Social Skills versus Skilled Social Behavior:
A Problematic Distinction in Autism Spectrum Disorders

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Abstract

The primary core deficit in autism spectrum disorders is social development. While frequently acknowledged as a critical aspect of intervention for improved functioning, research on the specifics of social development and effective models of intervention is not commensurate with the acknowledged importance. We present a model of social competence that is derived from a behavioral molecular analysis approach, but which is presented in a broad ecological context. We distinguish social skills from skilled social behavior and present specific clinical examples that are derived from the model. KEYWORDS: Skills training, social competence, model development.

Introduction

From the earliest writings of Leo Kanner concerning autism, the primary focus was on social development. In 1943 he wrote "The outstanding pathognomonic fundamental disorder is the children's inability to relate themselves in the ordinary way to people and situations from the beginning of life." This emphasis on social interaction development clearly persists through current diagnostic definitions (DSM-IV TR), in which, even under the criteria for communication impairment, one sees emphasis on the social aspects of communication. This is in addition to the primary category of "Qualitative impairment in social interaction."

Even from the various perspectives of individuals with Autism Spectrum Disorders (ASD), family and caregivers, researchers, and service providers, the development of social skills for individuals with ASD is critical for positive outcome. Yet it remains under-emphasized in most educational settings, often a relative weakness in behavioral intervention programs, and poorly addressed for individuals with ASD (particularly adults) who participate in psychotherapy and 'social skills groups'. The relatively poor outcome may be a function of research efforts that have focused on a specific behavior, skill development approach. This has resulted in a molecular analysis approach, particularly within a behavioral framework, at both the service provision and research level. What has become clear is that acquisition of specific social skills, comprised of sequences of specific behaviors, does not necessarily result in skilled social behavior. It is necessary to retain the molecular approach, which is essential in assisting individuals with impoverished repertoires, but this approach must also be placed in the full range of context and components of skilled social behavior.

Given the complexity of development of skilled social behavior, we will address the specific issues from not only a behavior analytic perspective, but also encompass important research findings and perspectives about social development from other disciplines. While behavioral intervention is arguably the most effective methodology for intervention, expansion of parameters and variables beyond what is typically addressed is necessary to improve outcome. One need not adopt the underlying theory or conceptualization of other approaches in order to benefit from a differing perspective and the observations associated with it. We feel more rapid progress can often be made on complex clinical problems when perspective is gained by broad knowledge of the literature and conceptual issues, which is then used to focus our efforts within a behavioral model. Absent this approach, we risk slowing potential progress, becoming insular, and attenuating the influence we could have outside our field. While at times uncomfortable for those strongly committed to empirical research, clinicians are continually faced with the problem of needing to deliver services immediately, often without the full benefit of comprehensive research on all of the complex areas of deficit for children with ASD. Researchers

and clinicians must help balance and support one another given the reality of our current knowledge base and the contrasting demand for services.

Social Competence: A Definition of the Construct and its Components

The construct of social competence is referenced in the literature under a number of different labels, including interpersonal skills, interpersonal competence, social skills, and communication competence (Segrin, 2000). All of these terms refer to a similar construct, which can be defined as the ability to appropriately and effectively interact with other people (Baron, 2000).   Appropriate and effective social skills consist of two main components: 1) organizing cognitions and behaviors into integrated actions based on socially and culturally acceptable interpersonal goals; 2) continuously assessing and modifying social behavior in order to maximize the likelihood those goals will be attained (Reed, 1994).

As is obvious from the above definition, social competence requires proficiency across a large number of behavioral domains, including specific social skills, social perception, and social motivation. In order to be perceived as socially competent, an individual must have competence in nonverbal, verbal, and paralinguistic social skills. Nonverbal behaviors hypothesized to be of importance in social interactions include affect appropriate to the conversational content, eye contact, body orientation, smiles, gestures, head nodding, maintaining appropriate interpersonal distance, and approaching others (Sheffer, Penn & Cassisi, 2001; Stokes & Osnes, 1986; Segrin, 2000). Verbal behaviors include asking questions, speaking on topic, and responding to questions (Sheffer et al, 2001; Stokes & Osnes, 1986), whereas paralinguistic behaviors include elements of speech other than content such as fluency, clarity, volume and prosody (Sheffer et al., 2001; Jackson, Moss & Solinski, 1985; Rourke, 1982). While all of these factors have been hypothesized to play a role in the rating of an individual's overall level of skill, the relative importance of each variable to the overall rating of an individual's social competence has not been investigated to date.

Social perception skills are also intimately related to social competence. Social perception can be broken down into three parts: input or perception, integration or interpretation, and choice of behavioral response or output (Glass, Guli, & Semrud-Clikeman, 2000). In other words, individuals must be able to accurately perceive social situations, recognize response options particular to that situation, and then choose the option that is most appropriate (McFall, 1982). Social perspective taking or ability to empathize with others has also been identified as a component of social perception (Glass et al., 2000). Social perception is also related to the individual's ability to detect the social context within which the interaction is taking place. As social skills are highly situation specific (Jackson et al., 1985) and social situations are highly variable (Butler & Wells, 1995), social perception plays an important role in social competence.

