had been created from the theory of mind test battery as part of another dissertation study, in which a CFA showed a good fit for a single-factor model fit, CFI = .951, TLI = .961, RMSEA = .055. However this variable showed high negative skew, leptokurtosis, and a small number of outliers (Figure 1). Consequently a simpler tripartite variable (labelled ToM3) was created to address these issues of non-normality and to improve interpretability (Figure 1). In subsequent analysis this variable could also be treated as three separate groups (low / medium / high theory of mind), allowing for greater flexibility when selecting statistical tests.

1. To what extent is the transition to secondary school a ‘turning point’ in children’s social experiences?

On the basis of past research (e.g. McDougall & Hymel, 1998) it was predicted that both children’s past and current social experiences would be important for their adjustment to the transition; therefore children’s social adjustment was examined in relation to how their sociometric status had changed across the transition to secondary school. In light of Sandstrom and Coie’s (1999) findings it was also predicted that improvements in sociometric status would be associated with higher theory of mind scores compared with children who continued to be rejected or neglected. Moreover, sociometric transition was expected to be associated with differences in peer reputation, with aggression being particularly of interest among both those falling in status (Landsford, 2009) and those showing improvement (Sandstrom & Coie, 1999). The following analyses were based on the longitudinal sample ($N = 105$).

Distribution of Sociometric Transition Status

Overall, 34.2% were classified as ‘consistently high’, 21.1% as ‘rising’, 18.4% as ‘falling’, and 19.3% as ‘consistently low’. The remaining 7% were unclassified. A series of chi-squared tests showed that sociometric transition did not differ significantly by

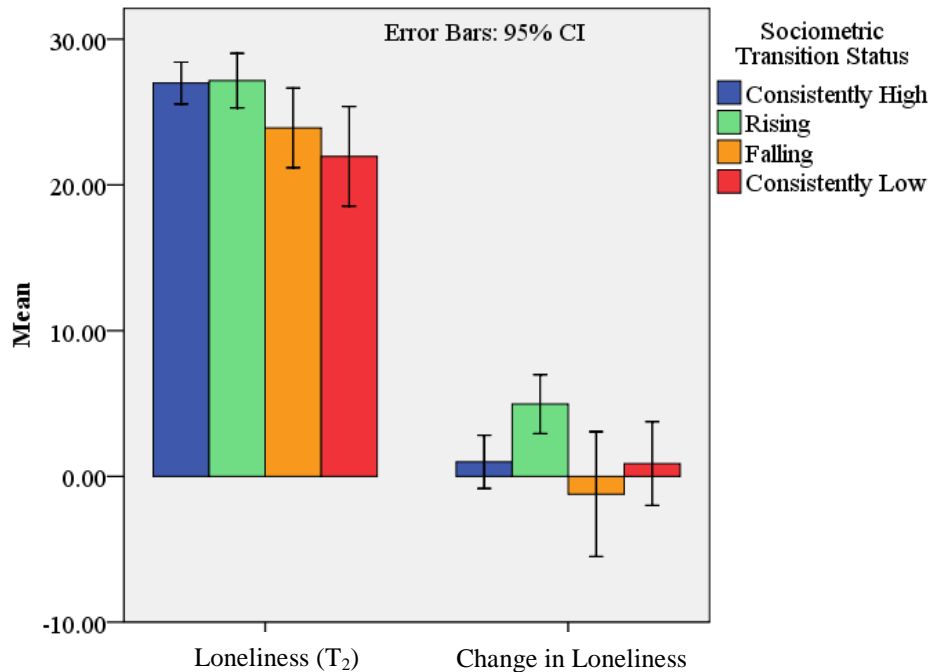


Figure 2. Loneliness at Time 2 and Change in Loneliness across sociometric transition groups.

gender [$\chi^2(3, N= 104) = 2.85, p = .416$], ethnicity⁸ [$\chi^2(15, N= 97) = 11.2, p = .737$], or SES (indexed simply by eligibility for free school meals) [$\chi^2(3, N= 96) = 2.04, p = .564$]. Thus no differentiation was made in later analyses.

