A review of defining and measuring sociability in children with intellectual disabilities

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ABSTRACT

There is a substantial body of research indicating that compromised social functioning for individuals with intellectual disabilities has far reaching implications for quality of life, community participation and wellbeing. However, an inherent difficulty for research into social functioning is the lack of agreed definition of key concepts in the area. The current paper reviews definitions for four concepts related to the central concept of sociability (social cognition, social competence, social skills and social behaviour). By reviewing the definitions available in the wider social and cognitive psychology literature and comparing these to definitions provided in research with individuals with intellectual disabilities it is clear that concepts are poorly defined. The current article proposes working definitions which may be used give impetus to future debate in the area. The clinical implications of having implicitly understood concepts rather than definable and measurable traits are considered. The review calls for researchers to provide definitions for the concepts under investigation and their relationship to measures employed in research.

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Keywords: Intellectual disability, Sociability, Social skills, Children, Social cognition

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1. Introduction

The importance of social functioning for individuals with intellectual disabilities has long been recognised as relevant to an individual’s quality of life, wellbeing and ability to participate in their community (Nota, Ferrari, Soresi, & Wehmeyer, 2007). Given the importance of the concept it is unsurprising that it has received so much research interest. However, a brief review of the literature reveals divers use of many terms related to social functioning. The term sociability, for example, is often used as an umbrella term encompassing numerous aspects of social functioning and is rarely defined. Similarly, the constructs which fall under or are related to the term of sociability (e.g. social cognition, social behaviour, social skills, social competence, social functioning) are often used interchangeably and without definition, therefore making comparisons across research difficult.

Poorly defined terminology makes it extremely difficult to evaluate and integrate research and construct models of the determinants of social functioning or other related end points. The difficulty of interchangeable concepts with no standardised definition was highlighted in a recent review of psychometric methods used to test children’s social skills (Matson & Boisjoli, 2007) where no definition of social skills was provided and yet over 40 tests were found for the construct of ‘social skill’ with tests not always covering social skills alone. If terms cannot be defined, it raises the question of how research can be interpreted, replicated and generalised. There is clearly a need therefore to define and differentiate the many concepts related to sociability and social functioning.

1.1. The concept of sociability

The term sociability has begun to be used more frequently in recent years to describe numerous facets of social interaction and functioning. However, its use as an umbrella term can be problematic when trying to understand the focus of research. There is a vast literature on the various aspects of sociability (used as an umbrella term) in individuals with intellectual disabilities that an introduction to the area poses problems given how poorly concepts have been defined. Research does show important relationships between different aspects of sociability which impact upon an individual’s life. However, this research often does not state the meaning of the concepts being investigating; leaving the reader to infer what is meant by certain terms (e.g. social skills, social behaviour). The importance of understanding the impact of problems with ‘sociability’ for individuals with intellectual disabilities can be seen with a brief introduction to the area. Again however, concepts are rarely defined.

1.2. Sociability in intellectual disabilities

There has been an increase in attention from researchers on the social skills (typically deficits in social behaviours such as eye contact problems, social interaction difficulties, lack of play behaviour, etc.) of children, particularly children with intellectual disabilities, developmental disabilities and genetic syndromes. Whilst historically the literature has recognised an association between intellectual disabilities and social skills, the association has typically been negative suggesting that intellectual disabilities lead to difficulties in social adaptation and functioning (Tredgold, 1937).

Much of the research on sociability in children with intellectual disabilities would support such a claim and the importance of investigating sociability has long been recognised as a way to understand potential future difficulties children might encounter. Some of the findings indicate that deficits or impairments in social skills are related to numerous problems, including attention deficit hyperactivity disorder (Boo & Prins, 2007), social isolation and withdrawal (Chung et al., 2007; Matson & Boisjoli, 2007), aggressive and antisocial behaviour (Webster-Stratton, Reid & Hammon, 2001), and challenging behaviour (Fox, Keller, Grede & Bartosz, 2007). Of course, the research does not imply a cause and effect relationship between these variables and social skills, but would suggest that this aspect of sociability is an important correlate.

Research on children with intellectual disabilities also suggests that social skills deficits can be an indicator for other social problems such as social behaviour problems, deficits in prosocial skills and displayed aggression which can lead to poor peer relationships and social maladjustment (Bellanti & Bierman, 2000). The relationship between intellectual disabilities and peer relationships has also been highlighted in pre-school children who have been found to have compromised social skills leading to an inability to develop relationships (Guralnick, 1997).

It has been suggested that difficulties in social relationships for children with intellectual disabilities may be due to different or impoverished social interaction which in turn are due to delays in the development of interactive skills (Sheridan, Hungelmann, & Maughan, 1999), or a lack of initiation of and maintenance of social interactions with peers (Kamps et al., 1992). Researchers have also suggested that specific difficulties exist which then impact on higher social functioning, for example, difficulty in appropriately interpreting social situations, including comprehending verbal and non-verbal social cues (Bruno, 1981; Markoski, 1983); problems focusing attention on social cues and instead paying attention to irrelevant information (Tur-Kaspa & Bryan, 1994); and lower competence levels than typically developing children in taking others’ perspectives and understanding others’ intentions (Weiss, 1984; Wong & Wong, 1980). Furthermore, it has been suggested that children may show lower levels of socially interactive play with their peers and more socially isolated play, leading to further problems with peer relationships and from a young age (Kopp, Baker, & Brown, 1992).

