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## Critically Appraised Topic: Maintenance & Generalization of Social skills & Social Skills Guide

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Critically Appraised Topic: Maintenance & Generalization of Social skills & Social Skills Guide

May 2018

This evidence project, submitted by

Alanna Flynn, Megan John, Maddie McBroom

has been approved and accepted  
in partial fulfillment of the requirements for the degree of  
Master of Science in Occupational Therapy from the University of Puget Sound.

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Project Chairperson: Sheryl Zylstra, DOT, MS, OTR/L

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Dean of Graduate Studies: Sunil Kukreja, PhD

Key words: Social skills, Autism Spectrum Disorder (ASD), Generalization, Maintenance

### **Abstract**

Research was conducted to investigate the evidence for generalizability and/or long term maintenance of social skills intervention for individuals with autism spectrum disorder (ASD) ages 13-21 years. The question was created at the request of Kari Tanta PhD, OTR/L, FAOTA of the Valley Medical Center Children's Therapy. The literature review was conducted, generating 17 articles that matched the inclusion and exclusion criteria. The process involved rigorous article review via several databases and saturating the available literature from various professions. There is strong evidence to support the use of social skill intervention for adolescents with ASD. Furthermore, the evidence supports the generalizability and long-term maintenance of acquired skills. It is recommended that both practitioners and care providers of those with ASD consider the use of social skill interventions, especially those in groups, to elicit generalizable and sustainable progression of skill development.

To support the implementation of these findings, a social skills guide was created as a knowledge translation project for parents and practitioners to use with individuals with ASD. The guide includes eleven social skills with which those with ASD are likely to struggle, according to our research. Each skill includes a description, potential problems with acquisition, research- and practice-supported interventions to encourage progress, and advocacy methods for functioning with the possible delays. The research was incorporated into the guide by extracting evidence-supported interventions for specific skills. The impact of this guide was monitored through use of a satisfaction survey, which was given to our course mentor, project chair, and practitioners at Children's Therapy to evaluate its effectiveness and ease of use for parents to whom they may distribute the guide. It is recommended that outcome data from these surveys also be distributed to parents in the future to receive feedback on how to improve the guide.

### **Executive Summary**

Our project began with collaboration with Kari Tanta, PhD, OTR/L, FAOTA of Valley Medical Center Children's Therapy. Dr. Tanta was interested in the feasibility of implementing a social skills group at her clinic, as well as research she could use to support the efficacy of such a program. She was also interested in evidence on whether the social skills gained through therapy generalized to other environments in participants' lives. Additionally, Dr. Tanta wanted to know the long-term effects of social skill interventions administered in a group setting. Because feasibility for a specific clinic is difficult to show using data from other places of implementation, we collaborated with Dr. Tanta and our course mentor to create the following research question: What is the evidence for generalizability and/or long term maintenance of social skills intervention for individuals with autism spectrum disorder (ASD) ages 13-21 years?

A systematic review of the literature was completed to examine our question. A total of 17 articles were included in the review. The synthesized data from our literature review provided strong evidence for the effectiveness of social skills interventions, as well as moderate to strong evidence for generalization and long-term maintenance of acquired skills. Furthermore, the research demonstrated that such interventions, especially those administered in group settings, were effective for those with high-functioning ASD. With this knowledge, we recommended that social skill interventions be considered for the identified client population. By choosing this type of intervention, practitioners can know that they are using evidence-supported practice and that skills are likely to generalize and be sustainable over time. Additionally, parents can use this information to advocate for evidence-supported therapeutic intervention for their children. Lastly, clinics can use the information to support funding requests for social group programs.

To translate the research from our literature review, we created a social skills guide for parents and practitioners to use with individuals with ASD. The guide contains eleven social skills with which individuals with ASD may have problems. For each skill, there is a description of the skill, potential delays associated with performance, research- or practice-based interventions for improvement of competencies, and ideas for parent or self-advocacy to promote awareness of skill limitations and optimize functioning. Although the language is geared towards parents, this guide can also inform practitioners of potential social skill interventions and ideas for advocacy. We monitored the outcomes of our guide with a satisfaction survey administered to our course mentor, project chair, and practitioners at Children's Therapy to evaluate its effectiveness and ease of use for parents to whom they may distribute the guide. The aim of outcome monitoring was to ensure the most effective product is provided to therapists and caregivers and to improve the likelihood that it will elicit positive change in those with ASD. The results of the surveys demonstrated that the guide may be useful in some settings, but needs improvement to be used in others. Dr. Tanta suggested that it be simplified for use at her clinic and Dr. Zylstra expressed potential for use at the university-based social skills camp. Dr. Watling suggested improvements for the guide in terms of streamlining and simplifying information, but also expressed overall positive opinions about potential use for social skill interventions. It is recommended that outcome data from these surveys also be distributed to parents in the future to receive feedback on how to improve the social skills guide.

**Critically Appraised Topic Paper****Focused Question:**

What is the evidence for generalizability and/or long term maintenance of social skills intervention for individuals with autism spectrum disorder ages 13-21 years?
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**Collaborating Occupational Therapy Practitioner:**

Kari Tanta, PhD, OTR/L, FAOTA
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**Prepared By:**

Alanna Flynn, Megan John, Maddie McBroom
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**Chair:**

Sheryl Zylstra, DOT, MS, OTR/L, FAOTA
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**Course Mentor:**

Renee Watling, PhD, OTR/L, FAOTA
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**Date Review Completed:**

January 20, 2018
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**Clinical Scenario:**

<p>Valley Medical Center Children's Therapy is a public outpatient hospital-based developmental center. The center is multidisciplinary with 29 therapists including speech language pathologists, occupational therapists (OT), and physical therapists (PT). The population is clients ages 0-18 with a wide range of diagnoses, often with multiple comorbidities. The length of time clients receive occupational therapy services varies with most clients receiving occupational therapy for approximately two years. The clients are ethnically and economically diverse. The center is a non-profit with approximately 70% of clients funded by Medicaid and the rest funded by commercial payers, the Accountable Care Networks for Boeing, and grants. Management is distributive and includes Dr. Kari Tanta as manager of pediatric rehabilitation, an overall director of rehabilitation services, and a manager of adult rehabilitation services.</p>
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<p>An area of potential opportunity that Dr. Tanta and the rest of the staff identified relates to the implementation of group therapy. The clinic has used group therapy in the past, but found it was not cost effective due to reimbursement and attendance issues. Staff have expressed interest in bringing groups back into the clinic. If we find strong evidence of the generalizability and long-term maintenance of social skills groups in therapy for adolescents with ASD, further research can be done to explore methods for adherence, implementation, and sustainability of these groups. Dr. Tanta and the staff at Children's Therapy will be able to use the information obtained to develop and pilot group therapy, and make an informed decision about re-introducing group therapy into the practice.</p>
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**Review Process****Procedures for the selection and appraisal of articles****Inclusion Criteria:**

Articles will be included if they investigate effectiveness of a social skills intervention for either groups or individuals. Outcomes measures must address generalizability and/or maintenance of skills, and have evidence of the acquisition of the social skills. Maintenance may be indicated by a follow-up, and for inclusion it must occur at least 2 weeks after the intervention. For generalization, studies must have outcome measures that report on the transfer of skills outside of the intervention setting (e.g. parent- or teacher-report of child's social skills following intervention)
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in a clinic). Studies must include participants ages 13-21. Articles with participant age ranges that overlap this range by at least two years will also be included (e.g., an article with participants ages 8-14). Similarly, articles can include diagnoses other than autism spectrum disorder but must include at least some participants with autism spectrum disorder. We will include articles from professions outside of occupational therapy.

**Exclusion Criteria:**

Poster presentations, non-peer-reviewed articles, school-based interventions, participants that do not overlap at least 2 years of the 13-21 year old age range and/or do not have participants with autism spectrum disorder.

**Search Strategy**

Categories	Key Search Terms
Patient/Client Population	-autism spectrum disorder, autism, ASD, pervasive developmental disorder, PDD-NOS, Asperger syndrome - adolescents, teenagers, youth, young adult
Intervention (Assessment)	-intervention, therapy, treatment, program, group -social skills, social abilities, peer interaction, social skills training, communication skills
Comparison	N/A
Outcomes	-acquisition, acquire, obtain, learn, develop -generalizability, transferability, external validity - maintenance, sustainability, follow up, long-term outcomes

Databases and Sites Searched
UW Libraries Primo search
PubMed
CINAHL
PsycInfo
ERIC

**Quality Control/Review Process: (narrative form)**

To ensure that the quality of our review is high, we met as a group throughout the process to operationalize terms, set inclusion/exclusion criteria, and to maintain consistency. We met with and emailed our clinician collaborator, Kari Tanta, PhD, OTR/L, to define our research question clearly. Our advisors and consultants were Renee Watling, PhD, OTR/L, FAOTA, Sheryl Zylstra, DOT, MS, OTR/L, and George Tomlin, PhD, OTR/L, FAOTA. We met with them to define and narrow our research question and to go over logistical questions classifying, rating, and organizing articles. The narrowing process led us to focus on long-term maintenance and generalization of social skills intervention. With this focus, we reviewed 43 articles and 13 met our criteria. To ensure that we searched the literature to the point of saturation, we met with Eli Gandour-Rood to explore other search strategies and terms. We continued searching and narrowed the search criteria further to better fit our research question to find articles that specifically included adolescents in the sample. After applying the new exclusion criteria to all searches and accounting for duplicates, we reviewed 54 articles total and found 17 that met all our criteria.

**Results of Search****Table 1. Search Strategy of databases.**

<b>Search Terms</b>	<b>Date</b>	<b>Database</b>	<b>Initial Hits</b>	<b>Articles Excluded</b>	<b>Total Selected for Review</b>
"social skills" group "autism spectrum disorder" generalizability	9/20/17	PubMed	2	0	2
social skills group "autism" generalizability	9/20/17	PubMed	5	2	3
social skills group AND autism AND feasibility	9/20/17	PubMed	0	0	0
social skills "group" "autism" feasibility	9/20/17	PubMed	22	19	3
social skills group AND autism AND feasibility	9/20/17	CINAHL	2	0	2
Social skills group AND autism AND follow up	9/20/17	CINAHL	6	1	5
Social skills group AND autism AND generalizability	9/20/17	CINAHL	3	0	3
Social skills training AND individual AND adolescent AND autism NOT group	9/20/17	CINAHL	4	3	1
Social skills AND group AND generalizability	9/20/17	UW Libraries Primo search	2,804	2,801	3
"social skills group" AND autism AND transferability	9/20/17	UW Libraries Primo search	292	290	2
implementation feasibility AND group therapy	9/20/17	UW Libraries Primo search	42,151	42,150	1
"social skills" AND group AND autism AND sustainability	9/20/17	UW Libraries Primo search	994	993	1
"social skills group" AND autism	10/1/17	UW Libraries Primo search	280	263	17
social skills AND adolescents AND autism spectrum disorders	10/11/17	Psyc Info	597	589	8
social skills AND adolescents AND autism AND generalizability OR maintenance	10/11/17	Psyc Info	100	97	3



social skills AND acquisition AND autism spectrum disorders	10/12/17	CINAHL	16	11	5
social skills intervention AND (generalizability OR maintenance) AND (autism or aspergers) AND adolescents	10/12/17	CINAHL	6	1	5
social skills intervention AND autism AND generalizability	10/31/17	ERIC	1	0	1
social skills intervention AND autism AND follow up	10/31/17	ERIC	13	7	6
social skills training AND autism AND (follow up OR generaliz*)	11/2/17	ERIC	25	15	10
Social skills AND adolescent AND autism AND (maintenance OR follow up OR generaliza*)	11/3/17	ERIC	25	15	10
social skills AND autism AND follow up	11/10/17	Psyc Info	27	21	6
Total number of articles used in review from database searches = 97 articles* *43 duplicates - new total number of articles = 54 articles					

**Table 2. Articles from reference tracking.**

Article	Date	Articles Referenced	Articles Excluded	Total Selected for Review
Jonsson et al., 2015	11/2/17	48	46	2
McMahon et al., 2013	11/2/17	80	76	4
Total number of articles used in review from reference tracking = 6				

Total number of articles used in review from database searches = 54  
 Total number of articles used in review from citation tracking = 0  
 Total number of articles used in review from reference tracking = 6  
 Total number of articles used in CAT = 17

*Summary of Study Designs of Articles Selected for the CAT Table*

Pyramid Side	Study Design/Methodology of Selected Articles	Number of Articles Selected
Experimental	<u>1</u> Meta-Analyses of Experimental Trials <u>3</u> Individual Randomized Controlled Trials <u>2</u> Controlled Clinical Trials <u>3</u> Single Subject Studies	9
Outcome	<u>1</u> Meta-Analyses of Related Outcome Studies <u>1</u> Individual Quasi-Experimental Studies <u>1</u> Case-Control Studies <u>6</u> One Group Pre-Post Studies	9
Qualitative	<u>0</u> Meta-Syntheses of Related Qualitative Studies Small Group Qualitative Studies <ul style="list-style-type: none"> <li>- brief vs prolonged engagement with participants</li> <li>- triangulation of data (multiple sources)</li> <li>- interpretation (peer &amp; member-checking)</li> <li>- a posteriori (exploratory) vs a priori (confirmatory) interpretive scheme</li> </ul> <u>0</u> Group Qualitative Studies w/ less Rigor <u>0</u> Qualitative Study on a Single Person	0
Descriptive	<u>0</u> Systematic Reviews of Related Descriptive Studies <u>0</u> Association, Correlational Studies <u>0</u> Multiple Case Studies (Series), Normative Studies <u>0</u> Individual Case Studies	0
Comments: White et al. (2006) is a systematic review of outcomes and experimental studies and accounts for 2 articles counted in the table above. Total number of articles reflects this duplicate.  AOTA Levels - I- 4 II- 3 III- 7 IV- 3 V- 0		<i>TOTAL = 17</i>