Sociometric Transition and Loneliness

Contrasts in self-reported loneliness between sociometric transition groups were examined using two one-way analyses of variance (ANOVAs), with loneliness scores at Time 2 and change in loneliness scores across time points as the dependent variables. Univariate and multivariate outliers were removed. In addition, because Levene's test suggested heterogeneity of variance a more conservative alpha of .025 was adopted to avoid Type I errors. The ANOVAs revealed significant group differences for both measures [self-reported loneliness: $F(3, 96) = 5.61, p = .001$; change in loneliness: $F(3, 83) = 3.40, p = .021$]. Games-Howell post-hoc tests indicated that for self-reported loneliness the consistently low group reported experiencing significantly more loneliness ($M = 22.7, SD = 6.49$) than either the consistently high group ($M = 27.1, SD = 3.67$) or the rising group ($M = 27.39, SD = 3.63$). In contrast, the only significant difference in the change in loneliness was that the rising group ($M = 4.96, SD = 4.20$) showed a greater increase in social satisfaction than children in the consistently high group ($M = .993, SD = 4.97$) (see Figure 2).

⁸ The data here violated the assumptions for chi-squared because of the low representation of minority subgroups. Nevertheless a further chi-squared conducted on just White British and Asian subgroups, which met the chi-squared assumptions, was also nonsignificant, $\chi^2(3, N= 87) = 1.42, p = .701$.

Sociometric Transition and Theory of Mind

Against my prediction, a one-way ANOVA revealed no significant difference in theory of mind between sociometric transition groups, $F(3, 59) = 1.31, p = .279$.

Sociometric Transition and Peer Reputation

A one-way multivariate analysis of variance (MANOVA) was performed on the peer reputation scales to investigate differences in sociometric transition profiles. Initial normality checks for Leadership, Disruptive, Isolated and Sociability revealed large numbers of outliers in all four peer reputation scales. Consequently these were transformed into quartiles which all met the assumptions for MANOVA (Tabachnick & Fidell, 2007).

The MANOVA revealed a statistically significant overall effect between sociometric transition groups, $F(12, 262) = 2.74, p = .002$, Wilks' $\lambda = .732, \eta^2_{\text{partial}} = .099$. Considering dependent variables separately revealed statistically significant differences in Isolated [$F(3, 102) = 6.07, p = .002$] and Sociability [$F(3, 102) = 6.51, p = .001$] with moderate to large effect sizes⁹, $\eta^2 = .134$ and $\eta^2 = .150$ respectively. Tukey HSD post-hoc tests showed firstly that consistently high children were significantly less isolated than both the falling and consistently low groups, and secondly that falling and consistently low children were less sociable than both rising and consistently high children, all at $p < .05$ (see Figure 3). In sum, results supported the wider hypothesis and were consistent with the notion of the transition as a turning point, however specific associations with theory of mind and aggression were not found.