However, research has now begun to emerge on social skills and functioning which paints an altogether different picture for some children. Investigations into some genetic syndromes (Williams syndrome and Angelman syndrome in particular)
have revealed some children to be excessively social (Jones et al., 2000; Oliver, Berg, Moss, Arron, & Burbidge, in press). It has also long been acknowledged that individuals with Down syndrome possess good social skills, are engaging and affectionate (Moore, Oates, Hobson, & Goodwin, 2002), show lower prevalence of aggression, attention seeking, untruthfulness and antisocial behaviour (Collacott, Cooper, Branford, & McGrother, 1998) and have social communication skills and relationships comparable to typically developing control groups (Laws & Bishop, 2004).

As the potential implications of problems with sociability are wide reaching, numerous intervention initiatives have been developed. Indeed, much of the focus of research has been to establish clinical interventions to help improve social skills and social behaviour. The importance therefore of researching and understanding sociability in children with intellectual disabilities has been established. However, there is an inherent difficulty in researching and evaluating research in this area, namely, how to define the construct.

The impetus of the current review was therefore to provide an examination and understanding of how sociability (employed as an umbrella term) is researched and defined. The aim of the review was to define and differentiate the constructs used to assess sociability in children with intellectual disabilities (as found in the current literature); and to compare these to definitions of the constructs within social and cognitive psychology literature. This review adds to the working definitions currently used to investigate sociability in children with intellectual disabilities to aid in future research.

1.3. Search criteria

Psychinfo® and MedLine® electronic databases were utilised to conduct a literature search using the search terms in Table 1.

Papers were selected that had investigated aspects of sociability in individuals with intellectual disabilities or developmental disorders through the use of standardised or novel measurements. Papers were excluded if the participants were adults and/or no measurement of sociability/social traits had been used. Papers were also excluded if their primary purpose was the identification of children with autism, as numerous literature reviews already exist. However, papers describing methods for assessing social traits in children with pervasive developmental disorder or autism spectrum disorders were included. Papers were also excluded where the focus was on intervention programmes for social deficits. Only clinical and experimental studies and case studies from peer reviewed journals were included.

2. The social constructs of sociability

The literature search indicated that four main concepts or constructs are investigated in children with intellectual disabilities: social cognition, social competence, social skills and social behaviour.

2.1. Social cognition

It has been estimated that there are over 100 definitions of social cognition (Ostrom, 1994) and it can be assumed that many more have been developed in the 15 years since that estimate was made. Perhaps the difficulty in defining the concept lies in its all encompassing nature; indeed Ostrom (1994) stated that the whole Handbook of Social Cognition (both volumes) should be taken as a definition for the construct (p. ix). Whilst numerous definitions exist, it does not appear that any are frequently cited as the accepted or definitive definition. Indeed, the majority of research appears to present the concept as implicitly understood.

One way of understanding social cognition has been to use a broad approach, such that individual aspects of social cognition (e.g. theory of mind, understanding another’s perspective, social problem solving, etc.) are not defined. For example, a recent definition is “social cognition is defined as the perception of others, the perception of self, and interpersonal knowledge” (Beer & Ochsner, 2006). A similarly vague definition has been provided by Frith and Blakemore (2006) “social cognition is defined as any process that involves other people”. Whilst such definitions allow for a range of social cognitive processes to be investigated, they do not provide the research area with a clear definition of the construct under examination.

The main difficulty with defining social cognition as a unitary construct appears to be that it is not a single concept, but rather an approach or philosophy (Augoustinos, Walker & Donaghue, 2006, p. 16). In a review chapter on social cognition in individuals with intellectual disabilities, although a model of social information processing was referenced and adhered to, no definition of social cognition was provided (Leffert & Siperstein, 2002).

Table 1

Terms employed in the literature search for studies examining sociability in individuals with intellectual disabilities or developmental disorders.

<table>
<thead>
<tr>
<th>Search term</th>
<th>Variations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociability</td>
<td>Social behaviour and behaviour; prosocial behaviour and behaviour; social motivation; social competence; social skills; social interaction; social cognition; social perception; social reciprocity; social participation; social avoidance</td>
</tr>
<tr>
<td>Intellectual disability</td>
<td>Learning disabilities; intellectual disability; intellectual disabilities; intellectual impairment; developmental disorder; mental retardation; mental handicap.</td>
</tr>
<tr>
<td>Children</td>
<td>Child; children.</td>
</tr>
</tbody>
</table>
2.1.1. Social cognition and children with intellectual disabilities

Given the above brief review of definitions employed in social and cognitive psychology to describe social cognition, it is anticipated that definitions for the concept will also be difficult to find in research with children with intellectual disabilities. Seven papers were identified that matched the search criteria and inclusion/exclusion criteria. Bauminger, Edelsztein, and Morash (2005) defines the concept as: Social cognition includes the child’s ability to spontaneously read and correctly interpret verbal and nonverbal social and emotional cues; the ability to recognize central and peripheral social and emotional information; the knowledge of different social behaviours and their consequences in diverse social tasks (e.g. how to initiate a conversation, how to negotiate needs, how to make group entry); and the ability to make an adequate attribution about the other person’s mental state (i.e. “theory of mind” abilities or role taking abilities). (p. 45)

Six of the papers do not give a definition of social cognition per se, although some do provide definitions for the specific areas of social cognition they are researching. Leffert, Siperstein, and Millikan (2000) define two areas of social cognition: social perception and social strategy generation. Social perception is defined as “an individual’s ability to interpret or read relevant social messages from others. These messages, known as social cues, consist of verbal and nonverbal stimuli in the environment” (p. 531). They then describe what social cues are, making it easier for other researchers to examine the kind of social interactions and behaviours they are referring to. Their definition for social strategy generation is “involves the ability to think of solutions for resolving social problems that are age-appropriate and that fit the immediate situation” (p. 532).