Generalization only (no follow-up) - Quantitative Articles

Author, Year	Study Objectives	Study Design/ Levels	Participants: Sample Size, Description	Interventions and Outcome Measures	Summary of Results	Study Limitations
Broderick et al., 2002  <i>Autism</i>  UK	Evaluate the benefit of SST within a group setting and skill generalization for adolescents w/AS	One group pre-post  O4 Level III 2/6	N = 9  Age range = 12-15 yo  In: dx w/AS, attending mainstream schools	<b>I</b> = Weekly SSGT (Group 1: n =5; Group 2: n=4) for 8 wks using social stories and coded signals  <b>O</b> = Self-rating: PHCSCS Parent, teacher, adult helpers rating: Researcher-created social functioning questionnaires to evaluate generalization	- <b>↑</b> on self-esteem measurements as measured by the PHCSCS - <b>↓</b> on reliance from adult helpers as recorded from questionnaires - 56% reported ability to make friends more easily post-tx	- No significance reported - Generalization not interpreted or discussed - Order effect (Group 2 began tx 8 wks after Group 1) - No direct observation outcome measures
Koegel & Frea, 1993  <i>JABA</i>  US	Evaluate effect of tx on targeted social communication behaviors and untargeted social behaviors	Single subject, multiple baselines across behaviors and subjects  E4 Level IV 3/7	N = 2  Subject 1: 13 yo ♂ Subject 2: 16 yo ♂  In: dx w/ASD, IQ score > 70, no atypical physical characteristics, part of normal education classroom for at least part of day, functioning successfully in school	<b>I</b> = SSGT, 1 session/wk for 14 wks in community setting. Included 1:1 instruction w/modeling, role play, followed by self-monitoring for 1-9 min intervals w/reward for appropriate behavior  <b>O</b> = 5-min sessions w/10-sec interval recording for operationalized variables Subjective judgments of overall appropriateness (9-pt scale)	- Both subjects <b>↑</b> and maintained all levels of appropriate behaviors (i.e eye gaze and voice volume) Treated behaviors <b>↑</b> to or near 100% during tx - Both subjects <b>↑</b> appropriateness of untreated behaviors - Subjective judgments: Subject 1: <b>↑</b> from 1 to 7 Subject 2: <b>↑</b> from 2 to 8	- No description of data analysis - No b/w phase statistical comparison - Unsure if results due to clusters of behavior or actual generalization
Mackay et al., 2007  <i>J of Int and Dev Dis</i>  UK	Improve social communication and generalization of social skills for individuals w/HFA  *Only results of adolescent group included	One group pre-post  O4 Level III 5/10	N = 22  M age: 14 yo ♂: 81%  In: dx w/HFA	<b>I</b> = SSGT, 1:2 trained staff to adolescent, 90 min/wk for 12-16 wks in community and clinic settings in groups of 7-8 participants targeting social interaction and understanding, supported by home-based practice  <b>O</b> = pre, post Parent ratings: SSQ-P, SCSQ-P, parent determination of 3 problem areas of social functioning	- <b>↑</b> on all outcome measures posttreatment ( $p < .05$ ) - Skills generalized to settings outside of clinic, per parent report and assessment in community settings	- No ctrl group - Parent ratings: potential expectancy bias - No blinding - No direct observation w/peers - Low fidelity - Groups ran for different amounts of time due to time constraints - Small n

<p>Tse et al., 2007</p> <p><i>J Autism Dev Disord</i></p> <p>Canada</p>	<p>Examine if social skills training group for adolescents w/AS and HFA affects their social competence and problem behavior</p>	<p>One group pre-post</p> <p>O4 Level III 4/6</p>	<p>N = 44</p> <p>M age = 14.6 yo</p> <p>♂: 61%</p> <p>In: dx w/ASD, motivated</p>	<p><b>I</b> = SSG of 7-8 participants, 90 min/wk for 12 wks in hospital-based clinic. Teaching social skills through psychoeducational and experiential methods w/emphasis on role play</p> <p><b>O</b> = pre, post</p> <p>Parent ratings: SRS, ABC, N-CBRF</p>	<p>- ↑ on SRS: total, social cognition, communication, DSM social aspects (<math>p &lt; .01</math>), social motivation (<math>p &lt; .05</math>)</p> <p>- ↑ on total N-CBRF positive social scale (<math>p &lt; .05</math>)</p> <p>- ↓ on problem behaviors including irritability, stereotypy, insecurity/anxiety, and inappropriate speech (<math>p &lt; .05</math>)</p>	<p>- Only 32 of 44 returned the SRS and 30 of 44 returned the N-CBRF and ABC</p> <p>- Absence of control group</p> <p>- Only parent report measures</p> <p>- Programing differed slightly b/w groups as program was not manualized</p>
<p>Van Hecke et al., 2013</p> <p><i>J Autism Dev Disord</i></p> <p>US</p>	<p>Investigate PEERS tx for adolescents w/ASD in increasing social skills and affecting neural function</p>	<p>RCT</p> <p>E2 Level 1 6/10</p>	<p>N = 87</p> <p><u>Tx:</u></p> <p>n = 28</p> <p>M age: 14.1 yo</p> <p>♂: 78.6%</p> <p><u>Ctrl (WL):</u></p> <p>n = 29</p> <p>M age: 13.3 yo</p> <p>♂: 79.3%</p> <p>In: dx w/ASD, verbal and full scale IQ &gt; 70, no neural, physical, hearing, or visual impairment, no bipolar disorder or schizophrenia, enrolled in school, motivated</p>	<p><b>I</b> = PEERS for Young Adults 90 min/wk for 12-14 wks in community setting in groups of ≤ 10 participants</p> <p><b>O</b> = pre, post</p> <p>EEG brain scans</p> <p>Parent rating: SRS, QSQ-R</p> <p>Self-rating: TASSK</p>	<p>Tx:</p> <p>- ↓ in ASD symptoms as rated by caregivers on SRS (<math>p &lt; .05</math>)</p> <p>- ↑ in social contacts as rated by the QSQ-R (<math>p &lt; .05</math>)</p> <p>- ↑ of social skills as rated by TASSK (<math>p &lt; .05</math>)</p> <p>- ↑ of EEG activity on left side of brain (<math>p &lt; .05</math>)</p>	<p>- No blinding</p> <p>- No long-term follow-up</p> <p>- Caregiver rating may have potential expectancy bias</p> <p>- No direct observation outcomes measures</p>

ABC = Aberrant Behavior Checklist, AS = Asperger’s syndrome, ctrl = control, b/w = between, DSM = Diagnostic and Statistical Manual of Mental Disorders, dx = diagnosis/diagnosed, EEG = electroencephalogram, HFA = high functioning autism spectrum disorder, I = Intervention, In = inclusion criteria, *J Autism Dev Disord* = *Journal of Autism and Developmental Disorders*, *J of Int and Dev Dis* = *Journal of Intellectual and Developmental Disability*, *JABA* = *Journal of Applied Behavior Analysis*, M = mean (average), min = minute(s), N-CBRF = Nisonger Child Behavior Rating Form, O = Outcomes, PEERS = Program for the Education and Enrichment of Relational Skills, pt = point, QSQ-R = Quality of Socialization Questionnaire Revised, PHCSCS = Piers–Harris Children’s Self Concept Scale. SCSQ-P = Social Competence with Peers Questionnaire-Parents, sec = seconds, sig = significant, SRS = Social Responsiveness Scale, SSG = social skills group, SSGT = social skills group training, SSQ-P = Social Skills Questionnaire-Parents, SST = social skills training, TASSK = Test of Adolescent Social Skills Knowledge, TP = typical peers, tx = treatment, w/ = with, wk(s) = week(s), WL = waitlist, yo = years old

Generalization only (no follow-up) - Systematic Review Article

Author, Year	Study Objectives	Study Design/ Levels of Evidence of Studies	Number of Papers Included, Inclusion and Exclusion Criteria	Interventions and Outcome Measures	Summary of Results	Study Limitations
White et al., 2007 <i>J Autism Dev Disord</i> US	1) Summarize empirical data on SSG for ASD 2) identify limitations within current literature 3) identify promising outcomes and techniques	E1/O1 Level I n/a  Articles: E4/IV: 2 E3/III: 4 O4/III: 8	N = 14 papers  Year range: 1984-2004  Databases: Psych Info, Medline  In: direct SST I implemented, group format, target population was school-age children or adolescents dx w/ASD  E: preschoolers, adults, children/adolescents w/developmental disorders not on autism spectrum	<b>I</b> = SCORE Skills Strategy Program, SST for Children and Adolescents w/AS and Social-Communication Problems, programs developed by study authors  <b>O</b> = Direct testing ( <i>n</i> = 5), parent-report ( <i>n</i> = 9), other-report ( <i>n</i> = 5), self-rating ( <i>n</i> = 3), observation ( <i>n</i> = 5), satisfaction w/group ( <i>n</i> = 6)  SSRS ( <i>n</i> = 5), DANVA2 ( <i>n</i> = 2)	- Qualitative and observational data indicated beneficial effects - Evidence for efficacy of quantitative, skill-based measures is inconsistent: no improvement ( <i>n</i> = 2), small to moderate improvement ( <i>n</i> = 2) - Change infrequently observed on parent-reported skill-based measures in naturalistic settings - Play and greeting skills ↑ when specifically taught, conversation skills showed smaller effects - SCORE: ↑ knowledge and proficiency in 4 of 5 targeted social skills - SSRS: no sig improvement ( <i>n</i> = 3), sig ↑ ( <i>n</i> = 1)	- Lack of explicit I or O used in selected papers  Literature: - Inadequate measure of social skills and deficits - Small, poorly characterized samples - Minimal examination of generalization of skills - Lack of control groups and randomization

ASD = autism spectrum disorder, b/w = between, DANVA2 = Diagnostic Analysis of Nonverbal Accuracy 2, dx = diagnosis, E = exclusion criteria, I = intervention, In = inclusion criteria, *J Autism Dev Disord* = *Journal of Autism and Developmental Disorders*, O = outcome measures, SCORE = Share Ideas, Compliment Others, Offer Help or Encouragement, Recommend Changes Nicely, and Exercise Self-Control, SSG = social skills group, SSRS = Social Skills Rating System, SST = social skills training

**Follow-up and generalization - Experimental Design articles**

Organized by shortest to longest follow-up time

Author, Year	Study Objectives	Study Design/ Levels	Participants: Sample Size, Description	Interventions and Outcome Measures	Summary of Results	Study Limitations
Dotson et al., 2010  RASD  US	Determine effectiveness and generalizability of teaching interaction procedure for conversation skills for adolescents w/ASD and ADHD	Single subject, multiple baseline across behaviors  E4 Level IV 2/7	N = 5  M age = 16.4 yo ♂: 80 %  In: dx w/ASD (n = 4) or ADHD (n = 1), good expressive and receptive language  E: immediate history of self-injurious, severe disruptive, aggressive behaviors	<b>I</b> = SSGT in group of 8 adolescents, 90 min, 2x/wk over 5 mo, varied from 15-29 sessions delivered in community setting. Included modeling, role-play, and describing steps of each skill  <b>O</b> = % steps correct for a skill during role-play w/feedback (teaching probe), role-play w/o feedback (baseline/maintenance probe), or unprompted conversation w/typical peer (generalization probe)  Maintenance probes occurred 1-4 mo after skill instruction.	- 4/5 participants mastered conversational basics* - 5/5 participants mastered providing feedback and asking/answering questions* - 4/5 had ↑ performance on conversational basics and answering/asking questions from baseline several months after teaching - 3/5 participants reached 100% generalization of at least one skill  *Mastery = 3 consecutive 100% correct role plays across 2 consecutive sessions	- Role-play w/undergraduates rather than peers may have influenced lack of generalization - Large gap in structure b/w instruction and generalization probes - Inconsistent number of tx sessions and length of time b/w sessions - No b/w phase statistical comparison
Lerner et al., 2010  Autism  US	Examine effectiveness of SDARI for improving social skills among adolescents w/HFA	Controlled clinical trial  E3 Level II 5/10	N = 17  <u>Tx</u> : n = 9 M age: 14.31yo ♂ : 89.9%  <u>Ctrl (WL)</u> : n = 8 M age: 14.32 yo ♂ : 75%  In: dx w/AS or HFA  E: record of psychotic illness, IQ < 70, limited verbal ability, or sig medical or neurological illness	<b>I</b> = SDARI 5 hr, 5x/wk for 6 wks in a clinic setting in group of 9 participants (29 sessions total)  <b>O</b> = pre, post , 6 wk follow-up Computer-rated non-verbal cue-reading: DANVA-2 Parent-ratings: CBCL, SSRS, EDI, SRS, satisfaction survey Self rating: BDI-Y	Tx: - ↑ in social assertion (SSRS), ↑ in accurately detecting emotions in adult voices (DANVA-2), and ↓ of social problems (CBCL); all findings maintained at follow-up (p < .05) - No sig group diff for internalizing and externalizing symptoms, depression and non-verbal cue reading ability	- 11/17 participants had incomplete data - No randomization - No blinding - Small n - Incomplete demographic information - Some ctrl group members previously received SDARI tx - Subjective outcome measures