Social perception can be examined at two levels of analysis: the molar level or the molecular level (Leonhard & Corrigan, 2001). The authors state that at the molar level of analysis, research focuses on social roles, rules, and goals. Typically, social schema are formed based on an individual's perception of the action, dialogue, and affect that were present in the interaction, as well as the overall goal of the interaction (Leonhard & Corrigan, 2001). A single situational schema may contain concrete cues (i.e., the actions and the dialogue), abstract cues (e.g., the affect and the goals), or both (Leonhard & Corrigan, 2001). Social schema then function as templates for the individual against which new incoming information is compared and processed (Leonhard & Corrigan, 2001). Prior knowledge of culturally conventional rules that govern behavior in social situations is also a necessary in order to respond appropriately (Penn, Combs, & Mohamed, 2001). At the molecular level, skills are theoretically broken down into their smallest component parts. At this level, social perception can be theorized to be composed of such elements as facial affect perception, facial recognition, person perception, person memory, and perception of nonverbal stimuli (Newman, 2001; Penn et al., 2001).

An individual's reaction in a social situation also depends on interpretation of the intent of the other participant in the interaction (Dodge, 1980). If the intent of the communication partner is misinterpreted, the

individual's reaction will likely appear socially inappropriate (Dodge, Murphy, & Buchsbaum, 1984). The detection of the intention of a communication partner is likely related to aspects molecular social perception skills listed above. Thus, if an individual is deficient in these skills he will also have difficulty with intention detection.

Investigations of the importance of social motivation and its relationship to overall social competence is not an area that is well represented within the empirical literature. Despite this fact, Segrin (2000) stresses the importance of considering social motivation separately from an individual's social performance. He states that under conditions of low social motivation individuals may display a lower level of skill than they possess. For example, if an individual in a social situation is apathetic about the outcome, he is not likely to expend effort to appear skilled in that situation. Thus, his communication partner would judge him as socially incompetent. However, the judgment of incompetence is based on his lack of motivation to appear skilled in that given situation, not necessarily due to the fact that he actually lacks the skills.

Existing Models of Social Competence

McFall's (1982) model of the interaction of the components of social competence can be conceptualized as a two-tiered model. He hypothesizes that an individual's prior history and the specific situation affect the individual's processing of the situation. He breaks down processing into three components: decoding skills (reception, perception, and interpretation), decision skills (response search, response test, response selection, repertoire search, and utility evaluation), and encoding skills (execution and self-monitoring). All of the above factors interact to produce the individual's response, which can then be judged as competent or incompetent. McFall's model, while complete in the conceptualization of a one-stage social interaction, does not adequately consider perception of the social consequences of an action. Additionally, while it may be possible to argue that social motivation is to some extent included in an individual's prior history, this component is not explicitly included within McFall's model.

Dodge has proposed two separate but similar models of social competence (Dodge, 1985; Dodge & Murphy, 1984). The model outlined by Dodge and Murphy (1984) states that an individual's memory or past experience in similar situations, and the individual's goal for the interaction affect all aspects of social performance. An individual when exposed to a social stimulus will decode and interpret the stimulus, choose which response to exhibit, and finally enact the response. The individual will then monitor the situation and regulate his behavior according to the response of the communication partner. The model in his 1985 paper is similar to the one proposed in 1984. In the 1985 model he hypothesizes "unconscious" influences (including goals and social schemas) and the specific task as global influences to social performance. While the reference to unconscious processes is not a useful analysis, the description of factors affecting processing of social information, which includes encoding, interpreting, searching for a response, evaluating the response, enacting the response and self-monitoring, is a useful beginning. Like McFall's model, Dodge fails to explicitly include motivational aspects of social interactions in his model.

Argyle and Kendon (1967) attempted to create a hierarchal model of social skills. They hypothesized that the first distinction in the hierarchy is between "translation processes", i.e., those process that determine how an individual will interpret a particular stimuli, and "effector processes", i.e., the actions that the person takes in a given social situation. "Effector processes" are further broken down into "standing features" and "dynamic features". "Standing features" are those that tend to change very little throughout an encounter, such as interpersonal distance, and orientation. Conversely, "dynamic features" are those that are constantly changing throughout the course of an interaction, such as the patterning of silences, language and speech, visual orientation, and facial expression. While the authors outline many of the key components of social interactions, including social motivation, they fail to describe how they hypothesize these elements interact.

