Young children's peer popularity and theories of mind

Sue Dockett, Sheila Degotardi, Diane Szarkowicz and Fiona Rovers
Faculty of Education
University of Western Sydney, Macarthur

Abstract
The paper reports some preliminary findings of a project which has
investigated the areas of young children's development of a
representational theory of mind and peer popularity. While
correlations between these areas were identified in earlier research
(Dockett & Degotardi 1995), this paper explores the issue of popularity
among peers in greater detail and over a longer period of time and
compares a broader range of data with children's performance on a
series of theory of mind tasks.

The data presented is drawn from a series of interviews and
observations involving 63, three, four and five-year-old children
attending a preschool in the south-western region of Sydney. Peer
popularity was established through the sociometric ratings procedure
(Asher & Hymel 1981). Data relating to the consistency of these
ratings over time, across the whole group, are reported. Observations
of three children identified as popular, neutral or unpopular also are
reported. Procedures for assessing representational theories of mind
included a series of traditional tasks-relating to false belief,
appearance-reality and representational change-as well as tasks
designed to provide a narrative framework for these tasks.

This investigation did not confirm the previous significant connections
between children's popularity with peers and their performance on
theory of mind tasks, at the group level. However, as indicated by the
case study data, such a connection does seem to exist for some children
classified as either strongly popular or unpopular with their peers.

Children's ratings of peers, as reported in this paper, were consistent

on three testing occasions over a four month period, suggesting that this procedure presents a reliable means of assessing peer popularity. The importance of data derived from children's, rather than teacher, ratings is highlighted.

Introduction
Theory of mind
This paper builds upon previous research (Dockett & Degotardi 1995, 1996) which identified a significant correlation between peer popularity among young children and their development of a representational theory of mind. It explores children's peer popularity, including the consistency of judgements about popularity and the nature of interactions in which children rated as popular or

unpopular engage, and compares these with performances on a series of standard theory of mind tasks.

While there has been a stated connection between social and cognitive development for some time, recent research has begun to investigate the nature and importance of this connection. This is apparent in the area of theory of mind research, where it has been noted that "children cannot make much progress toward understanding everyday events involving people until they have some understanding of the mind" (Flavell, Miller & Miller 1993 p. 100).

Theories of mind are the set of understandings that people have about minds (their own and others) and about the connections between the mind and the world. Such understandings enable us to "predict and explain actions by ascribing mental states, such as beliefs, desires and intentions, to themselves and to other people" (Astington, 1991, p. 158). Some of the indications that children have grasped the mind-world connection, and that they understand that mental states are representations of what happens in the world, are evident in their interactions with peers. For example, in play, children often engage in conversations about pretense, and the difference of this from reality, negotiate roles and perspectives and communicate about beliefs, desires and intentions (Dockett 1994a, 1994b).

Acquiring a theory of mind is a dynamic process, based on interactions with others. The social contexts of young children have an impact on the development of their theories of mind through the generation of shared understandings (Rogoff 1990; Wertsch 1991) and through the individual construction of knowledge (Piaget 1965). On this basis, attention has been paid to the types of social environments and interactions which facilitate the development of a theory of mind.

Children's play is one context in which theories of mind develop, as children negotiate, discuss ideas, resolve conflicts and extend upon imaginative themes (Dockett 1994a). It is also a context in which

children are required to demonstrate these skills. For example, much of the success of these interactions depends on children's ability to consider the perspectives of others.

Peer relationships
The importance of peer relationships has been highlighted in much recent research (for a review, see Ladd & Coleman 1993). In peer interactions, children have access to a variety of roles that are not available in adult-child interactions (Kemple 1991). For example, children have greater access to the roles of leaders as well as followers, in interactions with peers and they are more likely to engage in negotiation, suggestion and compromise with others who are perceived to be of equal power status (Kostelnik, Stein, Whiren & Soderman 1988). Issues of power are important, as adult-child interactions are usually characterised by the power of the adult, or greater skills in the resolution of conflicts or guidance of interactions. Within peer interactions, children are grappling with issues of power and dominance as well as the skills of negotiation and compromise (Kemple 1991).

