Effects of the STAR Intervention Program on Interactions between Campers with and without Disabilities during Inclusive Summer Day Camp Activities

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Abstract: The purpose of this study was to examine the effects of a peer intervention program designed to increase interactions between children with and without disabilities in an inclusive summer camp. A multiple probe single subject design was used to determine the effects of the STAR intervention on six dyads of campers aged five through ten over two week sessions. Each dyad consisted of one camper with a mild to moderate disability and one camper without a disability. The results showed an overall increase in the number of interactions and demonstrated that the STAR program was effective in increasing interactions between campers with and without disabilities. Factors contributing to the success of the intervention are discussed as well as limitations.

Many studies have investigated the dynamics of social interaction between young children with and without disabilities. In particular, the use of peer training has been examined as an intervention to increase social interactions in preschool and elementary school settings (Garfinkle & Schwartz, 2002; Goldstein, Kaczmarek, Pennington, & Shafer, 1992; Hundert & Houghton, 1992; Odom, Chandler, Ostrosky, McConnell, & Reaney, 1992). English, Goldstein, Kaczmarek, and Shafer (1996) developed a peer skills training program that taught children to “stay,” “play,” and “talk” with a peer with a disability. English, Goldstein, Shafer, and Kaczmarek (1997), Goldstein and English (1997), and Laushey and Heflin (2000) investigated the effectiveness of the “stay-play-talk” training procedure in preschool and kindergarten children. In all three studies, children without disabilities received training sessions during which they were taught how to interact with a child with a disability. The results showed a substantial increase in the interactions within the dyad after the “stay-play-talk” procedure was taught.

Gonzalez-Lopez and Kamps (1997) provided information about disabilities to typically developing peers. In addition, they taught social skills to children with autism and their peers, which increased the incidence of positive interactions between the children. Sasso, Mundschenk, Melloy, and Casey (1998) examined the effects of multiple variables on the social behavior of children with autism and other developmental disabilities. Results of the research suggested that dyads promoted social interaction on the part of the child with a disability better than triads. Furthermore, the study showed that social behaviors were more prevalent during peer-initiated free play than when peers were instructed to teach a child with a disability how to play a specific game. Despite these findings, few research studies have been published regarding attempts to increase social interaction between children with and without disabilities outside of the school setting. Though preschool and elementary schools are critical arenas for social development in young children, they are not the only settings where children come together, interact, and make friends.
One widely overlooked arena for social interaction is community recreation programs. There is a demonstrated benefit of social interaction during leisure activities for children with disabilities (Bedini, 2000). Studies have examined methods to improve inclusive recreation in areas such as staff training and administrative or structural modification (Herbert, 2000; Schleien, Germ, & McAvoy, 1996). In addition, several studies have demonstrated the benefit of inclusive recreation on the social acceptance of children with disabilities (Anderson, Schleien, McAvoy, Lais, & Seligmann, 1997; Devine, 2004; Sable, 1995). However, these studies did not address improving interactions between children with and without disabilities, which is an extensively studied area in educational settings. Due to the lack of intervention studies in leisure settings, research is needed to determine the impact of peer training at recreation sites. Therefore, the purpose of this investigation was to examine effects of a peer intervention procedure designed to increase interactions between children with and without disabilities during an inclusive summer day camp.

Method

Participant Selection

The study was conducted in an inclusive summer day camp organized by a suburban community recreation program in the mid-Atlantic region of the United States. The investigation took place during regularly scheduled camp hours (9am-5pm) at indoor and outdoor camp facilities. The camp program included activities such as organized team sports, games, arts and crafts, and swimming. The ratio of camp staff to children was approximately 1 to 5. The ratio of children with disabilities to children without disabilities was approximately 1 to 10. There were four two-week camp sessions in which approximately 20 campers attended per session. The study was implemented during two camp sessions, the first and third of the sequence. During each camp session, campers at three different sites were observed. Participants were summer day campers between five and ten years of age and consisted of a combination of boys and girls. Table 1 displays participant characteristics, including age and gender.