Whilst Cornish, Burack, et al. (2005) also do not give a definition of social cognition they do state that although they researched theory of mind and mental state understanding ‘other components such as emotion and face recognition, eye gaze, social anxiety and perception are all important aspects’ (p. 377), thus recognising that social cognition is not a unitary concept and has many facets.

Four of the papers (Bauminger et al., 2005; Gomez & Hazeldine, 1996; Leffert & Siperstein, 1996; Tur-Kaspa, 2004) primary aim was to investigate social information processing, and all cite the model proposed by Dodge (1986; Crick & Dodge, 1994). This model involves six steps: (1) encoding social cues from the environment; (2) forming a mental representation and interpretation of the cues; (3) searching for possible behavioural responses; (4) deciding on a response from those generated; (5) enacting the selected response; (6) enactment—including monitoring the effects of behaviour and regulating it. This model could be taken as a description of social information processing as applied by the above four authors.

The measures employed to assess social cognition can be seen in Table 2. The measures do relate to key areas of social cognition including social information processing, theory of mind, emotion recognition, social perception and social strategy generation. Five of the seven papers all use a similar methodology based around the social information processing model of Dodge (1986; Crick & Dodge, 1994) and adapted for use in individuals with intellectual disabilities (Tur-Kaspa & Bryan, 1994). Such a measure closely matches the constructs of the social information processing model and thus appears to provide inherently a definition for social information processing. Some measures of social behaviour are also included in some of the social cognition papers, which would appear not to match the construct under investigation. However, given that the fifth and sixth steps in Dodge’s social information processing model both involve social behaviour, it seems appropriate that social cognition should also be assessed in such a ‘real-world’ way.

Given the difficulty in defining social cognition in the wider literature, it is not surprising that researchers investigating social cognition in individuals with intellectual disabilities have also not established a widely accepted working definition of the concept. However, Bauminger et al. (2005) did provide a comprehensive working definition which coincides with the six steps put forward in the social information processing model (Crick & Dodge, 1994; Dodge, 1986) and the measures employed in the identified papers, and thus could be the starting point for a definition of social cognition in intellectual disabilities research.

2.2. Social competence

As with many of the social terms, there is no universally accepted definition for social competence and the term has undergone various transformations and has evolved over time and throughout research. Early definitions focused on social behaviour, with cognitive elements being added later and, more recently, affective components have been seen as equally important (Topping, Brenner & Holmes, 2000).

Some definitions have been prescriptive, providing a list of dimensions thought to be important for social competence, such as problem solving, perspective taking and person perception (Sarason, 1981). Such an approach would make research consistent, if the list of domains could be agreed, as the presence or absence of each ‘skill’ could be measured. Other approaches have been far more flexible and offer little direction for researchers, such as the definition ‘being well liked by peers’ (Hubbard & Coie, 1994). It would be very difficult to operationalise such an open ended definition and to apply it consistently across different groups of children. Therefore, it would seem that a good working definition would need to strike a balance between the two approaches.

In recent years some definitions have tried to consolidate the two approaches and also acknowledge the impact of environment and culture on social competence. Topping et al. (2000) suggested “social competence is possessing and using the ability to integrate thinking, feeling and behavior to achieve social tasks and outcomes valued in the host context and culture” (p. 31). These authors go on to suggest that such a definition suggests a set of component skills are necessary for social competence and give some examples, but still this definition is difficult to standardise across research.
Table 2
Measures employed by each study, with the construct reported to be under investigation, the measures and the constructs the measures report to assess.

