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# Testing the Situationally Modified Social Rank Theory on Friendship Quality in Male Youth with High-Functioning Autism Spectrum Disorder

I-Tsun Chiang, Younghill Lee, Georgia Frey, and Bryan McCormick

This study examined the impact of a situationally modified social rank (SMSR) based intervention on friendship quality of boys with high-functioning autistic spectrum disorders (HFASDs). Six male youth ages 10-14 years with HFASDs and their mothers, and six typically developing age/gender matched peers participated. Youth with HFASDs were trained to use a popular videogame for 3-6 weeks. After the training period, they taught peers without HFASDs to play the game. All participants completed pre- and post-intervention interviews that addressed social situations and intervention outcomes. Youth also completed friendship questionnaires pre- and post-intervention. The findings suggest that the SMSR based intervention improved some components of friendship quality, peer recognition through physical competence, and social expectations among participants.

**KEY WORDS:** *Autism Spectrum Disorders, Social Rank Theory, Situationally Modified Social Rank, Friendship*

Autism spectrum disorders (ASDs) are becoming one of the most common developmental disabilities in the United States (National Information Center for Children and Youth

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with Disabilities, 2003). The condition is characterized by deficits in communication, social interaction, and behavior (American Psychiatric Association, 1994), which typically lead to difficulties developing social relationships and reciprocal social interactions (Strain & Schwartz, 2001). Recent research indicates that youth with high functioning ASDs (HFASDs) express interest in social relationships, but lack skills and experiences in social initiation and social-emotional understanding that ultimately interfere with development of peer friendships (Bauminger, 2002). This has been supported by personal accounts of friendship difficulties reported by individuals with HFASDs:

"Why don't I know to follow groups outside of class? I noticed that we all got along and at first I went off to lunch with groups from my class who made me feel included. Then they seemed to drift off without me. . . . I don't understand the cues and get left out. . . . I want to make *real* friendships and it hurts that I can't get past step one (Williams, 1994, pp. 78-79)."

Children's friendships play an important role in promoting social development and adjustment (Parker & Asher, 1987). However, the lack of optimal peer relationships may result in social isolation, where children are actively rejected, socially withdrawn or neglected by peers (Rubin, 1985). Bauminger and Kasari (2000) specifically explored perceptions of loneliness and friendship in youth with HFASDs and reported that these individuals felt lonelier and expressed poorer friendship quality than typically developing youth.

Efforts to improve friendship quality for youth with HFASDs have focused on social skills training. Siegel, Goldstein, and Minshew (1996) maintain that social interventions for youth with HFASDs should focus on social skills training such as recognizing, understanding and responding to social cues. The majority of social interventions have incorpo-

rated these areas, with mixed success (Bauminger, 2002; Morrison, Kamps, Garcia, & Parker, 2001). Peer-mediated interventions are one of the most commonly used formats to implement social skills training (McConnell, 2002; Rogers, 2000). In peer-mediated interventions, involvement in activities with typically developing peers is a key component in maximizing successful social outcomes (Haring & Breen, 1992; Simpson, Myles, Sasso, & Kamps, 1997). However, peer-mediated interventions are often criticized due to: (a) reinforcement of hierarchical roles such as "giver" (trained peer) and "receiver" (youth with HFASDs); (b) failure to use natural social cues; and (c) the false impression that normal peer friendships are promoted (McConnell, Whitaker, Barratt, Joy, Potter & Thomas, 1998). Traditional peer-mediated, social skills training may help youth with HFASDs function more appropriately among peers, but it does not appear to improve friendship quality. That is, understanding the mechanics of social interactions does not necessarily lead to better peer relationships.

### **Social Rank Theory**

The lack of a theoretical foundation may partially explain the reported shortcomings of peer-mediated, social skills training interventions. Shank, Coyle, Boyd, and Kinney (1996) cautioned that the failure to incorporate theories into health-related research creates a gap in building outcomes and Austin (1999) noted that theories help understand clinical reality. Dunn (1993) further suggested that theoretically grounded research increases validity of the knowledge base.