While the above mentioned models have a more general focus, Patterson (2002) proposed a model of the development of antisocial behavior in young children. He hypothesized that antisocial behavior, as is true for most behaviors, is maintained by reinforcement (positive or negative) that is provided contingent on these behaviors. Patterson's model also states that the development of antisocial behavior is affected by the context of the family life. Factors that are hypothesized to affect antisocial behavior are parental divorce, social disadvantage, and parental depression. These factors have been found to be mediated by parenting practices (Patterson, 2002). As children age, antisocial behaviors tend to change in topography. According to Patterson's model this change is mediated by the influence of a deviant peer group who encourage or teach additional antisocial behaviors. Patterson's model is relatively simple and straightforward. However, at present this model does not address other factors that may influence the outcome of complex social interactions (e.g., competition between reinforcing contingencies within a social situation).

All of the above mentioned models have potential shortcomings. McFall (1982) criticizes molecular models of social interaction as being too microanalytic. He states that these models are an attempt to parse a continuous stream of behavior into artificial units. As such, both his model and Dodge's models choose to focus on more molar aspects of social competence. However, these models may be of limited use for clinicians seeking to identify and ameliorate specific deficits in social functioning. For example, if an individual is found to have deficits at the response level of McFall's model, a clinician has limited information regarding what specifically is problematic about the response as the term is overly broad, and therefore provides limited information about how to best intervene. Additionally, both McFall and Dodge's models do not explicitly denote the interaction of motivational variables with the other molar components outlined in their models. While Argyle and Kendon outline many molecular units of social competence, the shortcoming of their model is that they fail to outline the specific interactions between these components. Patterson's model gives a concise, but limited, theory on the development of antisocial behavior. Given the variability in the response pattern of children participating in studies examining the effect of manipulating contingencies for antisocial behavior, it has been acknowledged that other organismic and environmental variables may not be accounted for by the current model (Snyder et al., 2003). In other words, additional factors may need to be included in the model to give a comprehensive account for the development of antisocial behaviors.

Proposed Model of Social Competence

An expanded model (White, 2005) which addresses the short-comings of above models conceptualizes social competence as consisting of a non-linear interacting triad of appropriate response repertoire, detection/discrimination of socially relevant stimuli, and motivation/reinforcement for social interaction (See Figure 1 at end of paper). This model contains a combination of sequential effects and non-sequential effects of the different hypothesized elements of social competence. Sequential effects are those processes that by virtue of their occurrence in time affect each other in a sequential manner to form a response chain. For example, it would be impossible for an individual to attend to a stimulus before it is present, thus the stimulus must occur before an individual can attend to it. Sequential effects can only have an impact at one particular level of the response chain. Non-sequential effects are those that do not have to occur in a particular order in time, and though they affect the response chain, are not directly a part of it. For example, social schema/expectations, though activated in a sequential manner by context (i.e., you do not have a set of expectations regarding events until you are exposed to a particular context) have non-sequential effects at multiple levels of the response chain (e.g., attention to stimulus, interpretation of stimulus, and interpretation of consequences).

Interactions occur in a context and have multiple sequential and non-sequential effects. Context encompasses cues associated with the individual's history of reinforcement in similar contexts, as well as prompts recall of rules and conventions related to appropriate behavior. Finally, it causes the individual to have particular expectations (social schema) about the nature and outcome of an upcoming interaction based upon their reinforcement history. A specific stimulus then will occur within this context and is responded to based upon the history of reinforcement related to that stimulus. The individual's attention to the stimulus in turn

affects the detection/discrimination of the stimulus. Once the stimulus has been detected/discriminated, the individual then interprets it, and selects which response to emit, if any. The individual can choose to respond in a manner that indicates a desire to approach or escape/avoid the social interaction, or he can choose to not respond at all. The verbal, nonverbal, and paralinguistic aspects of the individual's response are then detected/ discriminated by the communication partner. If the communication partner detects/discriminates them, they can be responded to as being an escape/avoidance-based response, an approach-based response, or a non- response. The communication partner then selects a response, again either no response, an escape/avoidance response, or an approach response. The verbal, nonverbal and paralinguistic aspects of the communication partner's response are then detected/discriminated by the individual. The individual's detection/discrimination of the consequences not only affects his reinforcement history, motivation and social schema of the event, but also becomes the stimulus for the next response.

Rules and conventions of the situation have effects at the level of the individual's response selection, as do social schema/expectations. Expectations also affect the individual's attention to, detection/discrimination of, and interpretation of the stimulus, as well as the response selection. Social schema/expectations can also affect the individual's detection/discrimination of the consequences of his response. For example, if a socially phobic individual expects that he will be evaluated in a negative manner in social situations, he may interpret ambiguous consequences as negative, therefore confirming his negative expectation.

Reinforcement history with the specific context and stimulus, the individual's goal in the interaction, and the potency or strength of the anticipated reinforcer, all have a cumulative effect on an individual's motivation. Motivation then in turn affects the individual's detection/discrimination of the stimulus and response selection. Motivational processes alone can have a significant impact on social competence. For example, an individual lacking in motivation may appear to lack social competence, but if given specific prompting and reinforcement, has the ability to behave appropriately. However, individuals lacking in skills and social judgment may be motivated to engage in social interactions, but perform poorly when they do so. Social skills and social judgment are foundational skills and are therefore necessary, but not sufficient components for social competence. The catalyst of social motivation is required for an individual in the unaltered natural environment to appear competent.