<table>
<thead>
<tr>
<th>Construct reported to be investigated by the paper</th>
<th>Measures employed</th>
<th>What constructs are measured (based on the measure employed)?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Competence (Merrell &amp; Popinga, 1994)</strong></td>
<td>Social Skills Rating System (SSRS; Gresham &amp; Elliott, 1990)</td>
<td>Social behaviours - 2 subscales: social skills scale (cooperation, assertion, self-control and responsibility) and problem behaviour scale (externalising problems, internalising problems and hyperactivity).</td>
</tr>
<tr>
<td></td>
<td>The adaptive behaviour domain of the scales of independent behaviour (Bruininks, Woodcock, Weatherman, &amp; Hill, 1984)</td>
<td>4 subscales: Motor skills; personal living skills; social interaction and communications skills (social interaction, language comprehension, language expression).</td>
</tr>
<tr>
<td><strong>Social Competence (Charman &amp; Campbell, 2002)</strong></td>
<td>Socialisation scale of the Vineland Adaptive Behaviour Scale (Sparrow, Bella &amp; Cicchetti, 1984)</td>
<td>The socialization domain covers play and leisure time, interpersonal relationships, and various coping skills. Charman and Campbell state it ‘enquires into the participant’s habitual observable social behaviour’.</td>
</tr>
<tr>
<td></td>
<td>2 16-item scales to assess ‘active’ and ‘interactive’ sociability (Frith et al., 1994)</td>
<td>Active scale - social behaviours that could be performed without the ability to mentalise (e.g. shares toys when asked).</td>
</tr>
<tr>
<td><strong>Social Competence (Rosner et al., 2004)</strong></td>
<td>The Child Behaviour Checklist (Achenbach, 1991)</td>
<td>The CBCL requires parents to list activities pursued by their child and to rate the child’s skill and participation in these activities and how well the child gets along with others.</td>
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<tr>
<td></td>
<td>Social behaviour scale, consisting of items from other scales: ○ 14 items from the sociability/leadership scale of the revised class play scale (Masten, Morison &amp; Pellegrini, 1985). ○ 13 items from the Aggressive behaviour checklist (Achenbach &amp; Edelbrock, 1983). ○ 13 items from the Social withdrawal and anxious scales from the child behaviour checklist (Achenbach, 1991)</td>
<td>2 domains: activity and social activity-domain-rates the number of sports the individual is involved with, frequency of participation, skill in sports and non-sports hobbies, number and quality of jobs/chores the individual does. Social domain-number and degree of participation in clubs and organisations, number of close friends, degree of contact with friends, how well the individual plays or works alone.</td>
</tr>
<tr>
<td></td>
<td>No name given to the assessment methods used, although the description sounds as though it is part of the social information processing skills measure (Tur-Kaspa &amp; Bryan, 1994).</td>
<td>24 social vignettes, representing two types of social conflict situations (peer entry and peer provocation). After watching the vignettes the children were asked questions on four areas of social information processing: encoding of social cues, their interpretation of what happened in the story, what responses they would generate if they were in the situation and were then asked to rate three different consequences to the end of the scenario.</td>
</tr>
<tr>
<td><strong>Social Cognition-four social cognition processes, all part of social information processing; encoding, cue interpretation, strategy generation and evaluation of consequences (Leffert &amp; Siperstein, 1996)</strong></td>
<td>Social Information Processing task (Suess, Grossman &amp; Stroufe, 1992).</td>
<td>The three scales used to generate the social behaviour scale all measure different aspects of social behaviour.</td>
</tr>
<tr>
<td><strong>Social Cognition-Social information processing (Gomez &amp; Hazeldine, 1996)</strong></td>
<td>Social Information Processing task (Suess, Grossman &amp; Stroufe, 1992).</td>
<td>Six social vignettes were shown to the children which all showed a social dilemma involving provocation by a peer to another child, or their toys. Children were then asked questions around two aspects of social information processing: encoding and interpretation of social cues and responses to social cues.</td>
</tr>
<tr>
<td>Construct reported to be investigated by the paper</td>
<td>Measures employed</td>
<td>What constructs are measured (based on the measure employed)?</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
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<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Social Cognition-social perception and generation of social strategies (Leffert, Siperstein &amp; Millikan, 2000)</td>
<td>No name given to the assessment methods used, although the description sounds as though it is part of the social information processing skills measure (Tur-Kaspa &amp; Bryan, 1994).</td>
<td>Short social vignettes are presented which show social dilemmas. The child is then asked questions to elicit whether they had encoded the social conflict and if they could interpret the intentions of the child in the vignette (social perception) and what their response would be in such a situation (social strategy generation).</td>
</tr>
<tr>
<td>Social Cognition-Social information processing (Tur-Kaspa, 2004)</td>
<td>Social information processing skills measure-adapted for use with learning disability populations (Tur-Kaspa &amp; Bryan, 1994).</td>
<td>Short social vignettes are presented which are about social dilemmas and questions are then asked on 6 areas of social information processing: Encoding social cues, representing/interpreting social cues, clarifying goals, searching for possible social responses, making a response decision and enactment process (after Dodge, 1986).</td>
</tr>
<tr>
<td>Social Cognition-Social information processing (Bauminger et al., 2005)</td>
<td>Modified version of the Social Information Processing skills measure (Tur-Kaspa &amp; Bryan, 1994)</td>
<td>Short social vignettes (4) are presented and then questions are asked on 6 areas of social information processing: Encoding social cues, representing/interpreting social cues, clarifying goals, searching for possible social responses, making a response decision and enactment process (after Dodge, 1986).</td>
</tr>
<tr>
<td>Social Cognition-Theory of mind (Cornish, Burack, et al., 2005)</td>
<td>The emotion comprehension task (Cermelle, Ackerman &amp; Ixard, 1995).</td>
<td>Ability to recognise the mental state of others from stories, with social context.</td>
</tr>
<tr>
<td>Social Cognition-not otherwise specified (Cornish, Kogan, et al. (2005))</td>
<td>The affective matching measure (Feshbach, 1993).</td>
<td>Ability to recognise the mental state of others from pictures, with stories.</td>
</tr>
<tr>
<td>Social Skills-social interaction (Kemp &amp; Carter, 2002)</td>
<td>Location change false belief task</td>
<td>Measure whether children have mental state understanding of others.</td>
</tr>
<tr>
<td>Social Skills-social interaction (Kemp &amp; Carter, 2002)</td>
<td>Four appearance-reality tasks</td>
<td>Measure a child’s ability to understand their own mental state.</td>
</tr>
<tr>
<td>Social Skills-social interaction (Kemp &amp; Carter, 2002)</td>
<td>Facial expression recognition test</td>
<td>Ability to judge simple mental states (e.g. happiness, sadness, disgust) from full pictures of facial affect.</td>
</tr>
<tr>
<td>Social Skills-social interaction (Kemp &amp; Carter, 2002)</td>
<td>Revised eye test</td>
<td>Ability to judge complex mental states (e.g. panicked, jealous, arrogant) from pictures of eyes.</td>
</tr>
<tr>
<td>Social Skills-social interaction (Kemp &amp; Carter, 2002)</td>
<td>Autism quotient</td>
<td>50 statements regarding social functioning</td>
</tr>
<tr>
<td>Social Skills-social interaction (Kemp &amp; Carter, 2002)</td>
<td>No official measure, observations based on Carter et al. (1995)</td>
<td>Observing the child interacting with other peers with disabilities, without disabilities and with teachers. Specific behaviours were recorded, and also whether the interaction was negative.</td>
</tr>
<tr>
<td>Social Skills-social interaction (Kemp &amp; Carter, 2002)</td>
<td>Social competence ratings-no standardised measure</td>
<td>Overall social competence-parents were asked to compare their child to a same age typically developing child and rate their social competence compared to this child. Teachers were asked to compare the child to an average peer in their class/grade. Parents and teachers were also asked to rate the child on components of social competence (a) interacting with peers; (b) interacting with adults; (c) self-help skills. Rated on a 4-point scale.</td>
</tr>
</tbody>
</table>
Table 2 (Continued)