To function successfully in peer relationships, interventions should be sensitized to age-related social dynamics. Social rank theory provides a theoretical framework from which to develop a peer-mediated intervention to improve social relationships of youth with HFASDs. Social rank theory was initially used to describe group living animal behavior, but it also applies to human social engagement. The

theory stipulates that social ranks among animals living in groups and human society maintain hierarchical organization that allow access to significant resources, such as food, territory, and sexual opportunities from an evolutionary view (Gilbert, 1992; Gilbert, Allan, Brough, Melley, & Miles, 2002). All human groups organize themselves in hierarchies and an average individual belongs to multiple hierarchies that often involve different skills. Hierarchies or social ranks are created as one dominates others with skills and powers. Those who have a particular talent or skill are given the opportunity to exercise their power for the benefit of the group (Sloman, Atkinson, Milligan, & Liotti, 2002).

Throughout their school careers, youth construct their identities and status through interactions with peers (Farmer, 2000), and school is a challenging social setting with clear hierarchies (Macintyre & West, 1991). Even as early as preschool, students develop social structures of distinct peer groups and are selective in their peer affiliations (Snyder, Horsch, & Childs, 1997). Such selectivity is sustained across the school years as youth create and modify their identities, behaviors, and values through peer associations and social roles (Cairns & Cairns, 1994). Social hierarchies particularly emerge as some individuals and peer groups have greater social prominence and power than others (Adler & Adler, 1996; Cairns & Cairns). In school settings, children who are "popular" or "cool" are typically composed of athletes, cheerleaders, members of the student government, and their friends (Adler & Adler).

Researchers argue that the social status of students with disabilities integrated into mainstream classes may be lower than the social status of students without disabilities (Pearl, et al., 1998; Taylor, Asher, & Williams, 1987; Vaughn, Elbaum, & Schumm, 1996). Negative labels such as unlovable, worthless, bad, inadequate, and useless are assignments of status that locate the individual in a low rank position (Sloman, Price, Gilbert, & Gardner, 1994). Low social ranks lead to de-escalating strate-

gies which include low self-esteem, avoidance, submissive behavior, self-isolation, involuntary subordinate self-perception, feelings of shame, and depression (Gilbert & Allan, 1998). According to this theory, children with HFASDs tend to experience a low social rank because they may be perceived to be incompetent and thus negatively labeled. This leads to development of de-escalating strategies that might interfere with the ability to recognize, understand, and process social cues, or develop relationships.

To date, it appears that modifying the social rank of children with HFASDs as a method of affecting social relationships has not been attempted. Social rank theory implies that improved social status might positively influence peer relationships. Social rank can be altered through acquisition of certain skills that are valued by youth culture. Goldberg and Chandler (1992) identified physical competence as a significant factor in social status among male youth society. Smith (2003) proposed that social interventions that incorporate physical activity are a valuable approach to enhancing the quality of peer relationships. Therefore, physical activity could be used to modify social ranks between youth with and without HFASDs. If youth with HFASDs can demonstrate a level of competence comparable to peers in a socially valued physical activity, social rank may be modified and the status of youth with HFASDs would theoretically improve. As a result, self-perceptions of certain social variables such as friendship quality held by this group may improve.

### ***Purpose Statement and Research Hypothesis***

The purpose of this study was to examine whether a situationally modified social rank (SMSR), created through a game that requires physical competence, influenced perceptions of friendship quality in boys with ASDs. It was hypothesized that the SMSR intervention would have a positive impact on friendship quality in the target population.

## Methods

The use of mixed research methods enhances the validity of research findings (Dootson, 1995; Mathison, 1988), aids in elimination of subjective bias, allows the dismissal of plausible rival explanations (Mathison; Denzin, 1970), and maximizes confidence in data and results (Dootson; Kvale, 1996; Morse, 1991). This study employed both quantitative (questionnaire) and qualitative methods (i.e., semi-structured interviewing, informal conversations, and observation) in an attempt to comprehensively evaluate the treatment effect.