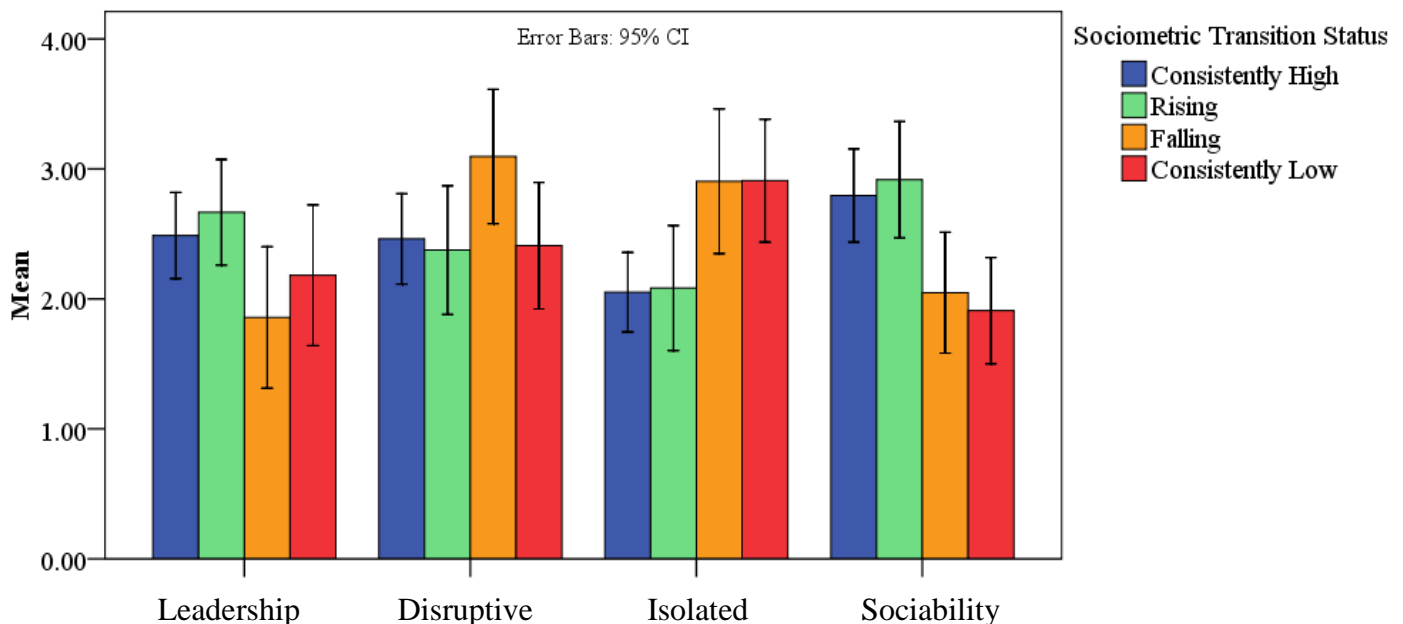


Figure 3. Mean peer reputation scores across sociometric transition groups.

⁹ Cohen's (1988) criteria for η^2 : .01 = small effect, .06 = moderate effect, .14 = large effect.

2. Do individual differences in social understanding explain unique variance in children's peer reputations?

Building on earlier reports of a positive link between sociometric popularity and theory of mind performance (e.g. Scott, 2009), it was predicted that theory of mind ability would be associated with differences in peer reputation within the full sample. Specifically it was expected that children with high theory of mind ability would score more highly on Leadership and Sociability than children with low theory of mind. The following analyses are conducted on the subset of children who completed all the tasks in the theory of mind test battery ($N = 385$).

Distributions of Theory of Mind and Peer Reputation

Using the transformed peer reputation scales as the dependent variables, a two-way MANOVA was conducted on the transformed peer reputation scales to examine differences across gender, ethnicity and SES. This revealed no significant multivariate differences at $p < .05$. Peer reputation scales were then considered independently using a more conservative alpha of $.01^{10}$. By this criterion no significant associations were discovered.

Next, a two-way ANOVA was performed on theory of mind using the same independent variables. Since Levene's test showed homogeneity of variance an alpha of $.025$ was adopted. The only significant difference found was for a gender by free school meals interaction effect, $F(1, 335) = 2.80$, $p = .011$, $\eta^2_{\text{partial}} = .046$. Inspection of the estimated marginal means revealed that girls receiving free school meals ($M_e = 1.70$, $SE = .192$) had significantly lower theory of mind scores than those not receiving free school meals ($M_e = 2.16$, $SE = .152$). Thus gender and SES were controlled for in subsequent analyses.

Theory of Mind and Peer Reputation

Differences in peer reputation between high, medium and low theory of mind groups was investigated using a series of analyses of covariance (ANCOVAs), in which gender and SES were held constant. Since four tests were conducted the alpha adopted was $.013$. By this criterion theory of mind was found to be significantly associated with Leadership [$F(2, 359) = 4.44$, $p = .012$, $\eta^2 = .024$] but not with the other peer reputation scales (see Table 5). Planned contrasts revealed that children with high theory of mind scores were rated significantly higher on Leadership ($M_e = 2.85$, $SE = .101$) than those with low theory of mind scores ($M_e = 2.44$, $SE = .094$, $p = .003$). The ANCOVAs also showed that gender and SES both had a statistically significant association solely with Disruptive reputation, $F(1, 359) = 15.1$, $p < .001$, $\eta^2 = .040$ and $F(1, 359) = 7.46$, $p = .007$, $\eta^2 = .020$ respectively.

¹⁰ These tests equated to three separate ANOVAs, hence $\alpha = .05/3 = .017$. However Levene's test also produced a significant result thus an even more stringent alpha was chosen to avoid Type I errors.

Table 5.
Summary of Results from One-Way ANCOVAs on Transformed Peer Reputation Scales

	df_1	df_2	F	p
Leadership	2	359	4.44*	.01
Aggressive-Disruptive	2	359	.17	.85
Sensitive-Isolated	2	359	3.50	.03
Sociability	2	359	.47	.62

Note: Gender and free school meals were used as covariates.