Accurately detecting/discriminating the stimulus allows the individual to identify which response is appropriate for the situation (Corrigan & Penn, 2001). However, there is an interaction between an individual's detection/discrimination of the situation and motivation to perform in that situation. If an individual is highly motivated to perform well, he or she will likely expend more effort in the detection/discrimination process (Klimoski & Donahue, 2000). His or her motivation will in turn be affected both by prior experience in similar situations, as well as the importance of attainment of the goal of the interaction. Additionally, an individual's detection/discrimination of the situation will be affected by "social schema" of similar situations (Newman, 2001). An individual's response choice will be affected by several factors including social motivation, social history and knowledge of social rules and conventions. After the individual has chosen and performed a response, future performance for that type of interaction will be altered depending on the feedback and reinforcement that is received from the communication partner.

It should also be noted that many of the factors within this model may be further broken down into component skills. Thus, though the model is more molecular than those proposed by McFall (1982) and Dodge (1985), it is not as molecular as the one proposed by Argyle and Kendon (1967). Social competence requires in part all of the aspects outlined previously, such as affect detection/discrimination, face recognition and detection/discrimination of non-verbal cues. Social response consists of non-verbal, verbal and paralinguistic responses. The items outlined in Figure 1 represent the necessary gross components, many of which may contain subparts.

As illustrated by the figure, an individual must possess a great amount of knowledge and skills in numerous areas in order to be socially competent, and the entire system could be disrupted by a deficit in any number of areas. While there has been some preliminary work examining the molecular components of individuals' behavior in specific social contexts (e.g., Conger & Conger, 1982; Conger & Farrell, 1982; Trower, 1980), the majority of the constructs outlined in this model have not been investigated. As such, the effect of a single deficit or combination of deficits cannot be predicted as this time.

Implications of the Proposed Model for Conceptualization of Specific Disorders

Just as appearing skilled in a social interaction requires a large amount of knowledge and performance across a number of different domains, individuals may appear unskilled if they lack or are deficient in one or several areas. For example, children with Attention Deficit Hyperactivity Disorder often appear to lack skill in social situations. Attentional deficits could interfere with performance at many levels of the model, including attention to the stimulus or detection/discrimination of response from the communication partner. Inaccurate attention to the original stimulus may result in a response that appears inappropriate to the stimulus and/or context. Additionally, if an individual has difficulty at the level of detection/discrimination of response from the communication partner, over time this deficit may also affect reinforcement history, motivation, goal of interaction, social schema/expectancies, rules/conventions, and/or reinforcer potency. Thus, even deficits which begin a one or two levels of the model, may affect other aspects of a social interaction if these deficits are present across an extended period of time.

Deficits in the area of socials skills are a defining characteristic of individuals with pervasive developmental disorders (American Psychiatric Association [APA], 2000). In the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) the diagnostic categories of Autistic Disorder, Asperger's Disorder, and Pervasive Developmental Disorder – not otherwise specified (PDD-NOS), all require that a child have persistent and pervasive deficits in social interaction (APA, 2000). Specifically, individuals with pervasive developmental disorders (PDD) have been found to have deficits in expressive gestures, maintaining eye contact, joint attention, and social responsiveness (Lord, 1990).   Children with PDD have also been found to have longer latency to initiate social behavior (Lord, 1990), have difficulty in understanding the rules governing social interaction (Wing, 1981), and be less responsive to the distress of others (Travis, Sigman, & Ruskin, 1999). Individuals with PDD also appear to have difficulty with social detection/discrimination tasks, particularly those related to affective content (Hobson & Lee, 1989). Thus, it appears that individuals with PDD have deficits at several levels of the model, including detection/discrimination of social stimuli, production of verbal and non-verbal behaviors, utilization of social history, and generation of rules/conventions. Additionally, they likely have deficits in social motivation. As such, individuals with ASD appear to have pervasive deficits across a number of areas of social competence (note: we will use the term ASD as descriptive rather than continue to use the specific diagnostic category of PDD).

Implications of the Proposed Model for Treatment Programs

Though a large amount of experimental work remains to validate aspects of the proposed model, it can minimally provide a framework for conceptualizing social skills intervention programs. As is evident from Figure 1, comprehensive social skills programming requires intervention across a variety of domains. Treatment outcome studies of social skills interventions or assertiveness training have often demonstrated failure of the generalization of these skills to novel situations (e.g., Bustillo, Lauriello, Horan, & Keith, 2001; Marder et al., 2001; Wallace et al., 1980). One potential reason is that most programs are restricted in their focus, e.g., teaching individuals verbal social skills while ignoring social judgment and nonverbal social skills. If an individual possesses skills, but is unable to detect the necessary stimuli that signal the appropriate use of those skills, he or she may not be socially skilled. Recent intervention programs with a broader focus, including

teaching social judgment have shown promising preliminary results in terms of efficacy and generalizability (Vallina-Fernandez et al., 2001; Wallace, Liberman, MacKain, Blackwell, & Eckman, 1992).