### Participants

Six male youth diagnosed with HFASDs ages 10–14 years, and their mothers volunteered to participate. Several were referred by the director of a campus-based activity program for youth with disabilities, and recruited through direct contact. The project was also announced and described in detail during local autism support group meetings. Potential participants were advised of the time requirement and inclusion criteria for involvement in the study. The resulting participant number reflects those capable of both meeting the project time commitment to the project and identifying a peer partner.

Participants were diagnosed with Pervasive

Developmental Disorder or Asperger's syndrome, and received special educational services under the category of Autism. Five were included in regular classes and one was home schooled by his mother who was a teacher. All were intellectually average and capable of reciprocal conversation, according to parent reports and personal interactions. They were also free from (a) aggressive or self-stimulating behaviors and (b) physical or sensory disabilities that could interfere with the ability to participate in the intervention. Six age and gender matched peers without HFASDs were identified as friends by participants with HFASDs, and recruited via direct contact. The identified friends were mostly neighbors or school acquaintances and the extent these friendships were limited. Specifically, they did not voluntarily socialize on a regular basis, as confirmed by parents and peers. All participants signed informed consent documents previously approved by the university human subjects review board. Pseudonyms are used to represent participants and characteristics are presented in Table 1.

### *Independent Variable: Situationally Modified Social Rank (SMSR)*

In order to create a SMSR situation, youth with ASDs were trained to be proficient in playing Dance Dance Revolution® (DDR), a

Table 1.  
Participants' Characteristics

Case Number	Youth with ASDs		Youth without ASDs	
	Pseudonyms	Age (Years: Months)	Pseudonyms	Age (Years: Months)
Case 1	Adam	10: 7	Alan	11: 0
Case 2	Brent	13: 0	Bruce	13: 2
Case 3	Calvin	14: 2	Charles	14: 8
Case 4	Dale	13: 11	Dennis	13: 0
Case 5	Eric	10: 4	Evan	10: 9
Case 6	Frank	10: 5	Floyd	10: 6

physical activity videogame (a product of PlayStation®, Sony Computer Entertainment Inc.). The DDR® was chosen because it involves both video-technology and physical activity, and is extremely popular among youth culture (Tran, 2000). The game has also been used as social skills intervention modality for youth with ASD (Brobst, 2002; Thomas, 2003). The game displays four directive signs (front, back, right, and left) in sequences on a television screen in conjunction with popular music. Players compete against the machine or another player by matching these signs while stepping in the corresponding directions on a floor dance pad. Players receive scores according to how well they match the dance steps in a certain time. Advanced levels of performance involve more complex dance steps, rhythms, and timeframes. There are both an arcade and home version of the game, and the home version was used in this study.

Participants with HFASDs were trained to use the DDR® twice a week for three to six weeks, depending on participant progress and scheduling. All sessions were conducted in an open space (17 × 10 ft.) of a university office after school. A TV-VCR set and PlayStation® (Sony Computer Entertainment Inc.) console were placed in a cart and two dance pads were on the floor in the room. There was sufficient room to be active during the game. Three standardized lessons were developed by the software manufacturer. Each lesson consisted of 8 sections, which included seven 1.5-minute sections and one 2-minute review section. Players had to pass the first seven sections to be able to take the final review section, which included movements of the previous seven sections.

When players completed three review sections (one for each standardized lesson), they completed the whole lesson sequence. The program evaluated player performances and gave "crown" icons in front of the section title, indicating that the players had passed or "checkmark" icons, indicating that the players had played the section, but had not passed. When players passed these lessons, they could

usually pass games in beginner mode and also some games in normal mode. Each lesson required approximately 10 to 15 minutes to complete without mistakes. All three lessons could be completed in 30–45 minutes, provided there were no mistakes. After completing the three lessons, participants were taught to operate the software (e.g., select the main game, couple mode, music, and difficulty levels) and install dance pads. Training sessions were ended when participants were able to operate the game in dual mode and play with a researcher. All training sessions were conducted by the first author who provided additional cues and instructions as needed.