<p>Mitchell et al., 2010</p> <p><i>Journal on Developmental Disabilities</i></p> <p>US</p>	<p>Evaluate efficacy of behavioral SSG intervention w/parent training for adolescents w/ASD or HFA</p>	<p>Single subject, multiple baseline design</p> <p>E4 Level IV 5/7</p>	<p>N = 3</p> <p>M age = 16.6 yo</p> <p>Subject 1: 16 yo ♀ Subject 2: 19 yo ♀ Subject 3: 15 yo ♂</p> <p>In: dx w/AS or HFA</p>	<p><b>I</b> = SSGT, 120 min/wk for 12 wks in OP clinic using behavioral social skills training w/concurrent parent training (role-play, discussions) for generalization. Skill 1: introducing self, Skill 2: initiating conversations w/peers, Skill 3: problem-solving conflicts; reward system of reinforcement w/generalization strategies</p> <p><b>O</b> = pre, post, 3 mo follow-up Training and generalization probes Parent rating: SSRS Self rating: SSRS, QoL</p>	<p>Tx:</p> <ul style="list-style-type: none"> <li>- ↑ on SSRS self-report for all and parent-report for Subjects 2 and 3 post-tx (&gt;68% confidence). ↑ maintained at 3 mo follow-up. Mild ↑ on QoL post-tx and at follow-up</li> <li>- Skill 1: Training and generalization ↑ for all</li> <li>- Generalization for Subject 1 and 2 after target skill training. No skills acquisition or generalization for Subject 3 on skill 3</li> <li>- Follow-up: Skills acquired maintained</li> </ul>	<ul style="list-style-type: none"> <li>- Delay of training effects</li> <li>- Lack of overlap b/w baseline pts</li> <li>- Visible training effects on skills trained sequentially</li> <li>- Lack of generalization probes in homes and schools</li> <li>- No parent training evaluation for take-home assignments</li> <li>- Skills 2 and 3: High baseline training probe pts for Subject 1 on both and Subject 2 of skill 3 obscured training effects</li> </ul>
<p>Olsson et al., 2015</p> <p><i>JAACAP</i></p> <p>US</p>	<p>Investigate efficacy and effectiveness of KONTAKT for children and adolescents w/ASD and psychiatric comorbidities</p> <p>*Only results of adolescent group included</p>	<p>RCT: stratified, multicenter trial</p> <p>E2 Level I 8/10</p>	<p>N = 296</p> <p><u>Tx:</u> n = 150 M age: 12.05 yo ♂: 71%</p> <p><u>Ctrl (WL, TAU):</u> n = 146 M age: 11.59 yo ♂: 69%</p> <p>In: dx w/ASD, atypical ASD, AS, or PDD-NOS and dx of ADHD, anxiety or mood disorder, IQ &gt; 70</p> <p>E: self-injurious behaviors, dx w/conduct disorder, antisocial or borderline personality disorder, psychotic disorder</p>	<p><b>I</b> = <i>KONTAKT</i> 90 min/wk for 11 mo in groups of 4-8 participants</p> <p><b>O</b> = pre, post, 3 mo follow-up <u>Primary measure:</u> Teacher and parent ratings: SRS</p> <p><u>Secondary measure:</u> Self rating: CiS Teacher rating: ABAS-II Parent rating: ABAS-II, PSS Trainer rating: DD-CGAS</p>	<ul style="list-style-type: none"> <li>- SRS total score ↓ for tx group at posttest and follow-up (<math>p &lt; .05</math>)</li> <li>- Sig b/w group diff in parent-rated SRS at posttest and follow-up (<math>p &lt; .05</math>)</li> <li>- Blinded teacher ratings: no sig change in SRS for tx or ctrl</li> <li>- Several secondary outcome measures ↑ for SSGT group (e.g. stress ↓ for participants but not parents) (<math>p &lt; .05</math>)</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of active ctrl group</li> <li>- Conflicting/varying tx factors for ctrl group could produce differential results</li> <li>- Conflict of interest: Bolte receives royalties from the German and Swedish KONTAKT manuals from Hogrefe Publishers</li> </ul>

<p>Laugeson et al., 2011</p> <p><i>J Autism Dev Disord</i></p> <p>US</p>	<p>Determine efficacy and durability of UCLA PEERS Program</p>	<p>Controlled clinical trial</p> <p>E3 Level II 5/10</p>	<p>N = 28</p> <p><u>Tx:</u> n = 14 M age: 15.0 yo ♂: 85.7%</p> <p><u>Ctrl (delayed tx):</u> n = 14 M age: 14.3 yo ♂: 42.9%</p> <p>In: dx w/HFA, AS, or PDD-NOS</p>	<p><b>I</b> = <i>PEERS for Young Adults</i> 90 min/wk for 14 wks in community setting in groups of 8-10 participants</p> <p><b>O</b> = pre, post, 14 wk follow-up Teacher rating: SRS, SSRS Parent rating: SRS, SSRS, QPQ Self rating: QPQ, TASSK-R</p>	<p>- ↑ SSRS, QSQ, TASSK-R and ↓ SRS scores from pre-to posttest in tx compared to ctrl for all ratings (<math>p &lt; .05</math>) - Tx: all scores maintained at follow-up (<math>p = .05</math>)</p>	<p>- No randomization - Specific geographic location of recruiting limits generalizability - No active tx ctrl group - No standardized diagnostic measures for determining dx - Lack of blinded behavioral observation of targeted behaviors - Reliance on rating scales completed by subjects and caregivers: possible subject expectancy effects</p>
<p>Laugeson et al., 2015</p> <p><i>J of Autism Dev Disord</i></p> <p>US</p>	<p>1) Replicate previous findings of UCLA PEERS Program on social skills of adolescents w/ASD 2) Determine maintenance of UCLA PEERS Program tx gains 16-weeks post-tx</p>	<p>RCT</p> <p>E2 Level I 5/10</p>	<p>N = 22</p> <p><u>Tx:</u> n = 12 M age: 21.01 yo ♂: 77.8%</p> <p><u>Ctrl (delayed tx):</u> n = 10 M age: 19.71 yo ♂: 75.0%</p> <p>In: dx w/ASD, motivated, AQ score <math>\geq 26</math></p> <p>E: hx of mental illness, visual/hearing impairment</p>	<p><b>I</b> = <i>PEERS for Young Adults</i> 90 min/wk for 16 wks in community setting in groups of 10-12 participants</p> <p><b>O</b> = pre, post, 16 wk follow-up Expert rating: TYASSK Parent rating: SSRS, EQ, SRS, QSQ Self rating: QSQ</p>	<p>Tx: - ↑ SSRS, QSQ, TYASSK, and ↓ SRS scores from pre-to posttest for all ratings (<math>p &lt; .05</math>) - All scores maintained at follow-up (<math>p &lt; .05</math>) Ctrl: - All but EQ and SSRS scores maintained at follow-up (<math>p &lt; .05</math>)</p>	<p>- Small sample size - No active tx ctrl group - No standardized diagnostic measures for determining dx - Lack of blinded behavioral observation of targeted behavior and rating of social skills - Reliance on rating scales completed by subjects and caregivers: possible subject expectancy effects - High attrition: 5/22</p>

ABAS-II = Adaptive Behavior Assessment System II, ADHD = Attention Deficit Hyperactivity Disorder, AQ = Autism Spectrum Quotient, AS = Asperger Syndrome, ASD = Autism Spectrum Disorder, b/w = between, CBCL = Child Behavior Checklist, CiS = Oregon State University Autism Clinical Impression: Severity, Perceived Stress, Children in Stress, ctrl = control, EDI = Emory Dyssemia Index, DANVA-2 = Diagnostic Analysis of Nonverbal Accuracy, DD-CGAS = Developmental Disabilities Children's Global Assessment Scale, dx = diagnosis/diagnosed, diff = difference, exp = experimental, HFA = high functioning autism spectrum disorder, hr = hours, hx = history, I = Intervention, In = inclusion criteria, *JAACAP* = *Journal of the American Academy of Child and Adolescent Psychiatry*, *J Autism Dev Disord* = *Journal of Autism and Developmental Disorders*, M = mean (average), min = minute(s), O = Outcomes, OP = outpatient, PDD-NOS = pervasive developmental disorder not otherwise specified, PEERS = Program for the Education and Enrichment of Relational Skills, pt = point, QoL = Quality of Life measure, QPQ = Quality of Play Questionnaire, QSQ-R = Quality of Socialization Questionnaire Revised, *RASD* = Research in Autism Spectrum Disorders, RCT = randomized controlled trial, SDARI = Socio-Dramatic Affective-Relational Intervention, sec = seconds, sig = significant, SRS = Social Responsiveness Scale, SSG = social skills group, SSGT = social skills group training, TASSK = Test of Adolescent Social Skills Knowledge, TASSK-R = Test of Adolescent Social Skills Knowledge-Revised, TAU = treatment as usual, tx = treatment, w/ = with, w/o = without, wk(s) = week(s), yo = years old



**Follow-up and generalization - Outcome Design articles**

Organized by shortest to longest follow-up time

Author, Year	Study Objectives	Study Design/ Levels	Participants: Sample Size, Description	Interventions and Outcome Measures	Summary of Results	Study Limitations
Pahnke et al., 2014 <i>Autism</i> Sweden	Examine feasibility and outcomes of ACT w/adolescents w/ASD	Case-controlled study  O3 Level II 4/6	N = 28  <u>Tx:</u> n = 15 M age: 16.2 yo ♂: 60%  <u>Ctrl (WL):</u> n = 13 M age: 16.8 yo ♂: 92%  In: dx w/ASD, written consent E: dx w/mental retardation or selective mutism	<b>I</b> = Modified ACT STG 40 min, 2x/wk for 6 wks in groups of 4-6 participants w/ daily mindfulness exercises modified to include coping w/ perception and sensory sensitivity for 6-12 min in classroom setting.  <b>O</b> = pre, post, 2 mo follow-up Teacher and self rating: SSS, SDQ Self rating: BYI	- Tx: SSS scores ↓ at posttest on self-report (p = 0.71) and teacher-report (p = 0.048), stable or ↓ at follow-up; ↑ self-reported prosocial behavior (p = .034) - Ctrl: ↑ in SSS scores at follow-up - No b/w-group effects (p > .10) - SDQ: moderate correlation b/w teacher- and self-ratings for emotional symptoms, conduct and peer relationship problems (r = .42-.54; p < .05)	- No active tx ctrl group - Modified scales may decrease reliability and validity of outcome measures - SSS has not been validated for self-report - Small sample size and low statistical power - No objective scoring measures or skilled observation (all self or teacher ratings)
Bonete et al., 2015 <i>Autism</i> Spain	1) To examine effectiveness of SCI-Labor program for adolescents w/ASD 2) To evaluate feasibility of SCI-Labor program based on adherence, attrition, and fulfillment of hw	One group pre-post w/age/gender/IQ matched comparison group for pre-testing only.  O4 Level III 5/6	N = 98  <u>Tx:</u> n = 48 Age range: 16-29 yo 2 drop-outs (included in N) ♂: 86%  <u>Ctrl:</u> n = 50 M age: 19.5 yo ♂: 86%  In: dx w/AS  E: comorbid psychiatric disorders	<b>I</b> = Interpersonal Problem-Solving Skills for Workplace Adaptation (SCI-Labor) Program 75 min/wk for 10 wks in groups of 4-6 participants in a clinic setting.  <b>O</b> = pre, post ESCI, O-AFP Parent rating: VABS-II  3 mo follow-up w/questionnaire	- ↑ on VABS-II total scale, Relations, Leisure, and Coping (p < .05), ESCI Situational Concordance domain and Solutions domains (p < .0001) - No ↑ on ESCI emotional domain (p > .05). ↑ in O-AFP self-report Learning subscale (p < .01) - No b/w-group effects (p > .10). ↓ in group diffs post-treatment (p < .05). - Follow-up: Improvement on most items reported by participant and parent	- Lack of direct measures of skill acquisition in follow-up - Lack of independent, blind evaluator - Lack of generalization analysis to natural settings - Lack of “gold standard” measures in tx outcomes - Only n = 32 for follow-up