Interactions between peers are characterised by more conflict than interactions between non-peers (Hartup & Moore 1990). This conflict is usually resolved, and in the process, children employ a range of strategies of negotiation. Interaction built upon disagreement is regarded in both Piagetian and Vygotskian frameworks as one of the bases of cognitive development.

One means of determining children's success in interactions is to consider children's social competence. This is defined by Pellegrini and Glickman (1990, p. 40) as "children's adaptation to their school and home environments" and incorporates both social and cognitive elements. For young children, some of the major indicators of social competence are their skills in peer interaction and their acceptance by the peer group.

Peer acceptance can be calculated through sociometric nominations or sociometric ratings. In these procedures, children are asked to identify other children in their group with whom they like to play a lot; those they sometimes like to play with and those they do not like to play with. In the case of nominations, children are asked to select a specified number of peers from a set of class photographs according to each of these criteria. In the sociometric rating procedure, children are asked to 'post' photos of each of their classmates into boxes according to the same categories. From this, it is possible to calculate a measure for each child which represents the number of positive, neutral and negative ratings from their peers (Asher & Hymel 1981).

One of the advantages of using either of these procedures is that they

rely on children's perceptions of their peers. While it is possible to assess children's peer acceptance through teacher ratings and adult observations, the use of a measure which reports children's own views is regarded as important (Das & Berndt 1992). This has been highlighted in earlier research (Dockett & Degotardi 1996) where major differences between the ratings of teachers and children were identified. Das and Berndt (1992) also have noted that peer ratings may be more appropriate measures of acceptance, as peers are likely to have a deeper awareness of the behaviours and interactions of their classmates than a teacher who is responsible for a large group of children.

One of the research issues relating to the use of peer ratings questions the consistency of such ratings. Research detailing the development of children's friendships (Selman 1980) indicated that children based friendship on transitory features, such as proximity and propinquity. The same might be expected in rating peers. Do children rate peers based on the events of the day, or do they use other criteria which relate more to the nature of interactions with these children over time?

Peer acceptance and behaviour
Children who are popular or unpopular with their peers tend to demonstrate a range of characteristics and to elicit some typical responses from their peers. For example, an unpopular child trying to enter a group at play may force their way in, either being ignored or rejected by the rest of the group. A popular child may observe the play and enter it using a suggestion related to the events unfolding. Putallaz and Gottman (1981) describe a number of instances where unpopular "children draw attention to themselves, rather than adopting the perspective of the group" (Kemple 1991, p. 49). Differences also have been reported in children's use of aggression and cooperation, with unpopular children using more aggressive strategies in interactions and popular children relying more on cooperative strategies (Ladd, Price & Hart 1988).

Children who are popular also are more likely to understand emotional expressions and situations (Denham, McKinley, Couchoud & Holt 1990). This research indicates that children who are popular with peers were more able to link emotional expressions with situations, suggesting

that "well-liked children are better able to recognise and respond to peers' emotions. Disliked children may misinterpret peers' emotional states, leading to difficult interactions and eventual rejection by peers" (Kemple 1991, p. 50).

Further differences between popular and unpopular children relate to their use of communication skills and strategies. Hazen and Black (1989) report that popular children were more likely than their

unpopular peers to maintain a smooth flow of discourse through the use of strategies such as making it clear to whom they were speaking, responding in a manner which was relevant to the context, and offering reasons for their non-acceptance of suggestions. In contrast, unpopular children often spoke in a general sense, not identifying to whom they were speaking, making irrelevant comments or responses and rejecting suggestions from others without explaining why.

Theory of mind and peer popularity
Several of the behaviours attributed to popular children link to their developing theories of mind. For example, popular children are described as able to take the perspectives of others and to adopt a variety of roles. Both role taking and perspective taking are underpinned by an awareness of the beliefs, desires and intentions of others (Dockett 1994a). The ability to adopt roles and perspectives signals a developing understanding of the mind and mental states. Pellegrini (1991 p. 154) notes that "a child's popularity is related to dimensions of cognition, such as perspective-taking ability and communicative skills".