After passing the software default training lessons, participants practiced teaching the game to the first author. Once they demonstrated sufficient teaching skills, each participant identified a peer to participate in the intervention. The peer and his parents were contacted and provided verification that he had never played or had very limited skills in DDR®. Once this was established the peer was invited to play the game. During peer interaction sessions, youth with ASDs took the lead and taught peers without ASDs to play the videogame, using the skills they had gained during the training protocol. Additional assistance from a researcher was provided as needed and field notes were kept during these sessions. Peer interaction sessions were conducted twice a week for two weeks and took approximately 30 minutes to complete.

### *Quantitative Measure*

*Friendship Quality.* Friendship quality was assessed pre- and post-intervention using the Friendship Qualities Scale (FQS) (Bukowski, Hoza & Boivin, 1994). The FQS is a standardized self-report that contains 23 items rated on a 5-point scale from "not true at all" (1) to "very true" (5). These questions reflect five friendship quality categories: companionship (4 items), security-intimacy and trust (5 items), closeness (5 items), help (5 items), and conflict (4 items). The internal reliability is

between  $\alpha = .71-.86$  for all subscales, but no validity scores have been reported (Bukowski et al., 1994). The instrument was originally designed to assess feelings toward a "best" friend, but since study participants did not necessarily view one another as "best" friends, the FQS language was slightly revised so that "my friend" referred to study participants. This approach was necessary to evaluate reciprocal friendship quality in the study dyads.

Verbal assistance was provided to facilitate participant understanding of the instrument during the pre- and post-intervention survey administration, as needed. Participants with and without HFASDs completed the FQS before and immediately after the peer interaction part of the intervention.

### *Qualitative Assessments*

All interviews were conducted by one researcher. Trust was established with participants with HFASDs and their mothers through: (a) one-on-one instruction during the training sessions; and (b) spending extended time with participants outside the intervention (e.g., local youth basketball games, local autism parent support group, community activities). This level of rapport between participants and the researcher allowed comfort in sharing feelings and providing feedback.

*Interviews.* Interviews were only conducted with mothers, who self-identified as primary care givers. Semi-structured interviews were gathered pre- and post-intervention and continued for approximately 30–60 minutes. Pre-intervention questions related to the child's social behaviors, friendships, other peer relationship, and demographics. Post-intervention questions focused on feedback and observations regarding the effectiveness of the intervention. Parent interviews were conducted in public settings identified as comfortable to them, such as bookstores or school offices. Interviews typically started with ice breakers such as "does your child like video-games?" and developed into other general questions such as "tell me about your child's

friends." These broad "tour" questions generated responses from which to prompt and with which to generate further questions concerning the social experiences of youth with HFASDs.

All youth were asked to complete informal pre- and post-intervention interviews after questionnaires were completed. Questions probed reciprocal relationships, self-perceptions, and how they felt about answers to certain survey questions (e.g., I have nobody to talk to in class). Since youth with HFASDs were often not able to sit and directly converse for more than 10 minutes, questions and probes regarding social perceptions were conducted during the training sessions and other interaction periods. These interactions were recorded in field notes, which supplemented the youth participant formal interviews. All interviews were audio-taped and transcribed for subsequent analysis.

*Observation and Informal Conversations.* Observational data (e.g., participant performance, interactions, and behaviors) and informal conversations (e.g., parent conversation, peer communications) that occurred between the first author, youth, and parents, and between youth with and without HFASDs were collected via written documentation before and after each intervention session. Member checks and peer debriefing were used to support trustworthiness of the data.

### *Data Analysis*

Qualitative information was processed using the QSR N6 (QSR International, Melbourne, Australia), a code-and-retrieve computer software program, which assisted with the processes of constant comparison, such as coding, sorting, organizing, and comparing data (Froggatt, 2001b; Strauss & Corbin, 1990). The process of coding generated major themes and subsequent meanings associated with each emergent theme. Descriptive statistics (i.e., means and SD) were used to examine the dependent measures. Unpaired and paired data from the questionnaires were analyzed using Mann-Whitney U and Wilcoxon signed

ranks tests, respectively. Data were analyzed using SPSS (Statistical Package for the Social Sciences, Inc., Chicago) and significance was set at  $p < .05$ .