<table>
<thead>
<tr>
<th>Camp Session</th>
<th>Gender</th>
<th>Age</th>
<th>Gender</th>
<th>Age</th>
<th>Disability (Verbal Ability)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-A</td>
<td>Male</td>
<td>7</td>
<td>Female</td>
<td>5</td>
<td>Emotional Disorder (Verbal)</td>
</tr>
<tr>
<td>1-B</td>
<td>Female</td>
<td>7</td>
<td>Male</td>
<td>10</td>
<td>Autism (Verbal)</td>
</tr>
<tr>
<td>1-C</td>
<td>Male</td>
<td>5</td>
<td>Male</td>
<td>5</td>
<td>Autism (Language Delay)</td>
</tr>
<tr>
<td>2-A</td>
<td>Male</td>
<td>8</td>
<td>Male</td>
<td>8</td>
<td>Visual Impairment (Verbal)</td>
</tr>
<tr>
<td>2-B</td>
<td>Female</td>
<td>7</td>
<td>Male</td>
<td>10</td>
<td>Autism (Verbal)</td>
</tr>
<tr>
<td>2-C</td>
<td>Male</td>
<td>7</td>
<td>Male</td>
<td>7</td>
<td>Autism (Limited language usage)</td>
</tr>
</tbody>
</table>
were provided and parents were asked to return them by the second day of camp. Once permission was granted, three campers without disabilities from each camp session were selected based on counselor recommendations or random selection from those who volunteered by returning their permission form.

**Procedure**

*Experimental design.* A multiple probe single subject experimental design was used. During the second day of camp, baseline observations of interactions between campers with and without disabilities began. Camper A was observed for a minimum of three baseline sessions at the same time that Campers B and C were observed for one observation. When baseline data were stable for Camper A, the intervention procedures were implemented. The intervention continued with Camper A until a noticeable increase in the number of interactions was observed and then Camper B was observed for three additional baseline observation sessions and Camper C was observed for one additional baseline session. When Camper B had a stable baseline, the intervention procedure was implemented. Likewise, intervention continued until Camper B showed a noticeable increase in the number of interactions. Intervention observations were continued for Campers A and B, while Camper C was observed for an additional three baseline observations before the intervention began.

*Dependent variable and data collection.* The dependent variable was the percentage of intervals in which an interaction between campers with and without a disability occurred. The primary focus of each observation interval was the camper without a disability, namely Camper A, B, or C. Interactions were defined as social behaviors occurring between campers with and without a disability including: (a) non-verbal communication (e.g., sustaining eye contact for three seconds, smiling, waving); (b) talking to each other; (c) directing an activity (e.g., explaining the directions for an art project); (d) sharing materials; (e) participating in an activity together (e.g., assembling a puzzle); (f) prompting a skill (e.g., gesturing to cut materials, modeling how to open a jar of paint); (g) physical assistance (e.g., taking the hand of camper with a disability to connect the dots); and (h) physical or verbal encouragement (e.g., patting on the back, giving a high five, saying “good job”).

Data were collected during 5 minute observation sessions. Within the 5 minutes, there were a total of twenty 10 second intervals for observing that were separated by 5 second intervals for recording. The observer was prompted via an earphone with a tape recorded signal to start observing, to stop observing, or to record. A partial interval recording system was used in which an interval was marked indicating that an interaction was observed regardless of the frequency of interactions or length of time for each interaction. At the end of each observation session, the percentage of intervals in which interactions occurred was determined. Data collection procedures were identical for all baseline and intervention conditions across all campers and camp sessions.

*Independent variable.* After baseline data were completed for the campers without disabilities, the first part of the peer intervention was implemented. Using the “stay-play-talk” training by English et al. (1996) as a basis, the STAR intervention was developed for this study to target elementary school aged children in recreation settings. The intervention consisted of four behaviors that were modeled and taught to the campers without disabilities to increase interactions with campers with disabilities: “S” stood for stay, “T” for talk, “A” for assist, and “R” for reward. Campers without disabilities were asked after their baseline observations were completed if they would participate in the STAR intervention. Before the training session began, the campers without disabilities were each read an assent form and participation in the research was agreed to by the campers.