Negotiation also has been identified as an important factor both in developing an awareness of the perspectives of others and in demonstrating this (Dockett 1994a). Children who are effective negotiators need to have the ability to consider what it is that the other party wants, as well as what they want, and to adopt a range of strategies to work towards a compromise. In addition they need a repertoire of strategies, enabling them to recognise when one is not working and to change to another. Again, this ability is underpinned by at least a rudimentary understanding of mental states as interpretations of reality, rather than direct copies of reality. Children who are developing a representational understanding of mind start to realise that we base our actions and understandings on what we perceive and that each of us perceives situations in different ways. Hence, those looking at the same situation are likely to hold different beliefs and to interpret the situation differently. Negotiating requires that those different perspectives-both conceptual and perceptual- be taken into account.

Understanding of emotions and emotional states is also linked to a developing theory of mind. Harris (1989) describes how children come to understand the links between beliefs, desires and emotions, resulting in the ability to explain and predict people's behaviour and emotions through an inter-relation of these concepts. For example, children may predict that a person will be happy if they get the present they believe they will get, or that they want, for their birthday.

In summary, similar understandings seem to underpin successful peer interactions and the development of a representational theory of mind. It is proposed that children who are popular with their peers are

likely to engage in successful interactions and that these same
children will have developed a representational theory of mind.

Underpinning this proposal is the expectation that children have the

ability to assess their peers in terms of popularity and that this
assessment is consistent over time, yielding a reliable measure of
social acceptance.

Methodology
Aims
This research seeks to confirm a proposed link between children's
popularity among peers and their developing theories of mind and to
describe the nature of any possible connection. A further aim is to
establish the reliability of children's peer ratings.

Sample
The sample consisted of 63 children aged three, four and five years
attending a community based preschool in the outer western suburbs of
Sydney. Ages ranged from 37 to 67 months, with a mean of 52 months.

Procedures
Data was collected over a period of two preschool terms (approximately
four months) using the following procedures:

Orientation visits to the preschool.
These visits occurred prior to data collection. They provided an
opportunity for the research team to meet parents, staff and children
and to discuss the planned research. Parental permission was sought at
this stage.

Sociometric interviews.
Using the posting procedure of previous research (Asher, Singleton,
Tinsley & Hymel 1979; Dockett & Degotardi 1995) children were asked to
identify and then post photos of their peers (taken during the
orientation visits) into separate boxes based on how much they like to
play with the child in the photo. Children they "liked to play with a
lot" were posted into a box with a smiling face painted on it; children
they "sometimes like to play with" in the box with a neutral face on it
and children they "didn't like to play with" into the box with a sad
face on it. During this process, children were asked to give reasons
for their allocation. A short procedural training session preceded
this task.

From the ratings, a likability score was calculated for each child,
which represented the number of positive nominations for that child,
less the number of negative nominations, divided by the total number in
the group. The possible range of likability scores is -1 to 1.

Negative scores indicate unpopular status, zero indicates a neutral
status and positive scores indicate popular status among peers.

To assess the stability of popularity rating of peers, this task was
completed three times (at six weekly intervals).

Observations of children's social interactions.
On the basis of the likability score, children were grouped according
to positive scores (popular), zero scores (neutral) and negative scores
(unpopular). From each of these groups, two children were randomly
selected for observation. Observations took place in the preschool
over a period of eight weeks. Anecdotal observations of free play
situations were recorded as field notes, supported by audio tape. Once
transcribed, these observations were coded for type of play (Rubin
1989) and the nature of peer interactions (Fantuzzo et al 1995).
Examples of the coding frameworks used are included in the Appendix.

Theory of mind interviews

Several forms of theory of mind tasks were used. These included the
traditional tasks of cognitive connections, appearance-reality,
representational change and false belief. In addition, two new tasks
were introduced in order to ascertain the role of narrative in young
children's developing theories of mind. One was a "hide-and-seek" task
in which children played the roles of the hider and the seeker. In a
hiding role, they were asked to hide an object from another child, who
was behind a screen. The researcher stated loudly (so that the seeker
could hear) that they should hide the object "under the cushion". She
then whispered to the hider that they should hide it somewhere else.
The seeker then looked for the object and when it was not located as
expected, searched until the object was found. When the seeker located
the object, questions relating to false belief and representational
change were asked.