## Results

Youth with HFASDs reported significant improvements in companionship ( $z = -1.90$ ,  $p = .03$ ) and help ( $z = -2.02$ ,  $p = .02$ ) subscales. Peers without HFASDs demonstrated improvements in both companionship ( $z = -2.04$ ,  $p = .02$ ) and closeness ( $n = -2.23$ ,  $p = .01$ ) following the intervention (Tables 2-3). There were no statistically significant differences in FQS scores between groups pre- or post-intervention except perception of security ( $z = -1.77$ ,  $p = .04$ ) in pre-test. Youth without HFASDs rated higher level of security during the pre-test.

Results from the FQS were supported by parent and participant interviews, informal conversations, and observations. Several specific themes emerged: (a) improved companionship, (b) improved peer recognition through physical competence, and (c) improved social and physical expectations.

*Improved companionship.* Perceptions of companionship in friendship improved in both groups following intervention. Several youth without HFASDs (i.e., Alan, Bruce, Charles, and Floyd) went over to the houses of their matched peers with HFASDs following the intervention. These were child initiated interactions. According to parents' reports, Dale and Dennis went out together on weekends following the intervention and shared their experiences and interests in other areas (videogames, martial arts, and other games).

**Table 2.**  
A Summary of Between Group Tests for the Dependent Measures

Variables	Mean and SD		Mann-Whiney	
	Youth with ASDs Group (N = 6)	Youth without ASDs Group (N = 6)	z values	p
Friendship Quality				
Companionship				
Pre-test	2.92 ± .80	2.79 ± .75	-.32	.41
Post-test	3.46 ± .58	3.21 ± .77	-.57	.29
Conflict				
Pre-test	1.71 ± 1.14	2.04 ± .70	-1.30	.12
Post-test	2.04 ± .70	2.17 ± .61	-.49	.35
Help				
Pre-test	3.06 ± 1.18	3.60 ± .84	-.80	.25
Post-test	4.22 ± .88	3.79 ± .85	-.80	.25
Security				
Pre-test	2.69 ± .57	3.25 ± .45	-1.76	.04*
Post-test	2.96 ± .45	3.43 ± .72	-.96	.18
Closeness				
Pre-test	3.81 ± .92	3.90 ± .60	-.40	.35
Post-test	4.06 ± .44	4.19 ± .69	-.48	.35

\* Significant at .05 level.

**Table 3.**  
**A Summary of Within Group Tests for the Dependent Measures**

Variables	Mean and SD		Mann-Whiney	
	Pre-test (N = 6)	Post-test (N = 6)	z values	p
Friendship Quality				
Companionship				
Youth with ASDs	2.92 ± .80	3.46 ± .58	-1.90	.03*
Youth without ASDs	2.79 ± .75	3.21 ± .77	-2.04	.02*
Conflict				
Youth with ASDs	1.71 ± 1.14	2.04 ± .70	-1.22	.11
Youth without ASDs	2.04 ± .70	2.17 ± .61	-.55	.29
Help				
Youth with ASDs	3.06 ± 1.18	4.22 ± .88	-2.02	.02*
Youth without ASDs	3.60 ± .84	3.79 ± .85	-1.24	.11
Security				
Youth with ASDs	2.69 ± .57	2.96 ± .45	-1.47	.07
Youth without ASDs	3.25 ± .45	3.43 ± .72	-.95	.17
Closeness				
Youth with ASDs	3.81 ± .92	4.06 ± .44	-.210	.41
Youth without ASDs	3.90 ± .60	4.19 ± .69	-2.23	.01*

\* Significant at .05 level (one tailed).