Application to ASD

Houck (1999) suggested that for otherwise 'typical' toddlers who have deficits in social competence continue to experience difficulties in social situations if intervention is not received. This serves as a useful anchor point of how important specific intervention is for individuals with ASD. For the 'typical' toddler age group, social competence includes prosocial behaviors, such as, initiating play, joining in, following rules, turn-taking, sharing toys, understandings others' feelings and having empathy. Within this type of context, social competence can be defined as a behavioral outcome related to a social situation wherein an individual exercises a choice in a social situation that is successful.

To have social competence, one must be autonomous in the initiation of social interactions, the decision-making process of making choices, the behavioral output, and also have appropriate self-regulation appropriate to the social situation. Given that social behavior permeates all facets of an individual's life, it is critical that individuals with ASD develop some level of social competence so that they can successfully participate in educational, social, family, community, and work activities. Most often, the social deficits in ASD prevent inclusion and result in exclusion. Therefore, social skills instruction should be incorporated into every aspect of a child's curriculum, yet is often observed to be a relatively small component in educational settings. Because teaching of social competence to individuals with ASD is extremely challenging and complex, it is perhaps not surprising that more is not typically done in school settings.

There is no "one way" to teach social skills that will produce meaningful social behavior that generalizes across contexts, scenarios, individuals, etc. We know that, as a group, individuals with ASD have difficulty generalizing skills across settings and unfortunately, social interactions and contexts are rarely the same. In order to teach functional skills, children need to learn how to respond appropriately despite variations in contexts, interactive styles, verbal content, etc. Creating multiple opportunities for practice is essential.

Our model emphasizes the importance of addressing social competence from a broad perspective and incorporates the many variables that influence the development of social competence, while being rigorously focused upon behavioral intervention and measurement.

Importance of Motivation

Social interactions tend not to be intrinsically reinforcing for children with ASD. Therefore, many opportunities need to be provided so that children can experience the rewards of successful social behavior (albeit no doubt of lesser magnitude than for typical children), and thus form a strong reinforcement history.

According to our social competence model, motivation is influenced by an individual's reinforcement history, the goal of an interaction, and a consequence's potential potency as a reinforcer. Motivation is also influenced by an individual's detection/discrimination of the consequences of past social interactions that can include a wide variety of variables, including context, the social stimulus (stimuli) itself, the presence of a response repertoire to produce a social behavior, the interpretation of the response from a communication partner, etc.

An individual's level of motivation will in turn influence attention to a stimulus in the environment, which affects the individual's response selection. Additionally, an individual's interpretation of a stimulus and response selection are also influenced by level of motivation. Therefore, without sufficient motivation, one can hypothesize that an individual may not have an opportunity to learn about, respond to, or interact with a social stimulus/event.

For children with ASD, level of motivation to engage in social interactions is typically low or absent compared to similar age peers. The literature base of "reinforcer preference" (sic) for children with ASD clearly indicates that preference for non-social stimuli can be easily assessed. (Note: the term reinforcer preference in this literature is more correctly phrased as assessing stimulus/stimuli for preference to then be used as a potential reinforcer. However, in keeping with the general use in the literature, we will use the common term "reinforcer preference").

Most researchers and practitioners agree that assessment of an individual's social skills, including level of social competence and motivation must take place in order to develop effective teaching strategies for an individual. A second, complementary process, is to consider the gap in the individual's chronological versus developmental age. Consideration of chronological age allows for the selection of age-appropriate skills, settings, and activities, which are generally accepted as an important anchor point to judge the appropriateness of goals and settings. Determining an individual's developmental age provides information about the level of social skills an individual may or may not have in the skill repertoire, relative to other areas of developmental delay. Consideration of both aspects of development are important in designing social skills interventions that will be effective, will generalize, and will have a positive impact on the individual's social competence. Assessment of skill level typically takes the form of a checklist, parent and/or child interview, behavior observation, ecological assessment, and/or baseline measures.

Intervention

As a guiding set of questions for our typical clinical social skills interventions (Gillis, Matey & Lockshin, 2004), we assess important areas that relate to an individual's reinforcement and motivation to respond in a social context, an individual's ability to identify a social situation or context (verbally or nonverbally), an individual's specific behavioral responses in social contexts, and an individual's perception of the social (or communication) partner's behavior in a social context.