At the time of the STAR intervention, campers without disabilities were separated from the group for no longer than 20 minutes. The session began with a series of questions posed to the campers: (a) What is a disability? (b) What are different types of disabilities? and (c) What are possible similarities and differences between their camp experience and the way campers with disabilities may experience the camp? If the campers did not respond,
appropriate answers were provided. The campers without disabilities were told that during an activity such as arts and crafts, they would be given a button illustrating the STAR acronym, which would be used as a reminder of how to interact with campers with disabilities. The campers were partnered with campers with disabilities and asked to be a “STAR.” After showing the campers the button during the intervention, the acronym was explained. The explanation included examples as well as opportunities for the campers to participate in role playing the four behaviors of “STAR.” The scenarios, which were used in the role play, were chosen based partly on the disabilities of their assigned campers. After the STAR intervention was completed, the campers returned to the group. Each day, when the targeted activity occurred (e.g., arts and crafts), the second part of the STAR intervention was implemented. The campers without disabilities were partnered with the assigned campers with disabilities, given the STAR button, and reminded by one of the researchers to stay, talk, assist, and reward the campers with disabilities.

Interobserver reliability. Six observers (all authors) acted as the primary and secondary data collectors. Prior to the implementation of the study, all observers became familiar with the definition of the dependent variable and what qualified as an interaction between campers. Data collectors were paired off and given a tape recorder with a double jack for two separate ear phones. Observers practiced data collection and calculations on a video of children interacting until a reliability agreement of 90% or above was reached. A point by point formula was used to calculate reliability: number of agreements of interaction intervals divided by the number of agreements plus disagreements of interaction intervals multiplied by 100. During camp observations, two observers entered the room with the tape recorder and double jack earphones, sat as far away as possible from one another and listened for the observe, record, or stop prompts with separate headsets.

Procedural reliability. Procedural reliability was calculated for two different aspects of the study: (a) during all training sessions in which the campers without disabilities were taught the STAR intervention and (b) before daily observation sessions when a reminder of the STAR procedures was given along with the STAR button. Procedural reliability was observed and recorded by one of the authors. A checklist of steps that was to be followed for the STAR intervention was used to insure all training steps were completed. During procedural reliability, the researcher observed and recorded the number of steps completed correctly. To calculate reliability, the following formula was used: number of steps completed divided by total number of steps multiplied by 100.

Results

Results of the STAR intervention program on the percentage of interactions between campers with and without disabilities in Camp Session 1 are presented in Figure 1. The baseline condition for Camper 1-A consisted of three observation periods with no interactions occurring with the camper with a disability. The intervention condition for Camper 1-A consisted of 12 observation periods with an average of 33.8% interactions with the camper with a disability, ranging from 5-55%. The baseline condition for Camper 1-B consisted of four observation periods with an average of 3.8% interactions with the designated camper with a disability and a range of 0-15%. When the intervention condition was introduced for Camper 1-B over 12 observation periods, an average of 33.8% interactions with the camper with a disability, ranging from 5-55%. The baseline condition for Camper 1-C consisted of five observation periods during which no interactions occurred with the camper with a disability. The intervention condition for Camper 1-C consisted of three observation periods with an average of 35% interactions with a range of 10-75%.

Results of the STAR intervention program on the percentage of interactions between campers with and without disabilities over each observation period in Camp Session 2 are presented in Figure 2. The baseline condition for Camper 2-A consisted of three observation periods with an average of 1.7% interactions with the camper with a disability, ranging from 0-5%. When the intervention condition for Camper 2-A was in effect for 16 observation periods, the average percentage of interactions was 31.6% with a range of 10-
Figure 1. Effects of STAR intervention program on percentage of interactions between campers with and without disabilities during camp Session 1.
Figure 2. Effects of STAR intervention program on percentage of interactions between campers with and without disabilities during camp Session 2.
The baseline condition for Camper 2-B consisted of four observation periods with an average of 2.5% of interactions occurring with the camper with a disability, ranging from 0-10%. Once the intervention condition was introduced for Camper 2-B over 12 observation periods, the average percentage of interactions was 16.7% with a range of 0%-60%. The baseline condition for Camper 2-C consisted of five observation periods with an average of 1% of interactions occurring with the designated camper with a disability, ranging from 0-5%. The intervention condition for Camper 2-C consisted of 12 observation periods with an average of 20.8% interactions with a range of 0-65%.