<p>White et al., 2010</p> <p><i>Focus on Autism and Other Developmental Disabilities</i></p> <p>US</p>	<p>Evaluate feasibility and efficacy of psychosocial intervention on social functioning for young adolescents</p>	<p>One group pre-post</p> <p>O4 Level III 5/6</p>	<p>N = 15 1 drop-out (included in N)</p> <p>M age: 12.55 yo ♂: 88%</p> <p>In: dx w/ASD, AS, or PDD-NOS</p>	<p>I = SSTG, 75 min/wk for 16 wks in 3 groups of 4 participants and 1 group of 3 participants w/ASD and 1 TD peer tutor. Social skills intervention adapted from Social Development Program (Koenig, White, Lau, &amp; Scahill, 2005). Modified to include adolescent social topics and teaching activities.</p> <p>O = pre, post, 3 mo follow-up Parent and teacher rating: SRS, SCI</p>	<p>- ↑ on SRS parent-report Total Score, Social Communication, and Social Motivation subscales (<math>p &lt; .05</math>). No ↑ on SRS teacher-report (<math>p &gt; .05</math>). ↑ on SCI parent-report and teacher-report social initiative index (<math>p &lt; .05</math>)</p> <p>- Improvement was not maintained at follow-up (<math>p &gt; .05</math>).</p>	<p>- 12/15 completed parent-report at 3 mo follow-up</p> <p>- Teachers did not give any follow-up measures</p> <p>- Small sample size</p> <p>- Lack of ctrl group</p> <p>- Observational data not included</p>
<p>Herbrecht et al., 2009</p> <p><i>Eur Child &amp; Adol Psy</i></p> <p>GER</p>	<p>Evaluate effectiveness of KONTAKT for improving social and communication skills for adolescents w/ASD</p> <p>*Only results of adolescent group included</p>	<p>1°: One group pre-post</p> <p>2°: pre-existing groups comparison w/covariates</p> <p>1°: O4</p> <p>2°: O2</p> <p>Level III 4/6</p>	<p>N = 17</p> <p><u>TxA (adolescents w/o KONTAKT experience):</u> <math>n = 4</math></p> <p>M age: 17.2 yo ♂: 100%</p> <p><u>TxB (adolescents w/KONTAKT experience)</u> <math>n = 7</math></p> <p>M age: 16.5 yo ♂: 86%</p> <p>In: dx w/ASD, AS, or atypical autism/PDD-NOS</p> <p>E: IQ &lt; 70, severe comorbid organic health problems</p>	<p>I = KONTAKT</p> <p>90 min, 2x/wk in groups of 4-7 participants. Structured schedule w/ mix of obligatory, intermittent and flexible elements</p> <p>O = pre, post, 5 mo follow-up</p> <p>Expert rating: DCL-K, CGB, GAS</p> <p>Parent ratings: PIA, SKS, FaBel</p> <p>Blind expert rating: Video observation</p> <p>Teacher rating: FEG</p>	<p>- Large effect sizes for FEG (<math>\eta = 0.69</math>), GAS (<math>\eta = 0.42</math>), all subscales of the DCL (<math>\eta = 0.30</math> to <math>0.50</math>), SKS (<math>\eta = 0.25</math>), and the PIA subscales of peer interaction (<math>\eta = 0.33</math>) and social behavior (<math>\eta = 0.18</math>) across all participants. Some improvement maintained at follow-up, though non-sig</p> <p>- Positive effect of age on communication skills measured by DCL-K (<math>t = 3.0, p = 0.02</math>)</p> <p>- No tx benefit diff b/w adolescent groups</p>	<p>- Missing data (e.g. only 5 participants had full FEG data)</p> <p>- Small sample (KONTAKT limited to max 7 participants; only 3 groups)</p> <p>- Follow-up 5 mo later in Sept, right after returning to school (risk of other factors affecting results)</p> <p>- Risk for bias (lack of blinding, no comparison to ctrl or alt. tx)</p>

<p>Mandelberg et al., 2014</p> <p><i>J of MHRID</i></p> <p>US</p>	<p>Evaluate long-term social outcomes of PEERS</p>	<p>One group pre-post</p> <p>O4 Level III</p> <p>4/6</p>	<p>N = 53</p> <p>M age pre: 14.3 yo</p> <p>M age follow-up: 17.5 yo</p> <p>♂: 81%</p> <p>In: dx w/HFA, AS, or PDD-NOS, social problems reported by parent, motivated</p> <p>E: hx mental illness, visual, hearing, or physical impairment, previous participation in Children’s Friendship Training Program</p>	<p><b>I</b> = <i>PEERS for Young Adults</i></p> <p>90 min/wk for 12-14 wks in community setting in groups of 8-11 participants</p> <p><b>O</b> = pre, post, follow-up (M = 29 mo)</p> <p>Self rating: TASSK, QPQ</p> <p>Parent rating: SSRS, SRS, QPQ, FII</p>	<p>- ↑ on SSRS Total Social Skills, QPQ parent report, TASSK (<math>p &lt; .001</math>)</p> <p>- ↓ on SRS and SSRS Total Problem Behaviors (<math>p &lt; .001</math>)</p> <p>- No diff on QPQ teen report (<math>p &gt; .05</math>)</p> <p>Follow-up: FII revealed 79% of adolescents involved in extracurricular activities at follow-up and 75% of adolescents reported having at least one “pretty close” friend at follow-up</p>	<p>- Outcomes measures were only parent and adolescent ratings</p> <p>- Some subjects participated in additional tx b/w end of tx and follow-up</p> <p>- No dx verification</p> <p>- Only 27/53 participants were measured on the SRS since it was administered halfway through the study</p>
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ACT = Acceptance and Commitment Therapy, ADI-R = Autism Diagnostic Interview-Revised, alt = alternate, AS = Asperger’s syndrome, ASD = autism spectrum disorder, b/w = between, BYI = Beck Youth Inventory, CGB = Checklist for group behavior, DCL = Diagnostic checklist for pervasive developmental disorders, DCL-K = DCL communication domain, diff = difference, dx = diagnosis, E = exclusion criteria, ESCI = Emotional and Social Competency Inventory, *Eur Child & Adol Psy = European Child and Adolescent Psychiatry*, FaBel = Family burden questionnaire, FEG = Questionnaire for the assessment of group behavior, FII = Friendships and Interventions Interview, GAS = Global assessment of functioning scale, HFA = high functioning autism spectrum disorder, hw = homework, hx = history, I = intervention, In = inclusion criteria, *J of MHRID = Journal of Mental Health Research in Intellectual Disabilities*, M = mean, min = minutes, mo = month(s), O = outcome, O-AFP = Osnabruck Work Capabilities Profile, PDD-NOS = pervasive developmental disorder not otherwise specified, PIA = Parent Interview for Autism, pt = point, QPQ = Quality of Play Questionnaire, QSQ = Quality of Socialization Questionnaire, SCI = Social Competence Inventory, SCI-Labor = Interpersonal Problem-Solving Skills for Workplace Adaptation Program, SDQ = Strengths and Difficulties Questionnaire, Sept = September, sig = significance, significant, SKS = Social Competence Scale, SRS = Social Responsiveness Scale, SSGT = social skills group training, SSRS = Social Skills Rating System, SSS = Stress Survey Schedule, STG = skills training group, TASSK = Test of Adolescent Social Skills Knowledge, TASSK-R = Test of Adolescent Social Skills Knowledge-Revised, TD = typically developing, tx = treatment, VABS-II = Vineland Adaptive Behavior Scales, Second Edition, w/ = with, w/o = without, wk(s) = week(s), yo = years

**Summary of Key Findings:****Summary of generalization studies with no follow-up**

Within this category, there were six studies with multiple design types. Collectively, these six studies provided moderate support for the generalization of skills following social skills interventions. Results of the studies suggest that group social skills interventions are effective for increasing conversation skills, number of friends, general social participation, and appropriate behaviors outside of the treatment setting in the home and community. One level IV study reported skill generalization with evidence that a one-on-one social skills intervention increases performance of behaviors that were targeted and untargeted during the intervention (Koegel & Frea, 1993). Most programs were developed by the authors and include elements of direct instruction, modeling, and role play, but these studies also included established programs such as the PEERS or SCORE Skill Strategy (Van Hecke et al, 2013; White et al., 2007). Four of six studies (three level III studies and one level I study) showed that active participation in weekly social skills groups significantly improved social skills and related measures including self-esteem, social motivation, and frequency of problem behaviors (Broderick et al., 2002; Mackay et al., 2007; Tse et al., 2007; Van Hecke et al., 2013). A systematic review by White et al. (2007) reported inconsistent results of interventions when skill-based measures were used, such as facial expression recognition and problem-solving, as well as infrequent change when parent-reported skill-based measures were used. A common limitation is the lack of direct observation and increased reliance on parent ratings for determining generalization. Results lack findings about the subjective experience of participants and how skills acquired in therapy generalize and influence overall functioning.

**Summary of generalization studies with follow-up**

*Summary of experimental studies (RCTs, single subject, and controlled clinical trials):* From the experimental research analyzed, six studies collectively demonstrate statistically strong evidence to suggest that social skills group intervention increases social participation and function in adolescents with ASD, and that these improvements are maintained long-term. Such skill acquisition includes increases in conversational abilities, social assertion, emotion identification in peers, problem-solving with social conflicts, and general social skills knowledge. Among the related research, two of six studies are RCTs and demonstrate both generalization and follow-up for at least sixteen weeks posttreatment (Olsson et al., 2017; Laugeson et al., 2015). Overall, follow-up measures range from one to four months after intervention completion. The remaining four studies (Dotson et al., 2010; Lerner et al., 2010; Mitchell et al., 2010; Laugeson et al., 2011) each provide moderate evidence since they support the success of social skills group intervention, but are experimental designs of lower rigor. Furthermore, there is moderate evidence that these skills generalize outside of treatment. In five of six studies, (Lerner et al., 2010; Olsson et al., 2017; Mitchell et al., 2010; Laugeson et al., 2011; Laugeson et al., 2015), increases in skills were reported through self-rating (by adolescents) and at least one outside source (teacher or parent ratings). Data from sources outside of the clinic setting provide evidence for transfer of gained skills. However, a common limitation is again reliance on self- and family-report measures for evidence of generalization, instead of direct observation of social function in naturalistic settings. Other common limitations themes include lack of blinding and active control groups. Out of the six studies, four involve standardized social skill intervention, while the other two were researcher-developed.

*Summary of outcome research (one group pretest/posttest and case controlled studies):* Five of five outcome studies had statistically moderate evidence suggesting that group social skills training increases prosocial behaviors and decreases autism symptoms and maladaptive behaviors in adolescents with ASD. Further, these results have been shown to be generalized across home, community, and school settings in all five studies and maintained during follow-up for four studies. One level II study of ACT-based group social skills training (Pahnke et al., 2014) showed decreased teacher and self-reported stress, emotional symptoms, peer relation problems,

and increased self-reported prosocial behaviors that were significantly maintained at two-month follow-up. Three level III studies of group social skills trainings (Bonete et al., 2015; Herbrecht et al., 2009; Mandelberg et al., 2014) showed increased parent-reported interpersonal skills, self-control, assertion, peer get-togethers, and decreased parent-reported maladaptive behavior and family burden. These same studies also found increased teacher-rated cooperation and initiation skills in addition to clinician-measured increased emotional competence, social competence, and work capabilities with decreased autism symptoms. Most of the parent-reported improvements and decreased autism symptoms were maintained in 3-60 month follow-ups. However, one level III study (White et al., 2010) found increased parent-reported social responsiveness such as motivation and communication and increased teacher and parent-reported social initiative that were not maintained at three-month follow-up. Common limitations included no active treatment control groups, lack of direct measures, small sample sizes, and limited follow-up responses.

### **Implications for Consumers:**

Adolescents with ASD and their caregivers should be aware that social skills group training is supported by moderate to strong evidence for increasing social functioning and maintaining improvements long-term. Additionally, consumers should be informed that this treatment does not only increase social functioning within the clinical setting in which it is taught but also some treatment gains generalize to other settings and situations, as indicated by ratings from individuals such as teacher and parents. It is important to note that analyzed evidence was concentrated on adolescents with ASD on the higher-functioning end of the spectrum. Thus, individuals seeking intervention would have stronger evidentiary support for intervention success if they matched these participant characteristics. If the consumer is searching for treatment to improve social functioning that is supported by the literature to provide long-term maintenance and transferrable skills, this summary of the available evidence supports intervention with social skills groups. With this knowledge, consumers can be better equipped to advocate for themselves for the most appropriate and effective treatment.

### **Implications for Practitioners:**

Practitioners may use the information presented in this CAT report when selecting treatment for their clients with ASD. The evidence supports the use of social skills groups for adolescents with ASD as an effective intervention choice for improving deficits in social skills. Outpatient practitioners that implement group social skills interventions with adolescents with ASD may see development in social skills, some of which may be maintained and/or generalized to home, school, and community settings. In addition, these interventions may decrease some symptoms of autism as well as some inappropriate and maladaptive behaviors that may be maintained over time in different settings (Bonete et al., 2015; Herbrecht et al., 2009; Mandelberg et al., 2014). In addition, practitioners who are interested in using social skills groups can justify their choices to their workplace or insurance companies with support from the literature. Specific types of social skills groups that have been shown to be effective in generalization and follow-up include PEERS, SCI-Labor, ACT-based, KONTAKT, behavioral, psychoeducational, SDARI, and SCORE. Successful intervention formats involve social stories, role play, modeling, skills practice, peer socialization, and homework. The most frequently cited duration was one time per week for 6-16 weeks, 75-90 minutes per session, in groups of 4-11 adolescents.

### **Implications for Researchers:**

Researchers may use the information from this review to direct and inform future studies. With the knowledge that social skills interventions can produce lasting, effective results, researchers may be interested in the maximum maintenance time periods, the “dose-response” relationship between group social skills training and effectiveness, and possible replication of current studies. Research to develop or evaluate the most effective, reliable, direct measures for generalizability outside of parent, teacher, and participant ratings would increase the strength of research about social skills interventions. In

addition to improving direct measures, researchers could strengthen the literature with more rigorous designs that include blinding and active control groups. Researchers can also use the information regarding optimal frequency, duration, and intervention components of social skill intervention to inform future studies. Research should expand to investigate the effectiveness of social skills interventions for adolescents with ASD who are not considered high-functioning. The literature also lacks qualitative design studies for adolescents with ASD. Research with this design, especially with prolonged engagement, would provide additional information about the experience of social skills group and could contribute to strengthening the evidence for generalization and maintenance of skills.

**Bottom Line for Occupational Therapy Practice/ Recommendations for Better Practice:**

Research suggests that group interventions targeting social skills are effective for adolescents with ASD for increasing social functioning, producing improvements that transfer across settings, and eliciting functional gains that are maintained over time. Specifically, we know from this research that adolescents considered high-functioning benefit from these interventions. As such, social skill groups should be considered when choosing interventions for clients with higher functioning ASD, in the adolescent age range, and with social function concerns. Most of the studies in this review had participant criteria that excluded adolescents with lower levels of functioning, so social skills groups should be considered with the caution for this specific population. Considering this evidence will increase the likelihood that the most effective treatment will be selected for clients who need to increase their social participation. In conclusion, facilities that serve individuals with the identified characteristics can confidently consider social skills groups to be evidence-based practice and use such groups to maximize overall potential treatment effectiveness.