* significant at $\alpha = .013$

3. To what extent do cultural differences in social attribution affect how social reputation relates to peer acceptance and peer rejection within two ethnic groups?

It was expected that performance in the fish task would show a similar culture bias among children as that previously found in adults (e.g. Morris & Peng, 1994), with White British children more likely to see the fish as a leader and Asian children more likely to see the fish as an outcast. Past research has revealed differences in the interpretation of social behaviours in different cultures (e.g. Chen, Rubin & Sun, 1992), however none have looked at this effect among Indian or Pakistani children. Therefore, although it was expected that there would be cultural differences in the relationship between peer reputation and peer acceptance / rejection, no specific predictions were made regarding the nature of these differences. The following analyses were conducted on a subset of Majority White British and Majority Asian children from the full sample ($N = 492$).

Fish and Cultural Differences

A chi-squared test revealed no significant difference in the distribution of Fish Attributions between Majority Asian and Majority White British children, $\chi^2(2, N= 310) = .837, p = .658$. However a t-test carried out on the Fish Judgements did show a significant group difference, with the White British children ($M = 1.50, SD = 2.50$) tending to view the fish as the leader more often than the Asian children, $M = .89, SD = 2.33; t(296) = 2.05, p = .041$. Nevertheless the magnitude of this effect was small, $\eta^2 = .014$. In addition, this ethnicity variable was confounded with eligibility for free school meals, which was more common in classes with an Asian majority. When this confound was taken into account using a one-way ANCOVA, the ethnic group difference became nonsignificant, $F(1, 287) = .104, p = .747$.

Cultural Differences and Peer Reputation

Pearson's correlations were used to examine the relationship between the peer reputation scales and the 'most liked' and 'least liked' scores in the two ethnic groups. Correlation coefficients were then converted to z-scores so that the statistical significance of the cultural differences could be calculated. As Table 6 shows, Z_{obs} values were all within ± 1.96 , indicating no significant differences between the two ethnic groups.

Table 6.
Comparisons of correlation coefficients for peer nominations and peer reputation between Majority White British and Majority Asian subgroups

	Pearson's Correlation Coefficients		z_{obs}^a
	White British r	Asian r	
Correlations with 'most liked':			
LED	.29**	.37 **	-.89
DIS	-.11	.02	-1.22
ISO	-.42**	-.23 **	-1.95
SOC	.42**	.45	-.35
Correlations with 'least liked':			
LED	-.25**	-.30 **	.46
DIS	.39**	.24 **	1.56
ISO	.40**	.30 **	1.01
SOC	-.24**	-.11	-1.26

Note: LED = Leadership, DIS = Disruptive, ISO = Isolated, SOC = Sociability.

^a z_{obs} values greater than 1.96 or less than -1.96 are statistically significant at $p < .05$.

** $p < .01$

Fish and Theory of Mind

Since the fish task is still relatively new for this age group, exploratory analyses were also conducted between fish variables and theory of mind scores to examine the potential influence of developmental changes in social understanding.

Pearson's correlation showed that theory of mind performance was not significantly associated with Fish Judgment, $r = .063$, $p(\text{two-tailed}) = .229$. However a one-way ANOVA to investigate differences in theory of mind across Fish Attribution groups found a significant relationship, $F(2, 367) = 5.92$, $p = .003$, $\eta^2 = .031$. A Tukey HSD post-hoc test revealed that this difference lay between the 'other' group ($M_e = 1.71$, $SE = .083$) and both the 'leader' ($M_e = 2.03$, $SE = .059$) and 'outcast' groups ($M_e = 2.06$, $SE = .083$); in other words between those who attributed intentionality to the fish and those who did not (see Figure 4).

To ensure this was not a spurious result a one-way ANCOVA was performed with gender and eligibility for free school meals as covariates. The test pointed to the existence of a relationship even after accounting for gender and SES, $F(2, 345) = 4.35$, $p = .014$, $\eta^2 = .024$.