Based upon these four primary elements of assessment and based on our model, we begin to pinpoint the components of a social skills intervention within the following areas:

I. Motivation and reinforcement
1) Is the individual aware of reinforcers (that is, preferred stimuli and events that the natural environment makes contingent on social behavior) in the environment?
2) If so, what types of reinforcers are preferred by the individual? This typically necessitates a reinforcer preference assessment.
    a) Primary (e.g., preferred food and drink)
    b) Symbolic (e.g., points, money, checkmarks, stickers)
    c) Tangible (e.g., toys, play breaks, stickers, cards, etc)
    d) Social (e.g., praise, smiles, etc)
    e) Physical stimulation (e.g., hugs, tickles, high fives, etc)
3) Given the information gathered by a reinforcer preference assessment, what types of reinforcers are available to the individual in social settings? (The purpose of this question is to determine the potential reinforcers in the teaching and natural environments.)
4) Can the individual correctly respond to social contexts where reinforcers are available?

II. Social awareness
5) Can the individual correctly respond to specific behavioral expectations for different social contexts?
6) Does the individual respond to basic social rules/conventions?
        For example:
    a) When do you approach an individual?

b) What type of behavior do you respond to socially?
c) What are the stimuli in the environment that may provide cues for identifying the social stimulus?
7) Does the individual attend to a social stimulus in the context/setting?
a) Does it appear that the individual requires more tangible motivation to attend to the social stimulus?
b) Does it appear that the individual requires a prompt to attend to the social stimulus?
8) Is the individual able to respond to different facial expressions?

III. Social behavior
9) Does the individual attend to the social stimulus, but not approach the stimulus?
10) Does the individual escape/avoid the social stimulus?
11) Does the individual ever approach the social stimulus and respond?
12) If so, is the individual's response appropriate or inappropriate?
13) And, what type of response does the individual provide?
a) Paralinguistic
b) Verbal
c) Nonverbal

IV. Social perception
14) What is the response of the communication partner to the individual?
15) If an individual is approached or escaped/avoided by a communication partner, how does he respond to the response/lack of response of the communication partner?
16) Is the response of the communication partner acted upon:
a) As no response
b) As escape or avoidance
c) As approach
d) The individual does not discriminate responses from the communication partner
17) Does the individual detect/discriminate the consequences of the social interaction as:
a) Positive
b) Negative
c) The individual does not detect the consequence of a social interaction.

Utilization of our model of social competence allows us to create not only task analyses of important social skills, but also to be highly sensitive to situational contexts and the multiple domains of behavior of the social partner that must become discriminative stimuli for the child with ASD.

The top of the social competence model begins with context. The context in which we interact with others influence our social behavior in many ways. For example, one's social behavior may differ in a familiar setting (such as in one's own home with family members) as compared to a novel setting (such as meeting new classmates at the beginning of a school year). One of the striking deficits in children with ASD is their difficulty in generalizing skills learned to different contexts. Additionally, individuals with ASD have difficulty learning how to slight change a social behavior given the context, such as greeting friends compared to greeting a police officer. The underlying social skill is greeting, however, due to the number of different possible contexts, the skill of greeting multiplies in complexity. Teaching a social skill in its natural context is helpful to assist with generalization of such skill. Given that a social skill may vary depending on the context, individuals with ASD sometimes need to be taught in multiple contexts these skills. However, sometimes teaching a skill in its natural context may be contraindicated because the individual requires acquisition of other pre-requisite skills. In these instances, a one-to-one teaching setting may be recommended in order to teach pre-requisite skills, refine a social skill, or learn a different skill that is causing difficulty with learning the social skill. Even though a one-to-one teaching setting may be very effective in learning specific skills, these skills are in a very specific context; the individual with ASD may be able to perform the social skill, but only with the adult teacher

or adults in general, which may make generalization to peers and others difficult. Additionally, the individual may have limited access to peer modeling of the social skill in a one-to-one setting.

In order to maximize our resources, and acknowledge that a child's intervention program has many components in addition to teaching social competence, we use the following table to assist us in establishing priorities. We fill in the cells with a ranking of high, medium, or low priority, while taking into account the child's typical acquisition pattern. We divide our "social skills groups" based on functional level of social competence (early, basic, intermediate, and advanced).

Group	Areas of Social Competence Model Addressed						
	Context	Attention to Social Stimuli	Evaluation of Stimuli as Social	Response Selection	Evaluation by Communication Partner	Response from Communication Partner	Evaluation of Consequences
Early							
Basic							
Intermediate							
Advanced							

Based on these priorities, we cluster children into functional sub-groups within the four primary groups (Gillis, Matey, & Lockshin, 2004).

Factors and characteristics of each group
Early Social Skills Group
- No more than 3 children for the majority of the group activities; larger group activities for short periods of time.
- Typically, very limited language and communication skills
- Typically, aggression that has the potential to put other children at risk in a typical play or social setting
- Typically, limited isolate play skills

Basic Social Skills Group
- Typically, most children have the ability to communicate basic wants/needs either verbally or nonverbally with minimal prompting.
- Typically, children have the ability to follow simple directions given via verbal gestural/sign language with 50% accuracy.
- Typically, low frequency and intensity of aggressive behavior
- Typically, children have the ability to tolerate physical prompting without becoming upset between 50-60% of the time.
- Most children in the group respond to contingencies for aggressive or disruptive behaviors.
- Some ability to transition from one activity to another without difficulty
- Typically children require immediate reinforcement and/or high density of reinforcement for appropriate social interactions.
- Typically, children have the ability to remain in seat/work area for approximately 60% of the time.