Through these additional experiences, peers knew more about youth with HFASDs in this study and became more willing to spend free time with them. Peers without HFASDs also began to appreciate the talents of those with HFASDs. For example, Alan said, "He [Adam] taught me how to pass several [video] games. He is awesome! We had a good time." Also, Dennis and Dale described their experience after playing other videogames in the local arcade. Dennis was very excited and said, "Oh, man. I wish you [the first author] could be there. That was so fun!" and Dale said, "Yes, you [researcher] should have been there!"

Observations indicated that SMSR intervention improved processing and responses to social cues in youth with HFASDs to some extent. Two specific examples were observed during the interaction phase. First, in the be-

ginning of the interaction phase youth with HFASDs guided their peers to complete the lessons. During this time, they did not respond well to their peers' requests (e.g., level selection) and always chose what they wanted to do (e.g., "No, you cannot skip this lesson"). However, because of their high competence in the game, they were in "legitimate" positions to expect peers to follow their instructions, so this was viewed as an appropriate response. Most instructors expect learners to follow lessons as planned. Peers could have accepted these responses for two reasons: (a) they respected the high level of physical competence and expertise of youth with HFASDs in the DDR® or (b) they were being polite. When Eric was teaching Evan, Evan requested that they play a different game than Eric had planned. Eric rejected the request with no explanation and Evan said, "Okay, you are the

boss." If Evan did not respect Eric's authority in teaching the game, he may have been reluctant to continue playing or he may have been unwilling to engage Eric in an argument in front of the researcher.

Second, after peers completed lessons, youth with HFASDs provided options for peers to choose games at the end of the interaction phase where they received and responded to social cues (e.g., I would like to play this game/song, I want to select this character) properly by complying with peer requests. Accommodation of peer choices was not simply a scripted behavior and youth with HFASDs were able to understand peers' preferences. For example, Dale wrote the first author a thank-you card following completion of the study. He wrote, "I have learned how to be a good teacher and know what students want." This response could be interpreted two ways: (a) Dale became more aware of the mechanics of being a teacher or mentor, rather than an equal peer, or (b) he actually learned to acknowledge what others want, which is a precursor for developing friendship reciprocity. Both interpretations suggest that he became more cognizant of the wants and needs of other individuals.

*Improved peer recognition through physical competence.* Data from interviews suggested that SMSR improved the self- and external perceptions of competence in youth with HFASDs in this study. Evan, said, "I did not know he [Eric who has ASD] is that coordinated! If the kids see it at school, they would lose their jaws like this [opening his mouse and acting shocked], and spend two hours to put them back!" In addition, several weeks after the intervention Adam's mother reported that he had recently started to play basketball with his peers during recess. This was a significant development for two reasons: (a) his peers were including him in the game and choosing him as a team member; and (b) he was engaging in activities during a time period that he previously dreaded. Observation also indicated another surprising outcome in that he displayed his dance abilities for several peers

and adults at a camp fire night. She said, "When I asked him how he did it, he told me that he just did the dance steps in DDR®!"

*Improved social and physical expectations.* Parents reported higher expectations of their children's abilities following the SMSR experience. Calvin's mother said, "Through the experience with DDR®, I learned that Calvin is capable of several things that I didn't realize." Frank's mother also stated, "I feel more confident in myself to have Frank invite other boys over to play. . . I felt uneasy before DDR® because I thought Frank might fail in making and keeping friends."

Peers developed higher physical expectations toward youth with HFASDs following the intervention. Charles, who was also a peer helper for Calvin in local martial arts club, said, ". . . now I know he [Calvin] is capable to more things . . . he can be more precise and do these kicks and stuff . . . because I know he is capable of it." Youth with HFASDs also appeared to have higher self-expectations of physical competence, even though it was not directly expressed. Youth with HFASDs often avoid physical activities because of clumsiness and low success rates in this area (Weimer, Schatz, Lincoln, Ballantyne, & Trauner, 2001), but participants in this study had a strong desire to teach their peers and were motivated to excel in the game, as evidenced by the zero attrition rate. Two parents even purchased a DDR® after the intervention because it was one of the few physical activities in which their children experienced both confidence and enjoyment.