The other task involved watching a video of a popular children's
television program (Bananas in Pyjamas) and answering a series of
questions about the pretense and reality of the situation. Questions
relating to false belief, appearance-reality and representational
change were asked and reference to the child thinking about what the
characters were thinking introduced questions of second-order false
belief.

Timing
Children completed the sociometric rating procedure and the theory of
mind tasks on three occasions over the two terms, at approximately six
weekly intervals. On each occasion, the tasks were varied slightly in
order to sustain the children's interests. For example, during the
second sociometric rating task children were asked questions about why
they did or did not like to play with peers, whereas the first and

third occasions relied on following up children's spontaneous comments.
 The theory of mind tasks used materials that were similar, but not
exactly the same. For example, a different video was used on different
occasions and different illusory objects were used as the focus of
questions about appearance-reality.

Conduct of interviews
All interviews with children were conducted in a quiet area of the
preschool, within sight of the other staff and children. Children were
invited to participate in the interviews. Each theory of mind
interview and each sociometric rating procedure lasted about ten
minutes. The training session was part of the first interview and
lasted for about five minutes. Interviews followed a standard pattern.
 However, there was the potential for the researcher to follow the
interest of the child by responding to their questions or statements
within the interview. Interview sessions were audio taped and then
transcribed.

Results and discussion
The consistency of children's peer popularity ratings over time
From children's ratings of peers, likability scores were calculated for
each child at the time of the three sociometric interviews. Comparison
of these scores identified significant correlations (Table 1). The
likability score for time one was significantly related to the score at
time two ($r = .5963$ $p = .000$) and the score at time three ($r = .3721$,
$p. < .005$). The likability score at time two was also significantly
correlated with the likability score at time three ($r = .5556$, $p. =
.000$).

Table 1. Correlations between likability scores at times 1, 2 and 3.

	Time 2	Time 3
Time 1	$r = .5963$	
	$p = .000$	$r = .3721$
		$p. < .005$
Time 2		$r = .5556$
		$p. = .000$

These correlations suggest that children are able to rate their peers,
over time, in a consistent manner. This is supported by a
consideration of the grouping of children as popular, neutral or
unpopular over the three interviews. The allocation of children to
these groups by their peers also was significantly correlated, as
indicated in Table 2.

Table 2. Correlations between group allocation at time 1, 2 and 3.

	Time 2	Time 3
Time 1	$r = .4344$	

$$p = .000 \quad r = .2519$$
$$p. = .05$$

Time 2 $\quad r = .5380$
$$p. = .000$$

The reliability of children's ratings of peers, combined with the validity of these measures as established through the relationship of ratings with other ratings of social acceptance and social behaviour (Das & Berndt 1992) reaffirms this procedure as a suitable means of data collection for young children. Rather than relying on teacher ratings or observations alone, it identifies a way in which the children involved can provide a range of data about the popularity of their peers. Further, it suggests that young children use some criteria for their judgements. They do not seem to rate their peers indiscriminately; rather they are consistent in their ratings and in their reasons for this.

The actions of popular, neutral and unpopular children
The analysis of observations for three children is reported in this paper. Of these three, Damien was consistently rated as unpopular by his peers; Alice as neutral; and Edith as popular.

Background of the children.
The three children, Damien (48 months), Alice (52 months) and Edith (46 months) attended the preschool two or three days per week. All had been in attendance for approximately 7 months, having commenced at the beginning of the preschool year.

Consistency of children's ratings of peers over time;
In the first round of sociometric rating, Damien was rated by his peers as unpopular, with a likability score of -0.14. This rating was confirmed in subsequent tasks, when he was rated as unpopular with scores of -0.36 and -0.29.

On average, 8 children out of his peer group of 14 rated him as someone with whom they did not like to play; 4 rated him as someone with whom they liked to play a lot, and 2 said that they sometimes liked to play with him.