<table>
<thead>
<tr>
<th>Constructs reported to be investigated by the paper</th>
<th>Measures employed</th>
<th>What constructs are measured (based on the measure employed)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Skills (Barton &amp; North, 2004)</td>
<td>Social Skills Rating System (SSRS; Gresham &amp; Elliott, 1990)</td>
<td>Social behaviours- 2 subscales: social skills scale (cooperation, assertion, self-control and responsibility) and problem behaviour scale (externalising problems, internalising problems and hyperactivity).</td>
</tr>
<tr>
<td>Social Skills (Fussell, Macias &amp; Saylor, 2005)</td>
<td>Social Skills Rating System (SSRS; Gresham &amp; Elliott, 1990)</td>
<td>Social behaviours- 2 subscales: social skills scale (cooperation, assertion, self-control and responsibility) and problem behaviour scale (externalising problems, internalising problems and hyperactivity).</td>
</tr>
<tr>
<td></td>
<td>Vineland Adaptive Behaviour Scale (Sparrow, Bella &amp; Cicchetti, 1984)</td>
<td>Measures adaptive behaviour over four domains: Communication (receptive, expressive and written), socialisation (interpersonal relationships, play and leisure time, and coping skills), daily living skills (personal, domestic and community), and motor skills (gross and fine).</td>
</tr>
<tr>
<td></td>
<td>Autism Behaviour Checklist (Krug et al., 1980)</td>
<td>Rates 57 autistic behaviours on 5 dimensions: sensory, relating, body and object use, language, social &amp; self help.</td>
</tr>
<tr>
<td>Social Skills (Tse, Hamiwka, Sherman &amp; Wirrell, 2007)</td>
<td>Social Skills Rating System (SSRS; Gresham &amp; Elliott, 1990)</td>
<td>Social behaviours- 2 subscales: social skills scale (cooperation, assertion, self-control and responsibility) and problem behaviour scale (externalising problems, internalising problems and hyperactivity).</td>
</tr>
<tr>
<td></td>
<td>Child Behaviour Checklist (Achenbach, 1991)</td>
<td>The CBCL requires parents to list activities pursued by their child and to rate the child’s skill and participation in these activities and how well the child gets along with others. (See Rosner et al., 2004 above.)</td>
</tr>
<tr>
<td>Social Skills (Agaliotis &amp; Kalyva, 2008)</td>
<td>Non standardised observations</td>
<td>Observations of school break during which time children were encouraged to join in free play. Observers were given operational definitions of the behaviours to be recorded. Rated nonverbal interactions, including nonverbal initiation and response.</td>
</tr>
<tr>
<td>Social Behaviour (Costenbader &amp; Keller, 1990)</td>
<td>Child Behaviour Checklist (Achenbach &amp; Edelbrock, 1983).</td>
<td>118 behaviour problems are rated by parents on a likert scale and fall into two domains: internalizing (overcontrolled) and externalizing (undercontrolled).</td>
</tr>
<tr>
<td></td>
<td>Conners Rating Scales (Goyette, Conners &amp; Ulrich, 1978)</td>
<td>The scale also has measures of social competence in three areas: social, activities and school.</td>
</tr>
<tr>
<td></td>
<td>The Autism Behaviour Checklist (Krug et al., 1980)</td>
<td>Rates 57 autistic behaviours on 5 dimensions: sensory, relating, body and object use, language, social and self help.</td>
</tr>
</tbody>
</table>
Perhaps the best way to begin the process of defining social competence is to see it as a broad term that encompasses other social concepts such as social skills and social behaviour, with an overarching theme of successful social outcomes that are pertinent to the context. However, until the concepts referred to by the construct of social competence are defined, there will remain a difficulty in defining the term.

2.2.1. Social competence and children with intellectual disabilities

Three papers were identified that purported to have investigated social competence in children with intellectual disability, using standardised or replicable measures.

None of the papers provide a definition of social competence although all acknowledge difficulties with the concept. Merrell and Popinga (1994) suggest that although there are different perspectives on what social competence is, there is a general agreement that the presence of adequate social competence allows individuals to have successful outcomes in social situations, develop positive relationships with peers and engage in social behaviours that have mutually reinforcing consequences (p. 40). Charman and Campbell (2002) discuss at length the potential relationship between theory of mind and ‘everyday social competence and social behaviours’, but fail to offer a definition of social competence. Whilst Rosner, Hodapp, Fidler, Sagun, and Dykens (2004) do not provide a definition of social competence either, they discuss the way in which social competence is assessed as typically being concerned with the number and quality of jobs, chores, friends, clubs and hobbies a person has; intimating that this is one way to measure social competence.

The measures used by the papers can be seen in Table 2. The majority of measures employed in the social competence studies measure aspects of social behaviour and an individual’s ability to interact and ‘get along with’ others. Whilst these at first do not appear to be measures of social competence, when compared with the themes in the definitions of social competence above, it would appear that taken together some of the measures would satisfy a definition of social competence. For example, the Social Skills Rating System, the Frith, Happé, and Siddons, 1994 Sociability Scales and the Child
Behaviour Checklist all measure areas of social skills/behaviour; and the adaptive behaviour domain of the scales of independent behaviour, the socialisation scale of the Vineland Adaptive Behaviour Scale and the Child Behaviour Checklist all assess social interaction and an individual’s ability to interact with other people. Both of these themes have been highlighted as important concepts in social competence (Hubbard & Coie, 1994; Sarason, 1981).