Results of this investigation showed that after the intervention training was given to each camper without a disability, the average percentage of interactions between campers with and without disabilities increased across all six campers. The mean percentage of increased interactions for all six campers from baseline to intervention conditions was 26.4%.

Interobserver reliability. During the baseline conditions for Camp Session 1 (N = 12) across all three campers, reliability measures were taken on 75% of all sessions and the mean reliability calculation was 100%. During intervention sessions for Camp Session 1 (N = 27) across all three campers, reliability measures were taken on 44% of all sessions, with a mean of 97.5% agreement and a range of 90-100%. Therefore, in Session 1 across all conditions and campers, reliability was taken on 54% of all observations with a mean of 99.2% agreement and a range of 90-100%.

During baseline conditions for Camp Session 2 (N = 12) across all three campers, reliability measures were taken on 75% of all sessions and the mean reliability calculation was 100%. During intervention conditions for Camp Session 2 (N = 40) across all three campers, reliability measures were taken on 27.5% of all sessions, with a mean of 95.8% agreement and a range of 90-100%. Therefore, in Camp Session 2 across all conditions and campers, reliability was taken on 36.5% of all observations with a mean of 98% ranging from 90-100%. Overall, for Camp Sessions 1 and 2 across all baseline conditions, intervention conditions, and six campers, interobserver reliability was obtained on 44% of all observations with a mean of 98.6% agreement and a range of 90-100%.

Procedural reliability. On 100% of all STAR intervention training sessions across both camp sessions with six campers, procedural reliability was taken by a secondary observer. A checklist of 20 critical steps necessary to implement the STAR intervention program was generated. During the intervention training sessions, the secondary observer indicated whether the trainer implemented the STAR intervention consistently. The number of steps implemented during the intervention training divided by the total number of steps (N = 20) multiplied by 100 yielded procedural reliability results. For Camp Sessions 1 and 2, the mean procedural reliability was 100%.

On 38.9% of all daily reminder sessions across both camp sessions, procedural reliability was taken by a secondary observer. A checklist of five critical steps necessary to implement the daily reminders was generated. During the daily reminder sessions, the second observer indicated whether the trainer implemented each step. The number of steps implemented during intervention conditions divided by the total number of steps (N = 5) multiplied by 100 yielded procedural reliability results. For Camp Sessions 1 and 2, the mean procedural reliability for the reminder procedures was 100%.

Discussion

The STAR program was shown to be an effective intervention to increase interactions between campers with and without disabilities in each of the six pairs in an inclusive summer day camp. These results were similar to those found by English et al. (1997), Goldstein and English (1997), and Laushey and Heflin (2000) in school settings. It is believed that the increase in interactions between campers with and without disabilities during the two week camp sessions was a direct result of a combination of variables. First, the initial training session provided useful information on disabilities by emphasizing similarities across all campers and helped to make the campers feel more comfortable around their peers with disabilities. The importance of training for children without disabilities re-
Regarding how to effectively interact with children with disabilities has been echoed by several other studies (Goldstein & English; Gonzalez-Lopez & Kamps, 1997). Secondly, the STAR procedures (specifically, “stay, talk, assist, and reward”) were effective because campers without disabilities were given specific ways to initiate and sustain interactions with campers with disabilities. Finally, the daily reminders were beneficial and necessary because they prompted the campers to assist campers with disabilities in specific camp activities.

However, there were sudden drops in interactions for certain observation sessions. In most of these cases, camp circumstances beyond the researchers’ control led to the decreased frequency of interactions. Decreases in interactions occurred when observed activities ended prematurely. The remainder of the observation session was then conducted while transitioning to another activity and interactions were not as likely to occur. In instances where the frequency of interactions dropped to zero, the primary reason was that the camper without a disability became too engrossed in his or her own assigned activity and failed to interact with the camper with a disability.