## Discussion

The hypothesis that an SMSR based intervention would improve perceptions of friendship qualities in youth with HFASDs was partially supported. Data from the FQS demonstrated positive changes in the companionship and help, and companionship and closeness subscales among youth with and without HFASDs, respectively. Findings from the qualitative analysis further revealed improved

friendship quality as demonstrated by improved companionship, peer recognition and social expectations between youth with and without HFASDs.

Bauminger and Kasari (2000) reported that youth with HFASDs had poorer ratings of companionship and help friendship qualities than peers. This was not observed in the current study. In fact, there were no group differences on all five subscales pre-intervention or post intervention. It was interesting to note that both youth with and without HFASDs improved perceptions of companionship toward each other after the intervention. The SMSR provided a structure for these changes to occur, but Duck (1994) explains the possible mechanism of improved companionship among participants. He pointed out that there are four necessary processes to developing meaningful relationships: (a) *commonality of experience*, (b) *mutuality*, (c) *equivalence of evaluation*, and (d) *sharing of meaning*. Youth with and without HFASDs should already possess some commonality of experience (e.g., school projects, games) and mutuality (e.g., interaction in classes or neighborhoods) in their past experiences. However, they might not have an opportunity to reach equivalence of evaluation because of their existing segregated social ranks. The SMSR created an opportunity to access equivalence of evaluation because peers without HFASDs did not observe what was likely expected, specifically a traditional lower rank physical performance by youth with HFASDs. Youth with and without HFASDs were allowed to engage in a more equivalent experience in the DDR<sup>®</sup> that could be similarly evaluated. Consequently, participants began to share meaning in other topics, events, and experiences surrounding this SMSR intervention, such as video games and sports (Duck, 1994). With continued shared experiences, youth with and without HFASDs could be expected to develop meaningful friendships (Duck). This was reinforced by follow up reports from parents that three dyads initiated socialization following the intervention.

Improvements in friendship quality perceptions could also be attributed to changes in social attractiveness and social rank in youth with HFASDs. Allan and Gilbert (1995) pointed out that social attractiveness is related to social rank. Youth with HFASDs were provided individual training to develop competence in a culturally relevant game that also required physical skill. Their peers viewed this positively because it involved a level of athletic ability, which is highly valued by male youth (Goldberg & Chandler, 1992). As a result, youth with HFASDs may have enhanced their social rank because they obtained a level of social attractiveness, which consequently improved perceptions of certain friendship qualities among participants. Heightened social expectation from parents also suggests improved social ranks in youth with HFASDs. Individuals with disabilities are often viewed and labeled as worthless, bad, inadequate and useless by their peers (Sloman, et al., 1994). Prior to the intervention, parents in this study expressed low social expectations for their children. During the SMSR intervention, parents observed that their children could develop competency in an activity valued by youth culture and engage in peer relationships as "givers" rather than "takers." Following the intervention, parents expressed higher social expectations for their children, particularly for those who interacted outside the structured setting. Neither social rank nor social attractiveness were specifically measured in this study, so definitive conclusions regarding these constructs cannot be made. However, these findings suggest that social rank and youth culture are important factors that must be considered when designing social interventions.

Traditional social interventions to improve friendship quality in youth with HFASDs have been peer-mediated (McConnell, 2002; Rogers, 2000) and focused on social skills training (Siegel et al., 1996). These efforts have typically not resulted in improved friendship quality in these individuals (Bauminger & Kasari, 2000). This may be because interventions have

been designed without consideration of inherent double-standards based on social rank that exist in youth culture. For example, unacceptable behaviors are often acceptable if exhibited by someone who is "cool" and unacceptable behaviors are always unacceptable if exhibited by someone who is not "cool" (Adler & Adler, 1996; Cairns & Cairns, 1994). Therefore, it may be less important that youth with HFASDs become proficient at reading and responding to social cues, because they will never be recognized as legitimate friends by peers as long as they are void of talents or skills valued by peers.