A similar consistency was noted for Alice and Edith. Edith was rated as popular on each of the three occasions, as indicated by her likability scores of 0.58, 0.42 and 0.60. On average, 2 children rated her as someone they did not like to play with; 2 as someone they sometimes liked to play with; and 8 as someone they liked to play with a lot. Alice's was rated variously by her peers as popular and

neutral, with likability scores of 0.14, 0.07 and 0 on the three testing occasions.

Table 3. Ratings and likability scores (LS) of three children.

Chld	Pop rat			LS			Neut rat			LS	Unpop ratings			LS		
	T1	T2	T3	T1	T2	T3	T1	T2	T3								
D	5	3	3	-0.14	2	14	-0.36	7	9	7	-0.29						
A	6	7	6	0.14	4	3	20	.07	4	4	6	0.00					
E	9	8	8	0.58	11	3	0	.42	2	3	1	0.60					

Reasons used by children in rating peers.
In the second round of sociometric interviews, children were
specifically asked to give reasons for their ratings. The following
comments highlight the criteria used by the children when nominating
their peers.

Table 4. Reasons given for peer ratings.

Observations
Observations of a total of 30 minutes of randomly selected free
activity collected over a period of several weeks were used to analyse
play and interaction patterns for these three children. The episode,
identified by a definite beginning and end, was the unit of analysis.

In the first instance, observations were coded according to the
categories of play and non-play behaviour detailed by Rubin (1989). In
subsequent analysis, play behaviours were coded using the
classifications in the Penn Interactive Peer Play Scale (Fantuzzo, et
al 1995).

Play and non-play
The Play Observation Scale (Rubin 1989) identifies non-play and play
behaviour and enables coding of these according to the context of
social interaction. Based on the Smilansky/Parten classification of
interactions, play which is solitary, parallel or group based is
recorded. The underlying assumption here is that play becomes more
social and more complex as children grow and develop. In terms of play
behaviours, this developmental progression identifies solitary play as
the least complex and group play as the most complex.

Table 5 reports the differences between the three children in both the
frequency of play and non-play behaviours as well as the complexity of
these interactions. The differences in these patterns of interaction
were significant (Fisher Exact Test, p. < 0.0001).

Table 5. Play and non-play behaviour.

```
ChildNon-playSolitaryParallel   Group
Damien   9    10       3      2
Alice   10    4        5      2
Edith    2    0        1      9
```

As indicated in the table, Damien and Alice engaged in more non-play behaviours, such as conversations with the teacher or onlooker behaviour, than Edith. In contrast, Edith was observed more in group interactions than either Alice or Damien. The pattern that emerges is one of Edith interacting with her peers, Damien engaging in mostly

solitary play and Alice moving between play interactions and non-play activities. This pattern does not provide detail about the interactions strategies used by the children. This information was sought through the use of the Penn Interactive Peer Scale (Fantuzzo et al 1995).

Penn Interactive Peer Play Scale
This instrument identifies three underlying dimensions of play: play interaction; play disruption; and play disconnection. Several types of interaction characterise each of these factors. These factors also have been linked to the typical interactions of popular, neutral and unpopular children. Items listed under the factor of Play Interaction have been associated with popular children; those under the factor of Play Disconnection with isolate, or neutral children, and those under the factor of Play Disruption with unpopular children (Fantuzzo et al 1995). The play observations collected for each of the three children were analysed according to these behaviours. This is reported in Table 7.

Table 7. Play interaction, play disconnection and play disruption for each of the three children.
FactorsDamienAliceEdithExamples of behaviours
Disruption1601Damien:
is rejected by others (4)
doesn't take turns (2)
doesn't share toys (2)
destroys others things (1)
verbally assaults (2)
is physically aggressive (5)
Edith:
is physically aggressive (1)
Disconnection9170Damien:
is ignored by others (7)
is not invited into play groups (1)
refuses to play when invited (1)
Alice:
hovers outside the play group (9)
is ignored by others (5)

is not invited into play groups (2)
Play Interaction41123Damien:
compromises (1)
directs others' actions politely (1)
converses (2)
Alice:
converses (5)
goes along (5)
Edith:
helps other children (3)
directs others' actions politely (8)
shows creativity in making up stories (3)
disagrees cheerfully (3)
Total292824

These patterns of behaviour are significantly different (Fisher Exact
Test, p. = .0001) despite the identification of a similar number of
actions. From this example, it seems clear that the popular child,
Edith, engages in many more actions which can be identified as likely
to promote play, when compared with Damien and Alice. Damien, on the
other hand, engages in more behaviour likely to disrupt the play. In
keeping with the predictions made by Fantuzzo et al (1995), Alice
engages in more behaviour that is disconnected from the play of the
group.