Intermediate
- Typically, fairly well-developed verbal repertoire even though language (verbal/nonverbal) may not be used socially.
- Ability to follow simple directions given via verbal gestural/sign language
- Occasional aggressive behavior under when duress.

- With minor exceptions, most children respond appropriately with verbal prompts only and re-specification of contingencies.
- Typically, able to demonstrate understanding of contingencies.
- Typically children demonstrate the ability to delay gratification and/or manage behavior with the aid of symbolic reinforcers.
- Generally able to transition from one activity to another without major upset.
- Ability to remain in seat or in work area for majority of scheduled session.

Advanced Group
- Typically, fairly well-developed verbal repertoire.
- Ability to follow simple and complex directions.
- Typically, infrequent aggressive behavior(s).
- Typically, children respond appropriately to verbal prompts to change inappropriate behavior, with minimal use of contingencies.
- Typically, able to demonstrate understanding of contingencies.
- Typically children demonstrate the ability to delay gratification and/or manage behavior with the aid of symbolic reinforcers.
- Generally able to transition from one activity to another without major upset.
- Ability to remain in seat or in work area for majority of scheduled session.
- Typically able to follow rules provided for different social situations.

Some examples of intervention strategies

In addition to specific social skills groups, a few of which were described above, we also address the development of social competence throughout the school day in classroom activities and instructional time. For example, most classrooms conduct "Circle Time" where a number of activities such as reading, singing, discussing the weather and days of the week, etc are provided to enhance social interactions. Another example is the emphasis of social skills taught within the physical education classes. Even though gross and fine motor skills as well as learning different athletic skills are goals, the social skills that are associated with these types of activities are emphasized as complementary goals. For instance, when learning toss and catch skills, these might be taught within the context of playing "Hot Potato", which is a social game that requires social skills such as eye contact, affect display, good sportsmanship, etc.

As part of our program, in addition to the above specific socials skills groups, we have created a component we call the "Buddy Group" (Romanczyk, Lockshin, Matey, & Gillis, 2005). Because it has been our experience that children with social skill deficits may possess the range of vocabulary and specific play skills that are required for social integration, yet still have problems because they use these skills in a rigid, rote, or atypical manner that results in poor acceptance by typically developing peers, we developed a specialized setting to address this problem.

The Buddy Group is an after school setting that pairs similar aged middle and high school students with children with social skill deficits. The primary emphasis of the program is to work with these children to expand their social skills, and encourage them to use these skills in a manner that advances friendship formation.

The Buddy Group is conducted as an after school program to give us more flexibility outside the normal school-day constraints. A guiding principle of the program is to provide multiple exemplars and multiple settings with repetitive practice examples to enhance social skills using systematic behavioral procedures. Explicitly, the middle and high school students are not utilized as 'junior therapists', but rather maintain typical peer roles. The types of activities chosen are ones that are preferred by similar aged peers in order to maximize generalization and these activities are used to facilitate the social skills being addressed.

Activities include playing board games, creative play (e.g., art-related activities), gross motor group games (e.g., bowling, tennis, dance, etc), putting on plays, hosting parties, and attending various community events.

Another group we have developed is one that focuses on social skills development for young children with Asperger's Disorder. Even though there are similarities within autism spectrum disorders with respect to social development, children with Aspergers disorder present additional complex characteristics. This group is a focused, ten-session after school program. Within each group meeting, a designated subset of basic skills are reviewed, rehearsed, and role-played within the instructional portion of the session. Each session also contains a segment that provides the children with the opportunity to practice the skills learned within the context of age-appropriate social activities (i.e., games, projects, sports). To assist with generalization of skills, parent participation is also an important component to this group. Parents help their children complete homework assignments and learn how to coach appropriate social interactions. In order to provide motivation for the children to attend and participate in the instruction and group activities and to manage disruptive behaviors a point system is utilized throughout the ten sessions. Emphasis is placed upon providing learning opportunities in various contexts and with multiple social partners to reduce rigidity of responding.

Consideration of family needs and goals in the area of social development is also a significant part of our educational program. A strategy used is to provide parents and siblings with specific intervention programs to enhance social competence in the home and community environment. For example, often there is "competition" among family members for attention and interaction with each other, and particularly for siblings, with parents. To assist a family in addressing this, it is necessary to involve each family member and recognize that specific skills may need to be taught to individuals in addition to the child with ASD. These are complex social skills and thus, we typically address first address in the school setting the specific skills needed by the child with ASD. Then begins generalization to the home setting with the teaching of specific skills to family members.