Fish and Peer Reputation

As a result of the previous finding, a one-way MANOVA was conducted to assess differences in peer reputation scores across Fish Attribution groups, in case the fish task behaved in the same way as the theory of mind tasks used in previous analysis. The MANOVA revealed a significant overall effect, $F(8, 972) = 2.13$, $p = .031$, Wilks' $\lambda = .966$, $\eta^2_{\text{partial}} = .017$. Examination of individual dependent variables indicated that the significant association was that children making non-anthropomorphic Fish Attributions tended to be seen as more disruptive than those who saw the fish as the leader, $F(2,$

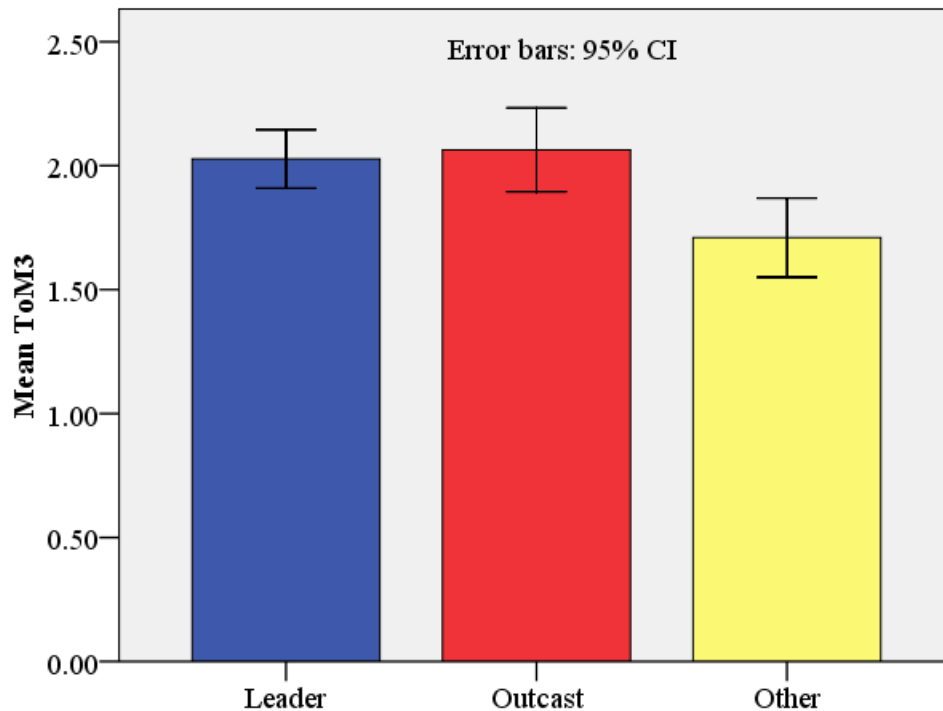


Figure 4. Theory of mind performance by Fish Attribution type.

489) = 4.82, $p = .018$, $\eta^2_{partial} = .019$. However this same association was not found for those who saw the fish as an outcast.

Finally, the validity of this association was again tested using a one-way ANCOVA with gender and eligibility for free school meals as covariates. This showed the association between Fish Attributions and disruptiveness fell below significance once gender and SES were taken into account, $F(2, 452) = 2.13$, $p = .114$. Gender and SES accounted for 3.4% and 1.7% of the variance in disruptiveness respectively.

Discussion

This study led to three sets of findings about peer reputation and the transition to secondary school. Sociometric transition was shown to be important for peer adjustment and peer reputation, however no association was found with theory of mind. In the wider sample, theory of mind was associated with leadership but not with sociability, while results from the fish task hinted at a cultural difference in attribution but this could not be teased apart from SES and showed no significant association with peer reputation. Finally, exploratory analysis revealed that performance on the fish task was related to theory of mind ability.

Changes in sociometric status did appear to be associated with children's self-reported adjustment to secondary school; however, both consistently high and rising groups reported significantly less loneliness at Time 2 than the consistently low group, suggesting that current sociometric status may be what really matters. In this way the transition to secondary school may well be seen as a turning point; providing an opportunity for children to redefine themselves but also challenging the positive status

enjoyed by children who were popular in their primary schools. Nevertheless the falling group did not differ significantly from any of the other groups, suggesting that their previous popularity may have had lasting benefits. It is also possible that members of the falling group are not liked by their classmates but continue to have friends in other classes or be accepted in other social contexts. Any of these may act as a buffer against feelings of loneliness.