Summary of observations
The observations of the three children indicate some differences in the
number and type of interactions with their peers. Damien, rated as
unpopular, engages in a lot of solitary actions. When he does seek to
interact with others, he uses strategies which are often unsuccessful,
resulting in rejection or being ignored. At times, he seeks to enter
interactions using aggression.

Alice, rated as neutral by her peers, seems to be an outsider in many
instances. She engages in onlooker, solitary or parallel behaviour and
does not initiate a high level of communication with her peers. When
engaged in interactions, she uses the strategies of "going along" with
what has been proposed. She was observed often hovering on the outside
of a play group.

Edith, rated as popular by her peers, uses a range of strategies and
engages in a variety of peer interactions. She is often involved in
group dramatic play, where she plays a directive role. Peers follow
her lead.

Based on these descriptions and observations of popular, neutral and
unpopular children, it is expected that Edith would demonstrate the
greatest understanding of the theory of mind tasks. It was also

expected that this understanding would be less obvious for Alice and even more so for Damien.

The relationship between popularity and theory of mind performance
A series of correlational analyses were undertaken to assess the relationship between peer popularity and theory of mind. When the entire group (n=63) was considered, no significant correlations were identified. Despite this unexpected result, the patterns of theory of mind performance and interactions for the three children described in this paper did seem to display such a link. This was confirmed through a Fisher Exact Test (p. < .005).

A number of explanations are posited to explain this unexpected result. Firstly, the children described through observations are definite examples of each of the categories of popular, neutral and unpopular. A number of their peers, while consistently rated, rated between these extremes. That is, they were not as popular or as unpopular as Damien and Edith. It may be that the proposed relationship between theory of mind and peer popularity relates only to those children rated as very unpopular or very popular.

Secondly, should such a relationship exist, it may be that using either the sociometric rating procedure or the theory of mind tasks described, is inappropriate to identify this. Separate analyses of the theory of mind tasks indicate that they are consistent with the results of previous research (Dockett 1994a) and that they actually seem to tap into an earlier understanding of mental representation than that reflected in standard theory of mind tasks only (Szarkowicz 1996). Specifically, the use of a narrative structure for the tasks, and the involvement of the children as actors in the hide-and-seek task is seen to identify the representational understandings of children earlier than traditional tasks.

The appropriateness of sociometric ratings then, must be questioned. It is clear that children can and do consistently rate their peers according to how much they like to play with them. What is not clear from the ratings procedure, is the criteria children employ when making this judgement. However, this is clear from a detailed analysis of

children's interactions, based on observations. Through observations of children's play, it is possible to identify the type of play in which children engage, the strategies that are used to enter and maintain interactions and the success or otherwise of these. The results of this research project indicate that it may be this level of analysis that is required if the proposed connection between children's social competence and representational theories of mind are to be identified. This would mean focussing not on peer popularity, but rather on social competence-that is, the ability to "generate and coordinate flexible adaptive responses to demands and to generate and

capitalise on opportunities in the environment" (Waters & Sroufe, 1983, p. 80). Peer popularity would then be one aspect of social competence.

Conclusions

Two major results are reported in this paper. The first is that there is evidence that young children have the ability to reliably rate the popularity of their peers over a period of time. In this study over a four month period, each of the three rating procedures was significantly correlated. This confirms results reported elsewhere (for example, Asher et al 1979; Denham et al 1990; Ladd et al 1988) and presents a strong case for using data derived from children as at least one means of assessing social competence. In the light of analyses indicating that data from teacher ratings and observations can differ substantially from that provided by children (Dockett & Degotardi 1996; Rosen, Furman & Hartup 1988; Saunders & Green 1993), the recommendation is that a combination of measures be used.