Additionally, care is taken to teach social skills that may not be typically taught within the school setting or practiced in the home setting, but are nevertheless valued social skills for the family. For example, attending a movie can be challenging for families with children with ASD, as the child with ASD is required to sit in the dark, among strangers, for a long duration, attend, and may be expected to react to or be able to comment about the movie, including sharing his/her favorite part of the movie. Within our school setting, we have created an analog "movie theatre" with the same general proportions as a typical "movieplex" theatre. It emulates the lighting conditions, sound level, image size, and seating arrangements found in a movie theatre (because we have control over these variables, we are also able to address specific anxiety responses for children who react negatively to this setting via behavioral desensitization procedures). Children learn how to purchase movie tickets and concessions, the social rules and behavioral demands required in the movie setting, specific vocabulary related to watching movies appropriate to their age-group, and how to comment and share information about the movie. When necessary, token economies or behavioral contingency plans are implemented to assist children with maintaining appropriate behavior.

The Challenge

Interventions, such as the above few examples, can be a crucial component in improving the quality of life for the family and child with ASD (Lockshin, Gillis, & Romanczyk, 2005). Building social competence, arguably the most difficult area of intervention for ASD, requires not only a comprehensive assessment of social deficits but also a comprehensive approach to intervention. Ideally, well-designed intervention programs would also include behavioral cusps (Bosch & Hixson, 2004). Behavioral cusps are behaviors that: result in access to new reinforcers, contingencies, and environments; are socially valid; allow for the generation of a wide number of behaviors; compete with inappropriate responses; and/or affect a large number of people (Bosch & Hixson, 2004). Interventions that include behavioral cusps are thought to be more efficient and effective as they presumably allow for acquisition of skills without direct teaching. It is essential that one adopt

a strong behavioral, molecular framework of skill building, but simultaneously also adopt a framework of ecological complexity.

Utilization and refinement of comprehensive social competence models, through application and research, will assist in making substantial progress in our ability to provide effective services. However, with respect to applied/clinical intervention for children with ASD, especially for such complex and broad areas of development such as social development, research will always lag practice. This is inevitable as the number of variables contained in any given comprehensive intervention (behavioral or non-behavioral), are such that specific research on each component, with respect to efficacy, sequence effect, and synergy and attenuation of various permutations of combinations of components. Such research must then be evaluated in both an efficiency context as well as a risk benefit analysis. Clearly the full scope and complexity of such parametric research presents ethical and pragmatic constraints with respect to cost benefit that will preclude such comprehensive research on individual models and treatment packages. This does not mean however that "All have won and all must have prizes". Every model presented must be scrutinized with respect to it's research underpinnings, rationale, and support for the components and perhaps most importantly, evidence of effectiveness. The effective 'marketing' of a model is not synonymous with effectiveness of the model.

There are a number of pressing significant issues that both researchers and clinicians can to address that are both important and cost beneficial, such as direct comparisons of intervention 'packages', developing more comprehensive and sensitive assessment tools, paying greater attention to reactions of the social partner, acknowledgement that social competence is not a static set of skills, and that generalization is not simply an extension of a specific behavior or skill across settings. Generalization to achieve social competence requires complex selections of behaviors from a substantial repertoire. Given that poor social competence is a core deficit in children with ASD, continued research in the area of social competence is critical to improving the quality of life for children with ASD.

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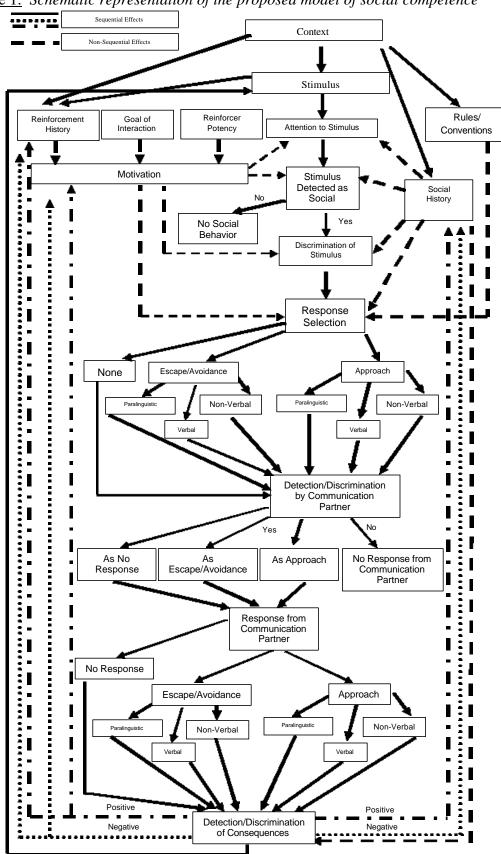E-mail: **rromanc@binghamton.edu**

Figure 1, Next Page

Figure 1. *Schematic representation of the proposed model of social competence*