Equally encouragingly, analysis of the change in loneliness before and after the transition indicated that the rising group seemed to gain more than the falling group lost; moreover, in absolute terms, mean social satisfaction increased for three of the four groups. However, the reliability of this finding is unclear; as the greater increase in social satisfaction shown by the rising group (compared with the consistently high group) may result from (or be confounded by) a ceiling effect in the measurement of self-reported loneliness. Many of those with 'high' sociometric status at Time 1 would have had relatively low levels of loneliness to begin with (Mills, 2009), which greatly limits the amount they can improve.

Although no significant association was found between sociometric transition and theory of mind, sociometric transition status was associated with peer reputation, at least with respect to isolation and sociability. Nevertheless, as shown in Figure 3, sociometric transition groups again closely resembled their sociometric status counterparts at Time 2. For scores on both Isolated and Sociability factors, the consistently high group scored very similarly to the rising group, while the falling group scored similarly to the consistently low group, with quite a gap between the two pairs. This suggests that it may be sociometric status at Time 2 that is most strongly associated with peer reputation, regardless of previous experience. The results also seemed to hint that the falling group may be more disruptive than the other three groups, which would support Lansford (2009) rather than Sandstrom and Coie (1999); however this difference was not statistically significant.

Within the full sample, low SES (eligibility for free school meals) was associated with low theory of mind in girls but not boys; this gender specific finding was unexpected as previous research on young children has suggested a link between family SES and theory of mind ability in both girls and boys (e.g. Cutting & Dunn, 1999). Nevertheless this result is consistent with Dodge, Pettit and Bates' (1994) finding that low SES is associated with a greater reduction in parent-child warmth for girls than with boys. This is particularly important for theory of mind development and suggests that girls may be generally more susceptible to the negative effects of low SES than boys.

The significant positive association between leadership and theory of mind makes sense inasmuch as leadership is highly associated with peer acceptance (Casiglia et al, 1998). This finding is consistent with the findings of Slaughter et al (2002) and Scott (2009), who found theory of mind to also be associated with popularity and peer acceptance. However the predicted association was not found for sociability. This result may be partly explained by the fact that the Leadership scale includes prosocial items (such as "plays fair" and "helps other people when they need it"), and one might expect children with more advanced theory of mind skills to be more prosocial because of their increased awareness of how others are feeling. On the other hand, the theory of mind skills required for sociability may be less advanced than for leadership; thus theory of mind may not be a source of individual differences in sociability for children in this age group.

It is also worth noting that the association between theory of mind and isolation would have been significant if alpha had remained at .05. Although the validity of this association cannot be assumed, it may still be viewed as a marginal effect. Furthermore the suggestion that low theory of mind ability might be associated with an isolated reputation is consistent with the idea that developed theory of mind skills may facilitate social success.

Gender and eligibility for free school meals were shown to account for a significant proportion of individual differences in disruptiveness, which is consistent with literature that indicates that being male and having low SES are both positively associated with expressions of aggression and disruptive behaviour among children (e.g. Dodge et al, 1994). It is therefore puzzling that initial testing revealed no significant gender or SES-related contrast in peer reputation; however this may simply be a methodological artefact of the more conservative MANOVA.

Similarly within the group analysis, the lack of cultural differences in the distribution of Fish Attribution groups may reflect a lack of clarity in the demands of the task; hence the substantial number of children who made statements classified as 'other'. Adding weight to this methodological point, scores on the forced-choice Fish Judgement did produce a significant group difference, consistent with the previous findings of studies involving adults (e.g. Morris & Peng, 1994; Hong et al, 2000). However, this relationship could also be attributed to covarying contrasts in SES, a finding that cannot be explained by results from previous studies. It is plausible, however, that children from low SES families may experience lower self-efficacy and a greater awareness of external pressures and constraints. They may thus be more likely to make external attributions.

Since the cultural difference in attribution did not remain significant after accounting for SES, it is perhaps not surprising that no cultural differences were found in the relationship between peer reputation and peer acceptance/rejection. However two results came close to significance. Firstly the negative relationship between Isolation and peer acceptance was more prominent among White British children than Asian children. Secondly the positive relationship between a disruptive reputation and peer rejection was also stronger within the White British group. These suggest that children's acceptance and rejection in White British classrooms may be closely related to their individual character, whereas Asian children may rely more on other factors such as family, caste or religion. Both of these results would have been statistically significant if a one-tailed hypothesis had been proposed. Therefore it may be pertinent for future studies to examine the sociometric differences between these two ethnic groups in more detail.