## References

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“\*” before a reference indicates one that appears in the CAT table itself.

### **Involvement Plan**

**Introduction.** Our group delivered the final CAT paper to the collaborating clinician on February 1, 2018. In our meeting with Dr. Tanta to discuss the knowledge translation piece of our research, she informed us that due to financial reasons, it was not going to be possible for her clinic to implement social skills group at this time. We explored other ideas and she introduced us to another therapist at the same facility, Claire Fischer, MS, CCC/SLP. Claire talked with us about how there is a need for increasing social skills as well as making sure parents and adolescents have an understanding of the development of social skills and social competency as a whole. The main rationale for this project was a need to demonstrate to consumers the value of teaching adolescents social skills and increase support and advocacy for those with ASD.

The final product of our knowledge translation project was a consumer guide of social competencies for parents, therapists, and adolescents with high-functioning ASD. The beginning of the guide includes an introductory section that provides an overview of interventions and research, an outline of general expected social behaviors, development of the guide, common deficits among persons with ASD that make social skills difficult, and the importance of advocacy. After the introduction, the guide sequentially focuses on specific social skills, separating each into three components. Each identified skill contains an explanatory section and possible limitations to its mastery. Next, each skill section has a short guide to advocacy, both for caregivers and the individuals with ASD themselves. Lastly, it details various evidence- and practice-based interventions that may be used to address and improve the skill. This three-part approach not only provides ideas to ameliorate social problems, but an explanation for why they exist and ways advocate for understanding and acceptance by others.

**Contextual Factors.** The knowledge translation activities were based in occupational therapy research and practice, but are able to be implemented by parents and other disciplines. Since Children’s Therapy serves clients of diverse ethnic, economic, and educational backgrounds, the implementation of activities by parents may depend on their English-language competency, available resources, and level of education. Therapists at Children’s Therapy may need to educate parents on the activities and may choose to implement some activities in their clinic. The guide was intended to be a convenient resource for therapists to use. Therefore, implementation of the guide for therapists would practically decrease extra time needed to research social skills and related activities rather than increase the workload, which can happen with some research implementation (Palinkas & Soydan, 2012). If the therapists choose to use this guide, the implementation of these interventions may be impacted by their discipline-specific knowledge. We provided a brief description of the guide for the staff so that they know how to use it and when it would be appropriate to give to clients. The implementation of activities or parent education by therapists may be further influenced by time limits and justification for reimbursement depending on the type of interventions used, as most clients are funded by Medicaid.

A contextual factor that supports research implementation is Dr. Tanta’s transactional leadership which is based on exchanges between herself as the manager and the therapists on staff. The original research question was developed following staff interest in implementing social skills groups, and the knowledge translation project was developed with input Claire; exchanges like these contribute to this leadership style which positively impacts organizational attitudes towards implementing research (Palinkas & Soydan, 2012). Additionally, the guide is a

sustainable product because it can be printed as needed for clients and families. Therefore, the only associated cost is printing.

Our knowledge translation process contained some issues with fidelity. As our research specifically focused on group treatment, the information we used for activities that will be carried out in different conditions will have lower fidelity. Though we used evidence-based interventions that demonstrated success in improving social competency, we applied them to a broader range of situations. A disclaimer was included in the guide to convey this potential limitation.

### Tasks/Products and Target Dates

<b>Task/Product</b>	<b>Deadline Date</b>	<b>Steps to achieve the final outcome</b>
Introduction section of the consumer guide	March 1	<ul style="list-style-type: none"> <li>- Research expected social skills</li> <li>- Research social skill deficits common in individuals with ASD</li> <li>- Research benefits of or need for self or parent advocacy regarding social skills in individuals with ASD</li> </ul>
Completed list of skill competencies	March 8	<ul style="list-style-type: none"> <li>- Use research to determine most important 10-15 social skills for adolescents</li> <li>- Organize social skills (e.g. conversation skills, interpersonal skills)</li> </ul>
Descriptions/developmental sequences/underlying causes of delays for each social skill	March 22	<ul style="list-style-type: none"> <li>-Research descriptions/developmental sequences and causes</li> <li>-Combine information from sources and translate it to be understandable for parents</li> </ul>
Activity intervention ideas for each social skill	March 29	<ul style="list-style-type: none"> <li>- Research interventions/activities</li> <li>- Identify those which would be feasible for parent application</li> <li>- Provide understandable descriptions/steps for activity implementation</li> </ul>
Advocacy methods for social skills	April 5	<ul style="list-style-type: none"> <li>- Research advocacy methods</li> <li>- Combine methods/apply them to the</li> </ul>

		various social skills - Complete the advocacy guide in an understandable way for parental/adolescent use
Final edits/transfer of guide to Children's Therapy	April 12	- Share with course mentor and department chair for edits/approval - Complete final edits and combine all parts into accessible guidebook

### **Outcomes of activities to be monitored/evaluated**

Surveys were administered to pediatric therapists to rate satisfaction and perceived efficacy of the guidebook. The survey covered a variety of questions including rating convenience, utility, and clarity of the guide along with open-ended questions about potential improvements and if reviewers would recommend this guide to parents. In the future it would also be helpful to administer this survey to parents of individuals with ASD.

### **Knowledge Translation**

Overall, the knowledge translation process was a challenging and engaging opportunity to put into practice what we had learned from the literature review. However, it began with some difficulty in deciding what product we would create. Originally, Dr. Tanta was interested in a potential curriculum for a social skills group intervention that she could implement at her clinic. Unfortunately, at the end of our research process, Dr. Tanta informed us that there was not funding for such a program. As such, we began our process of deciding what would be the most useful product to create for the clinic.

After discussing a few implementation ideas that were not feasible, Dr. Tanta referred us to Claire Fischer, MS, CCC/SLP. Claire was interested in a potential tool that would help her clients who had ASD with their social skills. She was specifically interested in the communication of social competency development, potential advocacy methods to support individuals in their various environments, as well as interventions for skill progression. After a synthesis process with Claire's ideas and our prior research, we collaboratively decided on a guide for parents and practitioners to help individuals with ASD develop social skills.

As Claire wanted a product that was informational and useable, we chose eleven relevant social skills to include in our guide. We selected these skills because our research suggested that they were common limitations for those with ASD. Additionally, the skills were chosen because of the associated evidence-based interventions that were supported both in our new research and original CAT project. We chose the following sections to include for each skill: description, potential limitations, interventions, and advocacy methods. These areas were selected with the goal of providing information of possible skill deficits, as well as methods to improve

competencies. A focus on the developmental sequences of skill acquisition was included when warranted.

Interventions were also designed with newly-researched evidence and existing evidence from our CAT. The activities were edited to be easily understood by parents who may implement them. Each skill contains three intervention ideas, so that the guide might meet the needs of a wider variety of people. At first, we encountered difficulty obtaining evidence to support interventions for some specific skills. To address this problem, we combined similar skills to create more researchable topics. An appendix was added to the end of the guide to further explain a theory of social competency development.

Once the first draft of our guide was completed, it was edited by our course mentor and chair. Edits were incorporated and the final draft was created, copyrighted, and sent to Dr. Tanta (See Appendix A). We included a satisfaction survey for feedback on the efficacy and readability of the guide and a brief description of the guide for therapists (See Appendices B and C). We also disseminated this survey to our course mentor and project chair. Suggested changes will be analyzed and integrated into future renditions of the guide. Since the product creation was an extensive process with new research, there was not enough time to obtain an adequate amount of feedback from the survey and make any further changes to the guide. Future work should be done to acquire a more comprehensive and representative data sample including parents to ensure the data is representative of the intended audience. Our final product will be displayed at a research symposium, which will provide another opportunity to receive feedback on the perceived usability and applicability to the intended client group.

**Dates of Completion**

- **March 1** - Introduction section of Social Skills Guide completed
- **March 8** - Initial list of social skill competencies compiled (14 total)
- **April 4** - Skill description, potential limitations, advocacy ideas, and activities completed for each social skill
  - The guide contains 11 skill areas as some from the initial list were combined (e.g. eye contact and facial expressions were combined to “Recognizing Nonverbal Social Cues”).
  - Instead of following the original deadline dates to complete descriptions, activity ideas, and advocacy methods on different dates, we focused on completing all areas for one skill at a time.
- **April 4** - Rough draft to Chair and Project Mentor
- **April 11** - Developed Satisfaction Survey
- **April 13** - Final draft of guide to Chair, Project Mentor, and Collaborating Clinician along with Satisfaction Survey



### **Outcomes and Effectiveness**

The outcomes of our Social Skills Guide were monitored through use of a survey (see Appendix B). Surveys were administered to Dr. Tanta, Dr. Watling, and Dr. Zylstra. The survey was designed to collect feedback on how we could improve our guide to better serve those who might use it. In the future, surveys will be administered to a larger population of individuals to integrate more feedback into the improvement process. In the future, it would be especially beneficial to collect feedback from parents of those with ASD to assess the utility of our product for that group, as our guide is designed to be used by parents.

The feedback we received was variable across the three practitioners. Dr. Tanta provided constructive criticism for ways in which the guide could be improved. She focused her suggested changes around the readability and accessibility of the guide for parents. She felt that the guide could be simplified to reach a wider audience. Additionally, she suggested that the research could have been clearer, as well as the organization of the guide in general. She would have liked the guide to have contained fewer activities per skill, include pictures, and be more streamlined. Dr. Tanta concluded that at this stage, the project would be an appropriate staff resource guide rather than a parent guide. Making the changes that Dr. Tanta has suggested would likely increase the population that could benefit from the Social Skills Guide, and so future revisions will certainly take her thoughts into consideration.

Dr. Watling had some similar suggestions, including clearer explanations of activities and addition of pictures or graphics to increase ease of use for parents. However, she noted that the guide provides enough information for a practitioner to implement the activities as well as customize them to meet individual needs for the client they are working with. Dr. Watling considered the advocacy component of the guide to be especially helpful as information about

parent advocacy and self-advocacy can be difficult and time-consuming to find. Dr. Zylstra reported she would recommend this guide to parents of children with ASD, but suggested to continue to work on the guide over the next year adding links and resources to then submit to a vendor at the AOTA conference.

Dr. Tanta conveyed that the design of our knowledge translation process did not allow for enough time to work together with her and Ms. Fischer to create a practical Social Skills Guide for families at Children's Therapy. In the future, Dr. Tanta would have preferred to see earlier drafts of the guide to provide more feedback on how to make it applicable to parents of children with ASD. Overall, she reported that the Social Skills Guide is a good start that can be further improved to become applicable for families at the clinic.

Based on the feedback, there appears to be several potential uses for the Social Skills Guide in pediatric settings. However, improvements can be made to increase its general use and widespread applicability. These improvements may include simplifying the language, adding pictures, and making it more concise.

### **Evaluation of the Overall Process of Project**

Being able to research a topic and complete a knowledge translation project that would address a current clinical problem practitioners were experiencing added a practical value to our research thesis. Originally our collaborator, Dr. Tanta, wanted us to study the feasibility of implementing social skills groups in a clinic setting, but this topic was too specific and our course mentor informed us that it would not yield many search results. Thus, our course mentor and project chair helped us form a research question around other topics of interest from our collaborator regarding social skills groups. However, the original research question was still too involved (“What is the evidence for group and/or individual intervention for social skills acquisition, maintenance, and generalization for adolescents with autism?”). We met with our course mentor and project chair to re-define and narrow our research question to our current one (“What is the evidence for generalizability and/or long term maintenance of social skills intervention for individuals with autism spectrum disorder ages 13-21 years?”). Through our research, we synthesized evidence on the generalizability and maintenance of social skills groups that informed Dr. Tanta on the lasting effects of social skills groups on the individuals’ social functioning.

Our knowledge translation did not directly relate to our CAT as Dr. Tanta felt that social skills groups, while effective, were not feasible to implement at their clinic. Instead, she had us discuss possible knowledge translation topics with another practitioner, Claire Fischer, who had a clinical need for a parent guide. This required additional research from us as the topic was on specific activities to improve social skills and advocacy for individuals with ASD. These factors made the creation of the guide for the knowledge translation more challenging.

However, we were able to use the research we found in the CAT as foundational knowledge to supplement our new research.

Our group felt that we did not have enough time to monitor outcomes. While we were able to monitor the outcomes through a survey given to Dr. Tanta for her practitioners, we did not have time to give the guide to parents and receive feedback. We may have been able to complete the Social Skills Guide a couple weeks earlier to allow enough time to receive feedback from parents. However, creating the guide was an extensive process that required adequate time to finalize. Overall, our group members equally divided work for the CAT and knowledge translation project. We met as a group throughout the process to collaborate, maintain consistency, and ensure we were meeting deadlines. We are pleased that our CAT topic and knowledge translation project addressed social skills as this is such a prevalent, growing topic in pediatric occupational therapy practice. We will be able to proudly share our CAT findings and implement activity or advocacy ideas with our future fieldwork II placements and employers.

### **Recommendations for Future Research and Follow-up Project**

Since our research only included adolescents with ASD, future follow-up projects could investigate evidence for generalizability and/or long term maintenance of social skills intervention for individuals in other age groups such as children and/or for other diagnoses such as attention-deficit hyperactivity disorder or traumatic brain injury. There should also be follow-up on the effectiveness of our activities from the Social Skills Guide. Research should be done to investigate the effect of these parent-implemented social skill activities and/or advocacy strategies on specific social skill development of individuals with ASD. Further, a more in-depth literature review to investigate which specific social group activities were most effective at developing the associated social skill or an experimental study on the effectiveness of teaching a specific social skill through two different ways would further benefit parents and practitioners.