This recommendation relates also to the consideration of a link between children's social competence and their developing theories of mind. While the preliminary analysis reported in this study does not indicate a significant relationship between ratings of peer popularity and theory of mind, it may be that a closer analysis of the interactions of peers is required to investigate this in more detail. An indication that this direction could be useful is found in the consideration of the three children drawn from the popular, neutral and unpopular categories.

References

Asher, S. R. & Hymel, S. (1981). Children's social competence in peer relations: Sociometric and behavioural assessment. In J. D. Wine & M. D. Syme (Eds), Social competence. New York: Guildford Press.

Asher, S. R., Singleton, L. C., Tinsley, B. R. & Hymel, S. (1979). A reliable sociometric measure for preschool children. Developmental Psychology, 15, 443-444.

Astington, J. W. (1991). Intention in the child's theory of mind. In D. Frye & C. Moore (Eds), Children's theories of mind: Mental states and social understanding (pp. 157-172). Hillsdale, NJ: Erlbaum.

Das, R. & Berndt, T. J. (1992). Relations of preschoolers' social acceptance to peer ratings and self-perceptions. Early Education and Development, 3 (3), 221-231.

Denham, S. A., McKinley, M., Couchoud, E. A. & Holt, R. (1990). Emotional and behavioural predictors of preschool peer ratings. Child

Development, 61, 1145-1152.

Dockett, S. (1994a). Pretend play and young children's developing theories of mind. Unpublished PhD thesis, University of Sydney.

Dockett, S. (1994b). Pretend play and the young child's theory of mind. Journal for Australian Research in Early Childhood Education, 1, 51-63.

Dockett, S. & Degotardi, S. (1995). Are popular children more likely than unpopular children to have developed a representational theory of mind at age 4? Paper presented at the AARE Conference, Hobart, November 1995.

Dockett, S. & Degotardi, S. (1996). Some implications of being popular at age 4. Paper presented at the Australian Research in Early Childhood Conference, Canberra, January.

Fantuzzo, J., Sutton-Smith, B., Coolahan, K. C., Manz, P. H, Canning, S. & Debnam, D. (1995). Assessment of preschool play interaction behaviours in young low-income children: Penn Interactive Peer Play Scale. Early Childhood Research Quarterly, 10, 105-120.

Flavell, J. H., Miller, P. H. & Miller, S. A. (1993). Cognitive development (3rd edition). Englewood Cliffs, NJ: Prentice-Hall.

Harris, P. L. (1989). Children and emotion: The development of psychological understanding. Oxford: Blackwell.

Hartup, W. W. & Moore, S. G. (1990). Early peer relations: Developmental significance and prognostic implications. Early Childhood Research Quarterly, 5, 1-17.

Hazen, N. L. & Black, B. (1989). Preschool peer communication skills: The role of social status and interaction context. Child Development, 60, 867-876.

Howes, C. (1988). Peer interaction of young children. Monographs of the Society for Research in Child Development, 53, 217.

Kemple, K. M. (1991). Preschool children's peer acceptance and social interaction. Young Children, 46 (5), 47-54.

Kostelnik, M. J., Stein, L. C., Whiren, A. P., & Soderman, A. K. (1988). Guiding children's social development. Cinncinati: South-Western.

Ladd, G. W. & Coleman, C.C. (1993). Young children's peer relationships: Forms, features and functions. In B. Spodek (Ed), Handbook of research on the education of young children. New York: Macmillan.

Ladd, G. W., Price, J. M. & Hart, C. H. (1988). Predicting preschoolers' peer status from their playground behaviours. Child Development, 59, 986-992.

Pellegrini, A. D. (1991). Applied child study: A developmental approach (2nd edition). Hillsdale, NJ: Erlbaum.

Pellegrini, A. D. & Glickman, C. D. (1990), Measuring kindergarteners' social competence. Young Children, 45, 4, 40-44.

Piaget, J. (1965). The moral judgement of the child. New York: Free Press.

Putallaz, M. & Gottman, J. (1981). An interactional model for children's entry into peer groups. Child Development, 52, 986-994.