Perceptions of friendship were not specifically examined in the current study, but this is an important factor that may have affected findings. Carrington, Templeton, and Papinczak (2003) found that adolescents with Asperger's syndrome did not understand what constituted a friendship and had difficulty describing this construct. Youth with ASD were asked to identify a friend to participate. In most cases these friends were neighbors or school acquaintances who were kind to the participant with ASD. When asked to identify potential friends to participate in the intervention, mothers mentioned that their children only had a few or no friends and actually worried that the inability to identify a friend without ASDs who would agree to be involved would prohibit participation in the study. As a result, participants and their peers may not have been engaged in a mutually perceived friendship prior to intervention and the changes observed in friendship constructs were indicative of an evolving, rather than improving relationship.

Attempts to modify social rank in this study demonstrated that youth with HFASDs can obtain skills valued by youth culture, and have those skills recognized and appreciated by peers without HFASDs. An additional outcome was that youth with HFASDs improved some aspects of social skills during the intervention. Social skills were not a target variable, but it was observed that youth with HFASDs became more tolerant and accommo-

dating when interacting with peers. Allowing youth with HFASDs to become proficient in the activity in a relatively safe environment (i.e., absence of peer expectations or ridicule) before intervention probably contributed to this observation. However, there is evidence to suggest that a certain levels of social skills training may naturally occur within an SMSR structure.

There are several potential implications for this research to practice. Recreational therapists working with this population should consider developing skills associated with serious leisure (Stebbins, 1992), particularly those that involve physical competence, as part of recreation intervention. Serious leisure is defined as "the systematic pursuit of an amateur, hobbyist, or volunteer activity that is sufficiently substantial and interesting for the participant to find a career there in the acquisition and expression of its special skills and knowledge" (Stebbins, 1992, p. 3). Through serious leisure, participants obtain sufficient skills that could escalate their social rank. Leisure activities can serve as "commonality of experience" (Duck, 1994) in constructing meaningful relationships. Specialized skills developed as part of the serious leisure activity may improve social rank to enhance social interaction, and improve friendship quality.

In conjunction with serious leisure, talent development may be another consideration when designing interventions for youth with HFASDs. Talent is a special natural capacity for success in mental or physical activities, which is often manifested in both children and adults in various areas such as science, mathematics, art, music, sport, and games (Csikszentmihalyi, Rathunde, & Whallen, 1993). An important motive for encouraging and emphasizing talent activities is experiences of enjoyment and fun (Scalan Carpenter, Lobel, & Simons, 1993; Scalan, Stein, & Ravizza, 1989), and it is reasonable to predict that this would positively impact intervention outcomes. Recreational therapists may want to discover the particular talents of youth with HFASDs and foster development of these

skills, whether in computer games, sports, music, etc.

In addition to those previously mentioned, several methodological issues must be carefully considered when interpreting these results. First, the small sample size, and age and gender of participants, as well as the lack of a control group limit generalizability of findings. Second, formal follow-up data were not collected, so conclusions regarding the maintenance of the intervention cannot be determined. Third, the laboratory setting precludes transfer of the findings to other settings. Fourth, the pre- and post-test scores may not have been independent or could have been influenced by the interviews. Fifth, friendship perceptions were not measured in youth with ASD. That is, it is not clear if youth with and without HFASDs in this study held similar views of friendship, which may have impacted questionnaire responses.

In spite of these limitations, the results are promising and prompt the need for further exploration of SMSR as a method of examining social dynamics of youth with HFASDs. There are a number of recommendations for future research such as expanding the sample size, including other ages and females, using other culturally valued modalities, examining intervention maintenance, measuring social rank, and longitudinally examining friendship pairs. Prospective studies could also assess other social variables (i.e., different social attributes), environments (e.g., school, recreation center), and multiple SMSR episodes. In addition, social interventions for this population should focus on highlighting the unique contributions of youth with ASD and acceptance of those contributions, rather than correcting "deficits" in an effort toward "normalization."

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