Therefore, although none of the social competence papers provide working definitions of the concept, the measures they employ do imply what aspects of social competence they are evaluating. Further definition of social competence and differentiation from the concept of social behaviour is needed.

### 2.3. Social skills

The topic of social skills has been the focus of a large body of research, particularly with respect to the social skills of children and adults with autistic spectrum disorders. As such it does have the benefit of a number of definitions being provided by researchers; unfortunately the quantity does not aid agreement of a single definition. Matson and Wilkins (2007) summarised this position when they commented that the definitions used for social skills are almost as varied as the studies conducted (p. 29). Bielecki and Swender (2004) stated “a universally accepted definition of social skills does not exist but major themes are reflected in the literature” (p. 694).

One of the ways that social skills have been conceptualised is as a combination of a number of behaviours. Bellack (1983) saw social skills as observable and measurable interpersonal behaviours that promote independence, social acceptability and quality of life. Hughes and Sullivan (1988) discussed a combination of motor, cognitive, and affective behaviours in amounts that would be viewed as neither excessive nor deficient to settings, individuals and/or situations. Whilst such a definition is broad, other researchers have applied even looser descriptions, for example discussing social skills in the context of interactions, communication and play (Wing, Leekam, Libby, Gould, & Larcombe, 2002). Matson and Wilkins (2007) acknowledge that the majority of researchers refer to the interpersonal context and some aspects of reciprocal verbal and non-verbal interactions with at least one other person as a way to understand social skills.

However, there does seem to be a theme of the development of observable behaviours for researchers to use when considering social skills, indeed this is how the majority of social skills assessments are designed. Laushey and Heflin (2000) suggested that providing the definitions of the skills that the research is interested in would be advantageous, e.g. ‘asking for objects’ or ‘getting the attention of another’. This is an approach that has been taken in the applied behaviour analytic literature where interventions are based around, often just one, observable, operationalised and well defined behaviour (e.g. spontaneous social exchange. Krantz & Mcclannahan, 1998; social initiation, Shabani, Katz, Wilder, Beauchamp, Taylor, & Fischer, 2002; eye contact, Hall, Maynes & Reiss, 2009) Of course, to provide a description for every social skill would be a vast task, but on an individual study level this could be achievable and would allow other researchers to use the operationalised definitions to replicate the research.

A way to reconcile the broader definitions, the need for operationalised behaviours and a definition for social skills per se was offered by Gesten, Weissberg, Amish, and Smith (1987). These authors discussed social skills in relation to social competence and proposed that “social skills are highly specific patterns of learned observable behaviour, both verbal and non-verbal, through which people meet their needs, avoid unpleasant circumstances and influence others’ (p. 27). Gesten et al. (1987) also suggested that within social skills there are macro-skills (e.g. engaging in conversation, relationship building) and micro-skills (e.g. establishing and maintaining appropriate eye contact). Within this broad definition that provides for both basic and subtle (macro and micro) social skills, there would be the possibility of researchers stating the specific observable behaviour that they were investigating.

#### 2.3.1. Social skills and children with intellectual disabilities

The variety of definitions in the wider social and cognitive psychology literature is also evident in the intellectual disabilities research. Six papers were identified that matched the search criteria (Agaliotis & Kalyva, 2008; Barton & North, 2004; de Bildt, Luteijn, Kraijer, Systema & Minderaa, 2005; Fussell, Macias & Saylor, 2005; Kemp & Carter, 2002; Tse, Hamiwka, Sherman & Wirrell, 2007) and four of these (Agaliotis & Kalyva, 2008; Barton & North, 2004; de Bildt et al., 2005; Kemp & Carter, 2002) provide definitions for social skills, the particular aspect they are researching or provide comments towards a definition.

Barton and North (2004) give a definition consistent with the concept described by Gesten et al. (1987) “social skills are socially acceptable learnt behaviours considered to be important by others, such as starting a conversation with others or giving a complement” (p. 553). In this definition the authors have not only specified that social skills comprise a set of behaviours, but have also given some examples for other researchers. Agaliotis and Kalyva (2008) give a similar conceptualisation “social skills represent a specific behaviour that people exhibit in specific situations in order to perform competently on social tasks” (p. 2).

Kemp and Carter (2002) do not provide a definition of social skills, but do provide one for the specific social skill they are investigating, namely social interaction. These authors measure social interaction and as such state that “communicative exchange (verbal or non-verbal); attempts to direct communication to another individual; joint cooperative activity involving two or more individuals; physical actions deliberately directed towards another individual” (p. 397; after Carter, Kemp, & Iacono, 1995, p. 22) are all acts of social interaction to be recorded.
Whilst de Bildt et al. (2005) do not define social skills per se, they do suggest that there is a difference between basic and subtle social skills "understanding the social context of a situation, understanding jokes, taking the other person’s perspective, understanding that a friendly acting person actually is doing you harm, are all examples of subtle social skills needed to handle more complex social situations" (p. 318). This discrimination between basic and subtle skills is in accordance with the ideas postulated by Gesten et al. (1987) and are also in line with the recent move in the United States (American Association on Mental Retardation, 2002) towards a definition of intellectual disabilities as requiring the deficit of basic and subtle social skills, such that individuals show certain characteristics, e.g. naivety and gullibility.

It can therefore be seen that the concept of social skills is perhaps better defined in the intellectual disabilities literature than social cognition or social competence. This may have been encouraged by the design and application of social skills interventions for children seen as having deficits in the area. It appears that the research already has a number of similar and well-accepted definitions for the concept.