There may also be other reasons for the lack of significant group differences. For example the UK versus India comparison may be less polarised than the US versus China since India has been described as being both individualist and collectivist (Verma & Triandis, 1999). Moreover, context may be important, for instance it may be that Indian children would make more collectivist attributions in a family situation, but that the school situation itself primes a British ethnic identity regardless of the classroom make-up. Thus this may reduce any potential difference. However the validity of this explanation is not clear. The only conclusion that can be drawn is that the null hypothesis cannot be confidently rejected.

Finally, the exploratory examination of the fish task from a theory of mind perspective proved unexpectedly fruitful, indicating that there did seem to be a developmental element affecting children's performance in the open-ended attribution task. Although this initially appeared to be associated with a disruptive reputation, it was no longer significant once gender and SES had been taken into account.

Limitations

The schools in this study were selected on the basis that they were the modal secondary schools of choice for the participants of an earlier cross-sectional study (Mills, 2009), with the intention of maximising the number of children who could be followed up to form the longitudinal sample used in this study. The findings of this study may therefore not generalise to children who go to a secondary school with very few or none of their primary cohort. For these children, one might expect the transition to secondary school to be even more of a turning point; however such questions exceed the scope of the present study.

The sample is also limited in that the school containing all the Majority Asian classrooms was based in a more deprived area than the other participating schools and consequently Asian identity was strongly confounded by eligibility for free school meals. For this reason the present study was unable to tease apart effects of culture from effects of SES, which restricted the conclusions that could be drawn regarding cultural differences in social attribution and peer reputation.

Finally the main methodological limitation of this study is the within-rater confounding with regards to peer reputation and sociometric status; these are based on the reports of the same classmates and therefore cannot be seen as completely independent. For instance it is possible that individuals may nominate classmates they like for positive roles in the Revised Class Play and classmates they don't like for negative roles, even if this may not necessarily reflect their objective behaviour. Nevertheless, the Revised Class Play comprises 30 different roles concerned with specific social behaviours and peer reputation scores reflect nominations across the whole classroom. Thus it is likely that there will be sufficient behavioural truth regardless of potential bias.

Implications and Future Study

Firstly, from the perspective of children's transition to secondary school, the results of this study are encouraging. Overall it seems that the majority of children adjust well to the transition, and even those who fall in sociometric status may find that their previous social success acts as a buffer against negative social experiences. In general, it seems that the new sociometric status has the greater association with self-reported loneliness and peer reputation, regardless of sociometric status prior to the transition. This could have positive implications for interventions against rejection as it suggests that the transition to secondary school could well be a turning point for rejected children. Nevertheless this also means that social success in primary school does not necessarily lead to social success in secondary school, thus teachers should be aware that popular children may need just as much support throughout the transition.

Secondly, the finding that low SES is associated with low theory of mind ability in girls may also have wider implications; if the author's explanation of this is valid then it may indicate a lasting effect of lower parent-child warmth earlier in childhood. This

would add to literature on the association between theory of mind and family SES (e.g. Dunn & Cutting, 1999) and suggests that future studies should perhaps look further into late childhood and early adolescence to see how enduring these associations may be.

Thirdly, the discovery that theory of mind ability was related to performance on the fish task may be important if the task continues to be used with children. The findings of the present study suggest that cultural differences in attributions could potentially be masked by developmental differences in social understanding. The Fish Judgement task appeared to eliminate this influence; however, without an initial open-ended question the order in which the judgement statements are presented may strongly influence the judgements that are made. Therefore it is important that researchers are made aware of this potential confound, and it may be interesting for future research to investigate this effect across a range of ages, as it is possible that this may even occur in adults.

Finally, the lack of cultural group differences in the present study may be the result of school settings acting as a salient British context (Vadher & Barrett, 2009). Thus it may be worth repeating these investigations in more salient ethnic contexts, for example within a variety of faith schools. Likewise, the comparisons of relationships between peer reputation and peer acceptance / rejection hinted at relationships but did not quite reach significance. Nevertheless, cultural differences between White British and British Asian subgroups have received remarkably little research attention. Improved understanding of the mechanisms of peer acceptance and peer rejection among Asian communities may lead to more nuanced interpretations of the processes that underpin children's reputations with peers, and hence to a greater understanding of the pathways to social success.

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