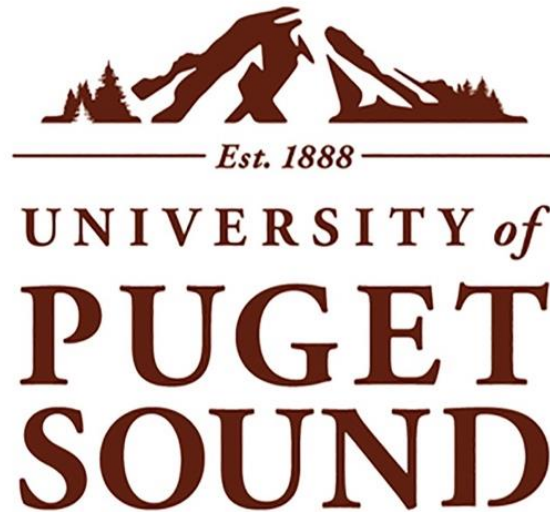
While performing our research, we noticed a lack of outcome measures for generalizability. We used parent or teacher reports to report on generalizability of social skills outside of therapy. Thus, one area for future research would be on the creation of reliable and valid outcome measures for generalizability to measure the transfer of skills to home and school environments. The second part of our research question was on the long-term maintenance of social skills resulting from group interventions. We used data from studies with follow-ups to report on this, but the follow-ups varied from 3 to 60 months. Research regarding the optimal length of follow-up would be beneficial for future studies on the long term effects of treatment.

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Appendix A

# Social Skills Guide



Produced by Alanna Flynn, OTS, Megan John, OTS, and Madeleine McBroom, OTS  
for Valley Medical Center Children's Therapy

**Disclaimer:**

This guide was created by student occupational therapists and should be used for educational purposes only. Consult a licensed occupational therapist if you have any questions or want further information.

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Persons Exempt: Sheryl Zylstra, DOT, MS, OTR/L and Julie Anderson, DrOT, OTR/L



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### **Introduction to the Social Skills Guide**

This guide is designed for parents, caregivers, and therapists of individuals with Autism Spectrum Disorder (ASD), as well as for those with ASD themselves. It aims to outline typical social competencies, their development, and potential interventions to improve various social skills. Additionally, it explains the possible causes for limitations in social function that those with ASD may experience. Lastly, it includes information for advocacy, so persons with ASD and those close to them can work to foster understanding and gain the necessary accommodations for successful participation. The recommended activities are supported by research and occupational therapy practice and are intended to provide opportunities for practice and problem-solving in relation to each social skill. The activities include a combination of games, exercises, role play, and real-life practice to encourage learning through a variety of methods and so that families and individuals can determine which activities would be the best fit. This could be based on individual preferences, skill level, or the opportunities/resources available for practice. The goal is for the activities to be clearly understood but challenging enough to promote skill development. Some of the activities are recommended based on research of group social skills interventions, so applying these activities outside structured group interventions may produce different outcomes as presented in the literature. However, the underlying skills addressed are the same and the recommended activities are intended to promote overall improved social competence.

### **Development of the Project and Literature Review**

The Social Skills Guide is a research translational project from a literature review on the efficacy of social skill interventions, completed for Dr. Kari Tanta, PhD, OTR/L, FAOTA, of Valley Medical Center Children's Therapy. The available research indicates that social skill interventions are effective, sustainable, and generalizable. This guide is designed to be a tool for parents and therapists to implement evidence- and practice-based activities for individuals with ASD. It is intended for educational purposes only.

### **Expected Social Behaviors**

Expected social behaviors are those which are socially-typical in various situations. They are the “unwritten rules” of social interaction (Social Thinking, n.d.). Necessary social behaviors for adolescents include being able to use strategies to join and exit conversations, use conversational skills including nonverbal and verbal communication, use electronic forms of communication, use humor appropriately, show good sportsmanship, and resolve arguments (Mandelberg, 2014). Nonverbal communication requires being able to utilize/demonstrate nonverbal cues, such as making eye contact, and also to recognize nonverbal cues in others, such as body posture of others, are expected social behaviors (Broderick, 2002). Further, respecting personal space by leaving an appropriate interpersonal distance during social interactions is an expected social behavior that may cause tension when not followed (Asada et al., 2016).

### **Common Deficits Found with ASD**

Social cognition, which includes deficits in social-emotional learning such as managing emotions and understanding others’ perspectives, distinguishing between personal feelings and those of others, and constructing meaning from social interactions, is commonly limited among individuals with ASD (American Speech-Language-Hearing Association, 2018). Additionally, social reciprocity such as responding to social initiations from others and making contingent comments is also a commonly-delayed skill. Individuals with ASD have difficulty understanding and using nonverbal communication including facial expressions, gestures, eye contact, and body language. Common conversation deficits are rules of proximity or personal space, voice volume, timing and turn-taking in conversations, as well as understanding figurative language such as sarcasm. Further, these individuals tend to make inappropriate or irrelevant comments often perseverating on a specific topic of personal interest. Limits in joint attention and sensory processing hinder the ability to maintain social interactions in busy environments (American Speech-Language-Hearing Association, 2018).

### **Parent/Caregiver Advocacy**

Those with ASD may experience limitations in social interaction that negatively impact their participation in work and school, and within relationships. Being thoroughly informed on these issues and their possible causes allows parents and caregivers to advocate for their child in the most effective way possible. Methods for advocacy for specific social delays provide parents with tailored approaches for their child's unique needs. Understanding the limitations, how they may be ameliorated, and possible accommodations equips parents with the resources to create an environment in which their child can thrive. Using these techniques will help inform others about how to best work with and become more accepting of those with different abilities. Thus, individuals with ASD may be best supported and successful in their day-to-day life.

### **Self-Advocacy**

For individuals with ASD, self-advocacy is a skill that is important throughout life, so it is a skill that is good to learn early and practice often. Students who demonstrate advocacy skills are more successful in postsecondary education and employment (Test et al., 2009). However, self-advocacy has been identified as a particularly challenging skill for individuals with ASD in postsecondary experiences which is why it is so important to address early (Elias & White, 2017).

Self-advocacy starts with self-awareness. It is important for individuals with ASD to know their strengths and weaknesses and how those affect interactions with other people and the environment (AutismSociety, 2016). Based on these strengths and weaknesses, individuals can know what is difficult for them as well as possible solutions to support participation in school, work, life at home, or time with friends.

The next part of self-advocacy is disclosure (AutismSociety, 2016). In order to advocate for yourself, you must be able to tell others why you need support or accommodations as well as what that looks like. Self-advocacy is as much about knowing and using your strengths as it is knowing what may be difficult for you. This guide will provide parents with examples of how to help their child develop self-advocacy for their specific social skill challenges.

**Social Skills:**  
Descriptions, potential  
limitations, activities & ideas  
for advocacy

## **Maintaining Personal Space**

**Skill Description:** Maintaining personal space is important in order to develop positive interpersonal relationships, communicate successfully, and prevent discomfort (Asada et al., 2016). Competencies needed to develop this skill include recognizing social cues and theory of mind skills.

**Potential Limitations:** In a research experiment by Asada et al. (2016), individuals with ASD showed preference to smaller interpersonal distances with people and objects than typically developing individuals. However, the individuals with ASD maintained longer distances when eye contact was made. This suggests that their reduced personal space may also be connected to difficulties with making eye contact, as this is another common difficulty for individuals with ASD. Further, individuals with ASD have difficulties with emotional processing, recognizing social cues, and theory of mind skills (Asada et al., 2016). Thus, a child with ASD may not be aware of the social cues that alert a typically developing child to stand further away.

### **Advocacy:**

Tell others that if your child invades their personal space, it is not intentional. Educate others on your child's lack of awareness and difficulty with recognizing the social cues. Prompt them to respectfully say something if your child is not leaving enough interpersonal space and is causing discomfort. The goal is to increase awareness without negatively influencing your child's self-esteem or motivation for social interactions.

Teach your child to be aware of his or her challenge in maintaining appropriate personal space and have your child practice phrases to say to people. These may include proactive phrases such as, "Sometimes I am not aware of how close I am standing to people. Please let me know if I am standing too close," or reactive phrases such as, "I was not aware that I was invading your personal space. I did not mean to make you to feel uncomfortable. I will try to give you more space next time." Give your child tools to handle confrontation regarding personal space so that these interactions do not harm his or her relationships with others.

### **Activities: Maintaining Personal Space**

#### **Read “Personal Space Camp” by Julia Cook**

- Ask your child questions to ensure he or she is understanding the concept
- To further develop your child’s learning, play tag using hula hoops, which are referred to as “comfort bubbles” in “Personal Space Camp” by Julia Cook to represent personal space (Innis, 2012; Cook, 2007). Have each individual stand with a hula hoop around his or her waist and bump into another person’s hula hoop to tag the next person (Innis, 2012).

#### **Role play examples of appropriate and inappropriate personal space**

- Step 1: Vary distances when having conversations
- Step 2: Video tape these interactions. Watch them back with your child to review which instances of personal spaces were appropriate and why (Kelly, 2014).
- Step 3: Role play social cues such as the other person taking a step back. Video tape these interactions and watch them back to discuss the social cues to be aware of that may signal when the other person feels discomfort and how to respond to them (Kelly, 2014).

#### **Hula Hoop Activity**

- Step 1: Prompt your child to stand in a hula hoop.
- Step 2: Prompt another person to stand in the hula hoop with your child and make eye contact with him or her (Delaney, 2016). Typically your child will experience discomfort because the other person is intruding on your child’s personal space.
- Step 3: Have your child take a step back and try again until it is a comfortable interpersonal distance for someone to approach him or her (Delaney, 2016).
- Step 4: Discuss how the experience made your child feel and compare the discomfort he or she may have experienced to how other people feel when he or she goes into their personal spaces
- Step 5: Determine a general rule for appropriate interpersonal distance, which is typically an arm’s distance away (Delaney, 2016).

## **Recognizing Nonverbal Social Cues**

**Skill Description:** Nonverbal communication is important in the facilitation of positive social interactions. It is important to use and recognize nonverbal forms of communication in order to maintain the attention of others (Bell, 2013). In recognizing nonverbal social cues, individuals can safely navigate social situations with minimal anxiety (Bell, 2013). Specifically, tone of voice and facial expressions indicate the underlying emotion and give clues for how to interpret the verbal exchange (Segal et al., 2018). Eye contact and body posture indicate level of interest (Segal et al., 2018).

**Potential Limitations:** Nonverbal communication typically develops automatically through watching the expressions of others. Children with ASD usually do not unconsciously learn these nonverbal communication skills during infancy and childhood. Common limitations include not being able to sustain eye contact, vary tone of voice, or use and understand gestures, body language, and facial expressions (American Psychiatric Association, 2018).

### **Advocacy:**

Tell others your child may not sustain eye contact for the whole conversation and may not look directly at their eyes but rather at other parts of their face such as the forehead. Explain to them that your child may not sustain eye contact because it is stressful or distracting during conversations (Autism Speaks, 2018).

Teach your child phrases to use such as, “I am paying attention to you even if I am not looking at you” (Autism Speaks, 2018). If looking at a part of the person’s face is too difficult, teach your child phrases such as “mmm-hmm” or “okay” to say during conversations to indicate to the other person that he or she is still paying attention (Autism Speaks, 2018).



## **Activities: Recognizing Nonverbal Social Cues**

### **Tone of voice**

- Step 1: Make cards indicating various emotions such as bored and excited
- Step 2: Pick a phrase with neutral meaning such as, “How are you?” Take turns drawing cards and saying the phrase using the emotion indicated on the card (Bell, 2013)
- Step 3: Use a voice recording to play it back to your child and have him or her reflect on whether the tone of voice used matched the emotion (Bell, 2013)
- Step 4: After your child gets the hang of this, say the phrase using different emotions and have your child indicate what emotional voice tone you are using (Bell, 2013)
- Step 5: Role play by drawing cards and having conversations in the designated emotional voice tone

### **Interpreting body language**

- Step 1: Show pictures or act out different body behaviors that indicate emotional states such as disinterested or engaged (Mind Tools Content Team, 2018)
- Step 2: Ask, “How does this person appear to be feeling?” and prompt your child to label the emotion such as, “She appears disinterested.”
- Step 3: Ask, “How do you know?” and have your child describe reasons such as, “Her arms are crossed, she is not looking at me, her body is positioned away from me.”

### **Eye contact**

- With a child, play with bubbles, prompt them to look at you, and then blow a bubble (Children’s Speech and Language Therapy Service, 2012).
- For adolescents, role play different conversation topics and prompt them to make eye contact for at least 3 seconds at a time. If making direct eye contact is too difficult, cue the adolescent to look at your forehead instead

### **Facial Expressions**

- See “Emotional Intelligence” (page 11)

## Emotional Intelligence

**Skill Description:** Emotional intelligence involves recognizing, showing, understanding, and managing emotions, which is important for social interactions and developing peer relationships (Boily et al., 2017). Competencies needed to develop this skill include recognizing facial expressions, being able to internally categorize these as emotions, and displaying emotions at socially-appropriate times (Bell, 2013). This allows people to emotionally connect with one another and form social bonds.

**Potential Limitations:** Individuals with ASD usually have decreased emotional intelligence, specifically with understanding and managing emotions, compared to typically developing individuals (Boily et al., 2017). Futher, Uljarevic & Hamilton (2013) found that individuals with ASD have difficulty recognizing emotions. Since these individuals do not notice the social cues such as facial expressions, they have difficulty navigating social situations leading to social isolation (Bell, 2013).