The atmosphere surrounding the camp also affected the frequency of interactions between campers. On multiple occasions the observation periods were affected by changes in the daily schedule that resulted in all or part of the observation occurring during activities where interactions were made difficult by the constraints of the activity. Not all observations were able to occur during the passive activity of arts and crafts as originally planned and it was found that physical, outdoor activities often produced fewer interactions between campers. Some observation periods were also conducted during unstructured activities because field trips occupied the majority of the day, which also decreased the frequency of interactions observed. Another factor was daily absences by either camper, interrupting the flow of the intervention. Also, counselors, particularly the counselors in training (CIT) who were adolescent volunteers, on occasion interfered with the campers during observation sessions. Most of the campers with disabilities were assigned a CIT by the recreation department who would sometimes monopolize the attention of his or her camper, which obstructed the camper without a disability from assisting his or her partner.

Despite the success of the intervention, the program could be improved by refining the STAR procedures. It was found that the training for some of the campers without disabilities appeared to have been too advanced for their age, which ranged from five to eight years. The concept of a disability was not always understood by the younger campers, which affected the implementation of the STAR procedures. This was especially true of situations where campers had a disability that was not visible. Some of the campers had mild disabilities, such as an emotional disorder, which were not discernable to other campers. Additionally, some campers without disabilities would focus on only one or two components of the STAR intervention, such as stay and talk. One possible way to remedy the problem would be to use picture symbols for stay, talk, assist, and reward displayed on an index card that could be placed in front of the camper. The modeling and role-playing component of the intervention was also essential. Adding more practice to the role-playing component may help the camper without disabilities to better understand the expectations of the STAR procedure. This could be accomplished by including a guided approach that would start with modeling, then a prompted role-playing situation, and finally lead to independent role-playing by the camper.

Although the daily reminders were critical to the success of the STAR program, they could also be improved in three ways. The first recommendation is to implement a role-playing component similar to the initial intervention into the daily routine by having the campers act out specific behaviors of the STAR interventions before receiving the button each day. This may enhance younger campers’ understanding of the procedures and further increase their interactions. The second recommendation would be to allow the camp staff to give the daily reminders. This familiarity may help the campers feel more comfortable in asking questions about the campers’ disability, how to assist, and what is expected of them, as well as facilitate generalization of the STAR behaviors across the entire day. The
The last recommendation would be to provide constructive feedback at each daily reminder session to the campers without disabilities about their interactions the previous camp day.

Limitations

There were several factors both foreseen and unforeseen that produced limitations to the results of the STAR intervention. As is often the case with inclusive recreation programs, there were very few participants with disabilities at each camp site. For this study there were only one or two campers with disabilities who had permission to participate in the study at each camp site and these campers had mild disabilities that were not apparent to the other campers. It is unclear if the results of the study would have been different if the campers with disabilities had impairments easily recognizable to the other campers (e.g., a child in a wheelchair).

An additional limitation to the research comes as a result of the design of the intervention itself. During the baseline condition, the campers with and without disabilities were seated away from each other, essentially eliminating any opportunity for interaction between the two. During the intervention observations, the campers with and without disabilities were seated next to each other. Simply placing the campers next to each other may have increased the incidence of interaction between them. The campers without disabilities were always free to move during the intervention; however, most stayed in the seat they were asked to sit in. Had the participant pool been larger, it may have been possible to take baseline data and complete the intervention with a camper who was initially sitting next to the camper with a disability.

Future Directions

The positive results of the STAR intervention have far-reaching directions for future research. It is important to replicate across different variables so the STAR intervention may be used by a variety of recreation programs in the future. It is also important to replicate the procedures using campers with a variety of disabilities and a range of severity. This should include campers with physical, emotional, and cognitive disabilities. Procedures should be replicated using different recreation settings and activities, such as team sports, games, swimming, and dance. A final factor to consider for future research is the age and gender similarities of the pair of campers. Gender and age differences in the dyads may have affected the results of this investigation, but future replications with pairs of the same gender or age versus pairs of differing gender and age will give further insight into facilitating interactions in camp settings. Future studies could also explore different interventions based on the age of the child, such as the use of pictures for younger children versus abstract presentations for older children. Future research will strengthen the effectiveness of the STAR intervention and will expand the opportunity for many recreation programs to use this method to increase friendships among campers with and without disabilities.

References


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