The way in which social skills have been measured appears to be consistent with the given definitions. A common measures used across studies was the Social Skills Rating System (SSRS; Gresham & Elliott, 1990) which was employed in three of the six studies. This evaluates social behaviours and has a social skills subscale, comprising cooperation, assertion, self-control and responsibility. The measures employed typically measure social behaviours which are then categorised as social skills. However, the measures seem consistent with the definitions employed in the intellectual disabilities literature.

2.4. Social behaviour

Similar to social cognition, at first glance the term social behaviour would lead us to believe that such a ‘common place’ term would be easy to define, particularly given its prominence in the other concepts reviewed. However, a search of the literature reveals the opposite is true and even a dictionary definition of the concept is difficult to find. One online dictionary reports the definition “behaviour directed towards, or taking place between, members of the same species” (Social behaviour definition, n.d.), which does not acknowledge the social aspects of behaviour. Even books such as ‘Handbook of cross cultural psychology: Social behaviour and applications’ (Berry, Segall, & Kagitçibasi, 1997) do not include chapters on social behaviour or define the concept which the book purports to document. It is hard to believe that there is no accepted definition for social behaviour given the emphasis on interventions that have been developed to improve the social behaviours of children with various developmental difficulties.

Perhaps the difficulty lies in the fact that there are so many areas of social behaviour, for example, aggression, assertiveness, altruism, friendship, sharing, cooperation, etc., that it is impossible to define the over-arching concept of ‘social behaviour’. However, it is important to have at least a broad, rudimentary definition of social behaviour agreed by researchers, as it appears within and referenced by the other concepts which fall under the heading of sociability. If this concept has no agreed definition, it leaves the sociability literature in a difficult position.

2.4.1. Social behaviour and children with intellectual disabilities

The lack of a definition for social behaviour found in the wider literature is replicated in that of children with intellectual disabilities. Eight papers were identified that matched the inclusion criteria and none provided a definition of the concept. However, one of the aims of this paper is to try to assemble definitions and to help in providing working definitions for the main concepts. Therefore, a way of trying to build a definition of social behaviour may come via examining the issues discussed within the papers and the measures used.

Two of the papers highlight difficulties with the construct not being widely defined, with particular reference to a clinical population for which social behaviour problems are central. Hartman, Luteijn, Serra, and Minderaa (2006) point out the problem of not having well defined social-behavioural descriptions for children suspected of having pervasive developmental disorder not otherwise specified (PDDNOS). However, until a definition for social behaviour can be agreed upon, descriptions of the specific behaviours will also be difficult to operationalise, therefore impacting on the ability for researchers to agree definitions for social behaviours relevant to PDDNOS. Similarly, Luteijn, Luteijn, Jackson, Volkman, and Minderaa, 2000 call for an instrument which is reliable and valid, that will describe the social-behavioural problems of children with PDDNOS. These authors developed a questionnaire to address the problem. Pierce-Jordan and Lifter (2005) also discuss a need for researchers to differentiate between play behaviour and social behaviour, and suggest that a number of measures confuse the two aspects. The problems highlighted in the research suggest a need to define not only the concept of social behaviour, but also provide definitions of specific social behaviours. Perhaps this should be done on a study by study basis which would be advantageous in the literature.

The papers use a number of measures purported to measure children’s social behaviour. However, some of the measures also include, or focus on, other areas of sociability. Three of the papers use the Child Behaviour Checklist (Achenbach, 1991; Achenbach & Edelbrock, 1983) which is a commonly used measure of behaviour problems. However, as can be seen in the review on social competence, this scale is also used to assess social interaction and a child’s ability to interact with other people. This scale can therefore be seen as combining a number of concepts, including social behaviour, social skill and social competence. Other measures rate social competence (School Social Behaviour Scales–Merrell, 2000; Home and Community Social Behaviour Scales–Merrell & Caldarella, 2002), problem behaviours (Conners Rating Scales–Goyette, Conners, & Ulrich, 1978), anti-social behaviour (Home and Community Social Behaviour Scales–Merrell & Caldarella, 1999; Robbins & Merrell, 1998; School Social Behaviour Scales–Merrell, 2000), temperament (Emotionality, Activity, Sociability (EAS) Temperament...

Taking an overview of how social behaviour is measured it can be seen to be an all encompassing social term, which includes measures of concepts (social competence) in which social behaviour is referred to; whilst at the same time some measures include detailed descriptions of specific behaviours thought to be ‘social’ (e.g. the playground observation checklist). This therefore leaves the concept of social behaviour poorly defined.

3. Discussion

The primary aim of this review was to define and differentiate the constructs used to assess sociability in children with intellectual disabilities (as found in the current literature); and to compare these to definitions of the constructs within social and cognitive psychology literature. Reviewing the social and cognitive literature revealed a number of difficulties with definitions of the concepts related to sociability, and the difficulties continued with research investigating these social concepts in children with intellectual disabilities.

The literature search revealed four main constructs which are included under the heading of sociability: social cognition, social competence, social skills and social behaviour. In the wider literature the concept of social cognition has received a vast amount of research interest and yet there is no agreed definition. The review suggested that this is perhaps because social cognition is not a unitary concept, but rather an approach or philosophy. However, definitions were found, the main tenets of which coincided with those found in the intellectual disability research and the measures employed.

Social competence was also found to be a wide area with definitions ranging from prescriptive, in terms of stating which dimensions should be measured, through to being extremely flexible and open to interpretation, e.g. being well liked (Hubbard & Coie, 1994). No definitions were found in the intellectual disabilities literature although the measures employed to investigate the area all contain specific social behaviours, grouped into areas of social skills deemed necessary for social competence and these dimensions did compare favourably to the definitions suggested in the wider literature.