### Advocacy:

Tell others that your child has feelings but has difficulty processing and appropriately-displaying emotions. Tell others to be more direct with your child about how they are feeling. For example, instead of showing they are angry through nonverbal behaviors, ask them to label their emotions such as saying “I feel angry” to make it more explicit for your child. You can practice doing this with your child as well. If your child is nonverbal, have others use picture cards to represent emotions they are feeling. If there are certain signs to look out for that may precede an emotional outburst such as an angry tantrum, warn others about these. This is a way to help prevent your child from displaying their emotions at a socially-inappropriate time.

Teach your child to advocate for himself or herself by telling others that he or she is more likely understand what other people are feeling if they make it more obvious such as exaggerating facial expressions or directly saying how they are feeling. Further, your child can tell them that he or she may have feelings but may not communicate emotions like others. Practice phrases of how to respond to common emotions from others. For example, if your child notices a person is feeling sad, he or she can ask, “Are you okay?” or, “I’m sorry you are feeling sad.”

## **Activities: Emotional Intelligence**

### **Categorizing Pictures of Emotions**

- Step 1: Take pictures of your child and family members expressing various emotions including happy, sad, bored, confused, and scared (Bell, 2013).
- Step 2: Have your child categorize these pictures by emotion (Bell, 2013).
- Step 3: Go one step further by sorting the same emotions on an intensity continuum (Bell, 2013). For example, for the emotion “happy,” the continuum may vary from content to happy to ecstatic.

### **Playing Charades**

- Step 1: Create a set of cards representing emotions such as happy and a set of cards representing verbs such as running (Bell, 2013)
- Step 2: Take turns drawing cards and acting out the scenario with the other person guessing (Bell, 2013). For example, if you drew the cards “happy” and “running,” you would act out running while feeling happy. This will help your child practice recognizing emotions in the context of daily actions

### **Creating a book of emotions:**

- Create a book with picture examples of emotions your child experiences in daily life (Bell, 2013). For example, add pictures of what makes your child happy under “happy” and what makes your child sad under “sad”
- Create a book for yourself also to help your child understand perceptions and emotions differ from person to person (Bell, 2013)

## Understanding Figurative Language

**Skill Description:** Figurative language is a type of language that has a nonliteral interpretation (Vulchanova et al., 2015). Its forms include metaphors, humor/jokes, idioms, and hyperboles. Being able to comprehend and use of figurative language such as sarcasm is important for social interactions. Figurative language skills typically develop gradually after age 5 years with achievement around 10 years of age (Vulchanova et al., 2015). To be competent in understanding figurative language, the individual must be able to process language beyond the literal meaning of the word to understand the intended meaning (Vulchanova et al., 2015). This involves inferencing skills and the integration of nonverbal and verbal information in context (Vulchanova et al., 2015).

**Potential Limitations:** Individuals with ASD typically have a delayed development of figurative language (Vulchanova et al., 2015). Further, these individuals usually have a dissociation between nonliteral and literal language tending to overuse literal language and failing to recognize nonliteral language (Vulchanova et al., 2015). This difficulty with using and understanding figurative language further limits social skills and peer interactions.

### **Advocacy:**

Tell others to use direct, literal language when discussing school and work tasks with your child in order to avoid confusion. You may further advocate your child by telling others that if they use figurative language with your child, he or she may not understand and may need further explanation. Tell others that the more unrealistic the statement, the more likely your child will recognize that it is sarcasm.

Teach your child to advocate for himself or herself by asking others to clarify what they mean if they use an unfamiliar metaphor or idiom. Further, if your child is unsure whether or not the person was using sarcasm, he or she may ask, "Was that sarcastic?" This is socially acceptable as many people with more developed figurative language skills will say this at times.

### **Activities: Understanding Figurative Language**

#### **Read stories filled with exaggerated plots that distort reality**

- Step 1: Read Amelia Bedelia books by Peggy or Herman Parish
- Step 2: Highlight funny and exaggerated parts of the story to guide your child in processing the figurative language and ideas (Wiki How, 2018). This will help your child learn how to interpret unrealistic things as humorous (Wiki How, 2018).

#### **Play a game where you tell a story or make a comment and your child guesses whether or not it is true**

- Step 1: When possible make statements that are obviously false such as saying that grandma is turning 29 years old (Wiki How, 2018). If your child tells you that you are wrong, continue to joke saying that she is 25 years old.
- Step 2: Explain afterwards that you know her age but were making a joke. Opportunities like this will teach your child that he or she can process language non-literally as not everything should be taken at face value (Wiki How, 2018).

#### **Create passages, or look online for examples, containing idioms highlighted, bolded, or italicized**

- Step 1: Have your child try to identify the meaning of the idiom in context (Speech and Language Kids, 2018)
- Step 2: Role play how to use the idiom in another example (Speech and Language Kids, 2018)

## **Communication: Initiating, Entering, and Exiting Conversations**

**Skill Description:** Initiating, entering, and exiting conversations are crucial skills for social interaction. Initiation is defined by creating a new conversation with one or more individuals. Entering a conversation involves appropriate joining of an existing social interaction. Exiting a conversation encompasses successful ending of communication in a manner that is socially acceptable.

**Potential limitations:** An individual with ASD may have difficulties with these skills due to a variety of causes. For example, there may be gaps in one's social-emotional development. This sequential skill-building process is contingent on mastery of developmental milestones that allow progression. Based on this model, an individual must be able to self-regulate and engage/relate to their environment before they can fully develop purposeful two-way communication (see Appendix A for developmental levels). Individuals with ASD have also been shown to lack bias toward social information, when compared to typically-developing peers (Antezana et al., 2016). Thus, there may be barriers to address and overcome when improving social skill capabilities.

### **Advocacy:**

Tell others (friends, people at places of employment, family members, etc.) about the potential limitations your child may have with conversation skills.

Teach your child phrases to explain potential social interaction problems such as, "I may have trouble joining conversations, but I would still like to talk to you," or, "I may end conversations quickly, but I still care about what you have to say."

Explore possible accommodations that may be made for communication limitations. For example, traditional verbal communications in a work environment could be completed electronically instead.

**Activities: Communication: Initiating, Entering, and Exiting Conversations****Practice greetings across multiple environments**

- Progressively increase complexity to help an individual learn the action. For example, verbal greetings may progress from “Hi” to “Hi, how are you?” and so on
- Promote generalization and retention of learned skills by varying the person used in practice, such as a trusted family member, a less-known family member, a peer, and a stranger
- Role-play greetings to include non-verbal social actions, such as smiling or a handshake (Hood et al., 2017)
- Phase out verbal prompting as the individual becomes more competent with this skill (White et al., 2007)

**Practice using socially appropriate comments and questions to enter conversations. See “Using Socially Appropriate Comments and Questions” section for more detail (page 20)**

- Practice these skills during conversation role-play activities between family members and the individual, therapists, peers, etc. (Hood et al., 2017)
- Increase the complexity by reducing verbal cuing to help scaffold the individual’s increasing independence with this skill (Hood et al., 2017; White et al., 2007)

**Practice appropriate conversation exiting through role-play with different individuals (Hood et al., 2017)**

- Making accepted exit comments, such as statements of leaving (“See you later,” “Goodbye,” etc.) or appropriate transitions (“That’s great, what do you think about \_\_\_\_\_?”, “How about \_\_\_\_\_?”, etc.) can be promoted with practice with different people and across environments
- Step 1: Provide the individual with an example of how to appropriately exit or transition in a conversation
- Step 2: Practice the verbalizations with as many different people as possible
- Step 3: Reduce verbal prompting as needed, encouraging the individual to expand his or her verbalizations from those explicitly provided (Hood et. al., 2017)

## **Maintaining Circles of Communication**

**Skill Description:** A circle of communication is the verbal “back and forth” (e.g. reciprocal nature) of a conversation. When someone says something, another person responds, and the original person answers, that is one circle. These reciprocal interactions are important for sustaining socially-appropriate conversations.

**Potential Limitations:** Individuals with ASD are less likely than their typical same-aged peers to exchange reciprocal information, often remaining silent (Capps et al., 1998). They may have trouble with the expected verbal turn-taking, conversation cadence, or understanding typical communication patterns. These skills can become more complex when interactions increase from two people to multiple individuals. Furthermore, development of this skill may be hindered by gaps in social emotional development. An individual may be lacking skills in their Functional Emotional Capacities, of which Purposeful Two-Way Communication is the third capacity, following Self-Regulation and Engaging/Regulating. Focusing on these potential missing developmental skills is one approach to improving reciprocal communicative ability (see Appendix A for developmental levels).

### **Advocacy:**

Tell others (friends, people at places of employment, family members, etc.) about the potential limitations your child may have with reciprocal conversation skills. Educate people you on how they can help make conversation easier for the individual with ASD. For example, explain how it might take longer to respond, or that they might listen but not respond at all. Explaining this can help assure people that silence does not equal inattention or disinterest.

Teach your child phrases to advocate for themselves in social environments, such as, “I might have trouble with conversations, but I still care about what you have to say.” Explore possible accommodations that may be made for communication limitations. For example, traditional verbal communications in a work environment could be completed electronically instead.



## **Activities: Maintaining Circles of Communication**

### **Initiate and Encourage Completion of Communication Circles**

- Encourage an individual to reply to a question or a comment by making it about something that is interesting to him or her
- Cue for eye contact and verbal response as much as necessary and give adequate time to respond
- Decrease cuing to encourage independence with the skill. When an individual masters this first step, verbally cue continued exchanges (increase “back and forth”). To increase the complexity, practice this skill with different people and in different environments (see Appendix A for developmental levels)

### **Explain and model the desired reciprocal conversation skill**

- Step 1: Tell the individual that when a conversation partner initiates a new interaction, it is socially expected that the other person shows interest by making at least two statements or questions about the topic (Social thinking, n.d.)
- Step 2: Describe how this should be in back-and-forth manner, and demonstrate what back-and-forth means
- Step 3: Model the behavior with another person, so that the individual can observe the skill
- Step 4: Demonstrate correct reciprocation (successful back and forth), and incorrect reciprocation (making irrelevant comments, remaining silent when a conversation is initiated, etc.). Prompt the individual to identify the correct conversational skills and the incorrect ones (Hood et al., 2017)

### **Create a social story that demonstrates a reciprocal conversation.**

- Step 1: Highlight the back and forth that occurs between two people. It may be helpful to include some physical demonstration of the verbal turn taking, such as an analogy of throwing a ball back and forth
- Step 2: Discuss the story and how the conversation “bounces” from person to person
- Step 3: Practice what was learned with the individual with ASD, possibly incorporating something from your story (such as passing an actual ball back and forth to signal conversation turns; Do2Learn, n.d.)

## Using Socially Appropriate Comments and Questions

**Skill Description:** Appropriate comments and questions are those which are relevant and well-timed with a conversation. They are important tools of communication and can help maintain verbal interactions. Using comments and questions in a socially-appropriate manner is a necessary skill for successful conversations.

**Potential Limitations:** Individuals with ASD are more likely to have difficulty with asking questions, often using them minimally or not at all. Improving this skill has been shown to be a key factor in improving long-term outcomes for children with ASD (Koegel et al., 2014). This potentially impaired skill can negatively impact social interactions. People with ASD may be lacking skills that are foundational to asking questions and making comments, such as self-regulation or engagement (see Appendix A for developmental levels). When this is the case, it is important to address these skill gaps to provide the adequate base from which to build and progress.

### **Advocacy:**

Tell others (friends, people at places of employment, family members, etc.) about the potential limitations your child may have with making socially appropriate questions or comments. Let people know that they may make remarks or questions that may not seem relevant. Potentially explain that this does not mean he or she don't understand what is going on.

Educate individuals on possible ways they can be helpful in conversations to your child. For example, explain that he or she may need a few more seconds to comment, or that he or she may benefit from verbal prompting to speak.

Teach your child phrases to advocate for themselves, such as, "I might make comments that seem off-topic, but that doesn't mean I don't understand what is going on." Explore possible accommodations that may be made for limitations. For example, using a conversational questions "cheat sheet" could be used at a place of employment. Additionally, individuals could be informed that the individual with ASD functions better in smaller groups.

### **Activities: Using Socially Appropriate Comments and Questions**

#### **Teach the individual with ASD relevant “wh” questions and encourage integration with different people and in different environments**

- Ask questions such as, “What did you do yesterday?”, “What is your favorite movie?”, or, “Where do you like to go on the weekend?” between two individuals, and then progress to group-settings and novel people (begin with questions being modeled to the individual, then encourage them to ask questions themselves)
- Teach the question, model it, and then practice it with the individual
- Begin with simpler “wh” questions, such as, “What is that?”, and progress to ones that require more abstract thinking, such as, “What happened?” or, “What do you think he felt when that happened?”

#### **Use motivational situations to promote question-asking and comment-making skills**

- Practice modeling and making socially-appropriate questions and comments on a topic that the individual enjoys
- Using a favorite character or topic increases the likelihood that an individual with ASD will use skills that are taught and generalize them to other settings (Koegel et al., 2014)
- As skills are acquired, expand topics to those that are non-preferred and incorporate different people and environments to promote generalization

#### **Create a social story for questions and comments that are off-topic and on-topic**

- Together with the individual with ASD, read the story and categorize the comments and questions. Talk about what an off-topic question or comment might make another person think or feel
- Establish language for off-topic verbalizations, such as “unexpected comments/questions” (Winner & Crooke, 2008)

### **Constructing Meaning from Social Interaction (Comprehension)**

**Skill description:** Comprehension is the process by which one derives meaning from verbal or written information. It involves not only the ability to read or repeat what is being said, but demonstrate a contextualized understanding of the overall message. Abstract thinking and comprehension are important to successful social interaction, as they allow an individual to understand the entire meaning of what is being conveyed.