Rogoff, B. (1990). Apprenticeship in thinking: Cognitive development in social context. New York: Oxford University Press.

Rosen, L. A., Furman, W., & Hartup, W. W. (1988). Positive, negative and neutral peer interactions as indicators of children's social competency: the issue of concurrent validity. Journal of Genetic Psychology, 149 (4), 441-446.

Rubin, K. H. (1989). The play observation scale. University of Waterloo.

Saunders, S. & Green, V. (1993). Evaluating the social competence of young children: A review of the literature. Early Child Development and Care, 87, 39-46.

Selman, R. (1980). The growth of interpersonal understanding: Developmental and clinical analyses. New York: Academic Press.

Szarkowicz. D. (1996). The false belief of hide and seek. Unpublished manuscript.

Waters, E. & Sroufe, L. (1983). Social competence as a developmental construct. Developmental Review, 3, 79-97.

Wertsch, J. (1991). A sociocultural approach to socially shared cognition. In L. B. Resnick, J. M. Levine & S. D. Teasley (Eds), Perspectives on socially shared cognition (pp. 85-100). Washington DC:

American Psychological Association.

Appendix: Coding frameworks for play

Play Observation Scale (Rubin 1989)

Non-play
Transition
Unoccupied
Onlooker
Aggression
Teacher Conversation
Peer Conversation

Solitary
Functional
Exploratory
Reading
Constructive
Dramatic
Games

Parallel
Functional
Exploratory
Reading

Constructive
Dramatic
Games

Group
Functional
Exploratory
Reading
Constructive
Dramatic
Games
Penn Interactive Peer Play Scale (Fantuzzo et al 1995)

Play Disruption:
starts fights and arguments
is rejected by others
doesn't take turns
doesn't share toys

```
tattles
destroys anothers' things
verbally assaults
cries, whines, shows temper
grabs other things
is physical aggressive
```

Play Disconnection
```
hovers outside play group
withdraws
wanders aimlessly
is ignored by others
is not invited into play groups
refuses to play when invited
confused in play
needs teacher's direction
seems unhappy
has difficulty moving from one activity to another
```

Play Interaction
```
shares ideas
leads other children
helps other children
helps settle peer conflicts
directs others' actions politely
encourages others to join play
shows creativity in making up play stories and activities
```

Other items:
```
accepts idea
compromises
disagrees cheerfully
considerate
converses
goes along
smiles
```

Young children's peer popularity and theories of mind

Elements of social competence

Waters and Sroufe (1983) list the elements of social competence as
including children's

1. individual contributions to a situation

2. recognition of opportunities of demands to respond

3. possession of a repertoire of response strategies

4. ability to choose alternative strategies that are
appropriate

5. motivation to respond

6. persistence in interactions and the related ability to
change strategies as the situation demands

7. ability to use finely tuned strategies, that is to decide
quickly what will work and how.

Communication strategies (Farver 1992).

StrategyExample
1.
Paralinguistic cuesChanges in intonation or pitch to mark fantasy and
the animation of objects. Eg, Brmmm, brmmm when playing with cars,
adopting "motherese" tone in play.
2.
Descriptions of actionDeclarative statements accompanying ongoing
activity or describing past or future actions. Eg, "I'm going to get
dinner for you kids" as J. moves to stove in family corner.
3.
RepetitionsRepeating partner's prior utterance(s).
4.
Semantic tyingAdding new semantic elements to partner's previous
contribution. Eg, J says "here's your dinner", K says "Wow, thanks Mum,
gotta have our dinner."
5.
Calls for attentionUtterances used to gain partner's attention. These
include calling the partner's name and "Hey!", "Look!".
6.
DirectivesDeclaratives used to control partner's actions, for example,
"DO this", "You bring me that plate" "That doesn't go there". Can also
occur within pretend play, eg when J (as mother) says "You go on to bed
now, and make sure you go to sleep."
7.
TagsVerbal devices placed at the end of a conversational turn to elicit

a response or acknowledgment. Eg, "We're playing mums, all right?",
"I'm going now, OK?"