The conceptualisation of social skills was remarkably uniform across the wider and intellectual disabilities literature, again however, no agreed definitions appear to exist. There is a general theme of conceptualising social skills as a set of observable behaviours which are applied in the appropriate way in certain contexts. The measures employed also reflect this as the majority are scales assessing specific social behaviours.

Unfortunately the area of social behaviour, to which the other three concepts all refer, is extremely poorly defined in both the wider and intellectual disabilities literature. It is suggested that perhaps no definitions exist due to the vast amount of research interest and yet there is no agreed definition. The review suggested that this is perhaps because social behaviour is not a unitary concept, but rather an approach or philosophy.

Other researchers defined the specific aspect of social cognition they were investigating, and combined with a general definition of social cognition, such as that proposed by Bauminger et al. (2005) Social cognition includes the child's ability to spontaneously read and correctly interpret verbal and nonverbal social and emotional cues; the ability to recognize central and peripheral social and emotional information; the knowledge of different social behaviours and their consequences in diverse social tasks (e.g. how to initiate a conversation, how to negotiate needs, how to make group entry); and the ability to make an adequate attribution about the other person's mental state (i.e. “theory of mind” abilities or role taking abilities). (p. 45).

Other researchers defined the specific aspect of social cognition they were investigating, and combined with a general definition of social cognition, such as that proposed by Bauminger et al. (2005) this could be seen as useful as it would provide a way for researchers to have a shared, broad concept for social cognition and then specific definitions for the area which is under investigation.

The area of social competence was markedly lacking definitions, although a general definition suggested in the wider literature was “possessing and using the ability to integrate thinking, feeling and behavior to achieve social tasks and outcomes valued in the host context and culture” (Topping et al., 2000, p. 31). In the intellectual disabilities literature no definitions were suggested, although many issues were raised by authors. The suggestion made from reviewing the literature would be to view it as a broad term, encompassing other social concepts (e.g. social skills and behaviour) with an overarching theme of being able to interact with other people, which allows successful social outcomes that are pertinent to the context the individual is in. It would then be advantageous if researchers defined the specific skills, behaviours, etc., they believe necessary for social competence and that they will measure.

As the area of social skills is so vast, it is hardly surprising that a number of definitions exist for the concept. In the wider literature there is an emphasis on a set of behaviours, “social skills are highly specific patterns of learned observable behaviour, both verbal and non-verbal, through which people meet their needs, avoid unpleasant circumstances and influence others” (Gesten et al., p. 27). This is reflected in the definitions suggested in the intellectual disabilities research.
and two possible working definitions which are very similar were suggested by Barton and North (2004) “social skills are socially acceptable learnt behaviours considered to be important by others, such as starting a conversation with others or giving a complement” (p. 553) and Agaliotis and Kalyva (2008) “social skills represent a specific behaviour that people exhibit in specific situations in order to perform competently on social tasks” (p. 2). As with social competence, it would be still remain for individual researcher to state which social behaviours they were interested in investigating in their conceptualisation of social skills.

As discussed above, the area of social behaviour has proven to be somewhat problematic in terms of definitions. It appears as though meaning is implicit such that definitions are seen as unnecessary. The measures employed in the area also do not aid the definition of the concept as many of the measures assess and refer to other concepts within the sociability domain, such as social competence and areas of social cognition. At this stage it is not possible to suggest a working definition for social behaviour, even such a broad definition such as that provided in a dictionary (“behavior directed towards, or taking place between, members of the same species”, Social behaviour definition, n.d.). The inherent problem with such a vague notion would be the ability to construe any behaviour as social. Therefore it is suggested that until research efforts are focused upon defining exactly what is meant by social behaviour, no definition can be provided.

3.2. Differentiating the constructs

One of the aims of this review was to provide a way to differentiate the four main social concepts from each other; however, a review of the definitions reveals that this will not be a simple task. If the suggested working definitions are utilised then it could be seen that social competence is an overarching concept that includes facets of social cognition, social skills and social behaviour. Such that someone possessing good social cognition and social skills (including social behaviour) would be classed as ‘socially competent’. Social cognition can then be seen as encapsulating social skills and social behaviours; with social skills requiring a specific set of (undefined) social behaviours. However, numerous questions remain which have been outside of the remit of this review, such as: can someone possess social skills without social cognition? Can someone have adequate social behaviours but still be seen as not socially competent? Can social skills be ‘taught’ to someone if they lack social cognition?

3.3. Clinical implications

The need for clinical interventions for children with intellectual disabilities who have sociability problems has long been recognised and numerous interventions have been designed and implemented. The majority of interventions are targeted at social skills deficits for children with autism or autistic spectrum disorders. However, as discussed in the previous sections, the lack of coherent definitions for social skills and the behaviours pertinent to social skills makes it a difficult area to conceptualise. Therefore, designing and implementing interventions for a social concept which is not universally agreed can have many implications for researchers and individuals in the social skills programmes.

In a recent review of social skills training programmes for children with high functioning autism or Asperger’s disorder, it was found that 70% of programmes reported success (Rao, Beidel, & Murray, 2008). However, the authors point out that within these successful programmes, success was only for a subset of children or on a subset of skills. The first limitation Rao et al. (2008) discuss is the lack of a universally accepted definition of social skills and social behaviours thought to be deficient in the children, and therefore requiring intervention.

3.4. Future directions

It was anticipated that one of the outcomes of this review would be to add to the current definitions employed in the literature in a bid to improve cohesion throughout the research arena. However, the lack of definitions (e.g. for social behaviour) or the wide variety of conceptualisations (e.g. social cognition and social competence) make such a task extremely difficult at the present time. Whilst some potential working definitions have been suggested, future efforts should be focused on trying to bring together the diverse ideas around some of these concepts so that working definitions can be debated and implemented in future research.

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