**Potential limitations:** Individuals with ASD can demonstrate severely-impaired comprehension and abstract-thought skills, although their word-recognition can be at the same level as peers. This is true no matter where children fall on the autism spectrum. These deficits may stem from poor text integration, metacognitive monitoring, inference making, and working memory (Randi, 2010). Furthermore, as with other developmental skills, deficits in comprehension may result in part from gaps in precursor foundational skills. For example, an individual may have issues with complex communication or creating emotional ideas, affecting their ability to think abstractly (see Appendix A for developmental levels). Thus, a developmental approach may be necessary to address more basic skills before progressing to those which are higher in complexity.

#### **Advocacy**

Tell others (friends, people at places of employment, family members, etc.) about the potential limitations your child may have with social comprehension skills. Educate individuals on ways that may help your child. For example, it may help to present information in a straightforward manner, in a written format, or provide directions with sequential steps. Find out what would be most helpful for the given situation and advocate for those specific changes.

Teach your child phrases to let others know the potential socially-atypical comments that they might make, such as, “I may say things that are off-topic, but I still would like to have a conversation with you.” Explore possible accommodations that may be made for limitations. For example, crucial verbal information or instructions could be provided in a written format to give more time for contextual decoding.

**Activities: Constructing Meaning from Social Interaction (Comprehension)****Ask questions and discuss a favorite story**

- Step 1: Read a story/watch a show/describe a scenario with the individual with ASD. Choose a topic that is interesting to the individual, as this will more successfully reinforce the concept
- Step 2: Throughout the story and/or at the end, discuss and ask questions, starting with easier questions and progressing toward more complicated ones. For example, ask, “Where was \_\_\_ going?” or, “What was \_\_\_ doing?” before asking, “Why did \_\_\_ do that?” or, “What do you think he was thinking/feeling?”
- Step 3: Consistently refocus attention to where it is important (i.e. redirecting from irrelevant details) and provide models for imitation to help the individual generalize and progress their skills (Randi, 2010)

**Practice decoding emotions in situations by playing an “emotion identification game”**

- Use scenarios or topics that are engaging to the individual (Randi et. al., 2010). Use visual cues, such as emotion cards that are selected based on a situation presented to the individual
- The activity can progress from simple stories where emotions are clear (a person is crying, he/she is sad) to more abstract identification (based on the context of the story)
- Decrease the overt emotional cues to challenge the individual
- Activities could be made harder by using real people (role-playing scenarios) or talking about situations that the individual has experienced (Tse et al., 2007)

**Use the “Predict/Reflect” Strategy**

- Read a story/watch a show/describe a scenario with the individual with ASD. Throughout, pause and make guesses about what may happen next. Identify the clues that give you an idea about the coming events.
- Reflect and connect informed guesses to how to use this skill in social situations
- The book “You are a Social Detective” (Winner & Crooke, 2008) may be a helpful resource for using clues to make guesses about people and situations. Doing so may help strengthen inference-making abilities and overall comprehension skills

## **Mental Flexibility**

**Skill Description:** Mental flexibility, or cognitive flexibility, is the ability to shift thinking and behavior when the situation changes. This skill requires being able to see things from other perspectives, recognize when an approach is not working, and figure out how to change your approach. Mental flexibility is especially important in social contexts because it helps with changing topics in conversations, applying social rules, and resolving conflict when people have different perspectives (Roberts, 2017).

**Potential limitations:** Individuals with ASD often have difficulty with mental flexibility which may be referred to as having “rigid thinking” (Roberts, 2017). This contributes to repetitive behaviors, restricted interests, and difficulty with transitions, shifting attention, and departing from a normal routine (Stone & Iguchi, 2013). Mental inflexibility makes it difficult to shift perspective to another point of view, to think about different solutions to a problem, and adjust plans and routines. Because it may be hard for individuals with ASD to think ahead to what will happen next in a situation, experiencing a change in routines or being forced to change perspective may create confusion, fear, and stress which causes further difficulty with mental flexibility (Stone & Iguchi, 2013).

### **Advocacy:**

Tell others about why mental flexibility can be challenging for your child. Share strategies that support understanding and problem solving, such as the person explaining their point of view rather than just stating their opinion, or giving warnings about upcoming transitions or changes in routine. Parents can play an important role in developing awareness of mental flexibility by providing practice and explanations of situations that require their child to shift their thinking or behavior.

Teach your child to talk with others before a problem arises to let them know that sometimes he or she may have difficulty being flexible, and to ask for as much warning as possible if the regular schedule or routine is changing. Sometimes it is difficult to anticipate when flexibility is needed, so establish strategies with your child that work for them to adjust to the situation, such as directly asking a person what their point of view is, thinking of multiple solutions, or taking a minute to be alone and calm.

### **Activities: Mental Flexibility**

#### **Make a game of imagining what others are thinking**

- At an event where there are several people around, have your child try to imagine what others are thinking about the event and what is happening (Roberts, 2017)
- Have your child describe his or her own interpretation of the event, and then start thinking about others' perspectives. Roberts (2017) suggests doing this for anyone - the host, a young child, an older adult, or even a pet, and could include people not present at the event
- Write down what you come up together with to see how each person's perspective may be different
- You can also play this game while reading a book by stopping to discuss what each of the characters are thinking about the situation

#### **Explore the Superflex curriculum and books (Social Thinking, n.d.)**

- Superflex is the superhero who has to outsmart Unthinkables, common situations that challenge mental flexibility including strictly following the rules, having large emotional reactions to small problems, and getting distracted easily
- Read through a book or play one of the games with your child and discuss how Superflex responded to challenges and how your child could do that as well

#### **Brainstorm multiple solutions to a problem**

- This can be a real-life situation, role play, or a conversation based on a movie or book.
- Describe the context of the problem and then challenge your child to think of every possible solution, not just the one that seems most logical (Roberts, 2017).

## Impulse Control

**Skill Description:** Impulse control is the ability to inhibit or ignore impulsive urges. Impulse control helps a person have positive outcomes through making decisions and responding to stressful situations in a way that is appropriate for the situation (Hutton, 2015). It requires many other cognitive skills including self-awareness, attention, problem-solving, prioritizing, and forward-thinking (OT Toolbox, 2016).

**Potential limitations:** Impulsivity and learning how to control it is a normal part of development, however individuals with ASD may have difficulty with impulse control later than is typically expected. Difficulty with impulse control can interfere with participation in structured activities including classroom activities, mealtimes, and social play (Wertz, 2012). Examples of impulsivity are speaking out of turn, interrupting during a conversation, quitting a game, and getting up from seat at an inappropriate time. There is also an element of emotional control related to the reaction when an individual is not able or allowed to act upon an urge (AppliedBehaviorAnalysisEDU.org, 2018). This is when an individual with ASD may respond to frustration or anger with yelling, running, or other maladaptive behaviors.

### Advocacy:

Tell others about what impulsivity is and why impulse control is difficult for your child to increase understanding that your child is not intentionally being rude or misbehaving. Parents and individuals with ASD can work together to identify impulses, common reactions to the impulses, and strategies to promote impulse control such as proactive movement breaks, social stories, and relaxation techniques. Then, parents can share these specific strategies with other adults, friends, and family to increase support for their child.

Teach your child to be direct with friends, parents, teachers, and employers about the impulses they experience and share strategies they are working on. For example, they could tell a new friend, “Sometimes I interrupt people when they are talking. I am not trying to be rude.”



## **Activities: Impulse Control**

### **Create social stories about using impulse control**

- Use situations specific to challenges your child faces with impulsivity and make sure the story has a positive outcome
- Use short phrases that are easy to remember that your child can repeat when they are feeling impulsive. For example, if he or she has difficulty with interrupting, the social story could include the phrase, “I will wait my turn to talk.”
- It is helpful to have your child repeat the phrase, sing it, or dance to it to help remember it (OT Toolbox, 2016)
- Read Bryan Smith’s “What were you thinking? Learning to control your impulses” to help with this activity (Smith, 2016)

### **Keep an impulse control journal**

- The journal can be used independently by your child or with the help of a family member to reflect on impulsive behaviors and what strategies can be used for impulse control
- The Impulse Control Journal is a resource that can be helpful for promoting self-regulation and organization to decrease impulsivity (OT Toolbox, 2016)
- Your child can use the journal to set goals, track strategies, and identify situations that were challenging and/or successful. To-do sheets promote planning and prioritizing to support self-control

### **Play games that require impulse control**

- Follow the Leader, Red Light Green Light, and Simon Says all require impulse control to follow the directions and movements of the leader, and for your child to wait his or her turn to be the leader (Hutton, 2015)
- These games also promote movement and physical activity which will help promote body awareness and regulation to help with recognizing and resisting impulses

### **Emotional Control**

- See “Emotional Intelligence” (page 11)

## **Conflict Resolution**

**Skill Description:** Conflict resolution is the ability to manage a disagreement between people where the goal is to have a respectful conversation and positive outcome. Conflict resolution is a necessary social skill for work, play, education, and relationships. It requires a combination of skills including communication, recognizing nonverbal social cues, emotional intelligence, and mental flexibility. In order to have successful conflict resolution, the people involved must have socially appropriate reactions to problems including accurately identifying the size of the problem.

**Potential limitations:** Individuals with ASD may need support to develop conflict resolution skills due to difficulty seeing others' perspectives, understanding nonverbal cues, emotional and impulse control, and mental flexibility. This may create issues in the classroom, at home, at work, or other after school activities. Social beliefs are also an important part of conflict resolution those may be more challenging for individuals with ASD to understand. For example, individuals with ASD may have black and white thinking that leads them to think that conflict with a person means they cannot be friends, so they often do not address the conflict (Disabled World, 2015).

### **Advocacy:**

Tell others about your child's need for support with conflict resolution and exchange strategies, such as using IDEAL method explained in the activities, to use so that your child has consistency with how the conflicts are handled. When parents and other adults mediate conflict resolution, they provide a model to all children involved about how to execute conflict resolution.

Teach your child to ask for additional support or time before entering a conflict resolution conversation. If someone approaches your child to discuss a disagreement, it is appropriate to ask that person if he or she can have the conversation at a later time or the next day so that they can prepare for the discussion.

### **Activities: Conflict Resolution**

#### **Role play situations where there is a conflict and talk through conflict resolution**

- Use the IDEAL method with your child – Identify the problem, Define the context, Explore possible solutions, Action or Agree on a solution, and Look back to reflect on the process and the outcome (Canadian Association of School Psychologists, 2012)
- Role play made up scenarios, actual conflicts your child has experienced in the past, or current conflicts your child is facing to make the activity more challenging (Tse et al., 2007)

#### **Create a social story that demonstrates conflict resolution skills**

- Have your child develop the conflict and work together to write the story about how they will solve the disagreement
- Make sure the story includes talking to understand both sides of the conflict, coming up with various solutions, and working together to pick the best option (Child and Youth Health, 2016)
- Use this social story the next time your child needs to resolve a conflict to remind him or her of expected behaviors, steps to resolving conflict, and decrease anxiety surrounding the conversation

#### **Play the Conflict Resolution Board Game (Childs Work Childs Play, 2018)**

- This game encourages talking through day-to-day problems children may face. Players get to move ahead when they express their feelings or help to solve a disagreement
- Use this game may prompt further discussions about conflicts your child faces in life – stop the game to discuss if necessary or keep it in mind to talk about with him or her after the game.
- Play with different people each time (siblings, friends, parents) to bring in new perspectives and strategies to resolve the conflict scenarios

## **Appendix A**

### **Functional Emotional Developmental Levels**

The following is a list of developmental capacities referenced in this guide, the Functional Emotional Development Capacities. They were developed by Dr. Stanley Greenspan, MD of the Interdisciplinary Council on Development and Learning, Inc. (ICDL) as part as the Developmental, Individual-differences, & Relationship-based model (DIR). The capacities are theorized to be developmental in nature; successful acquisition of each is contingent on mastery of previous levels.

These capacities come directly from the ICDL with summaries compiled by the Social Skills Guide authors. For more complete information on the Functional Emotional Developmental Capacities, please visit <http://www.icdl.com/dir/fedcs>.

#### **Capacity 1: Self-Regulation and Interest in the World**

The ability to calm oneself (self-regulation) and the demonstrate of interest in the environment

#### **Capacity 2: Engaging and Relating**

Demonstration of preference for relationships and sustained engagement with interaction

#### **Capacity 3: Purposeful Two-Way Communication**

Basic engaged communication between two people (both nonverbal and verbal back and forth). Beginning of circles of communication (one person initiates interaction, other responds, original person responds)

#### **Capacity 4: Complex Communication and Shared Problem Solving**

Using advanced communication skills to convey more complex needs/information, using these skills to problem-solve with another person

**Capacity 5: Using Symbols and Creating Emotional Ideas**

Use of abstract thinking, increased communication skills, and imaginative play.  
Expanding vocabulary/use of language and identifying/expressing emotions

**Capacity 6: Logical Thinking and Building Bridges between Ideas**

Logical sequence to ideas/imaginative play, emerging concepts of time/space, increased emotional awareness (including ability to predict emotions in situations)

**Capacity 7: Multiple Perspectives**

Multi-causal thinking (moving past the idea that there are only simple cause-and-effect relationships), understanding that there are relationship dynamics between other people (rather than their own relationships/having their own needs met)

**Capacity 8: Gray Area Thinking**

Understanding varying degrees or relative influence of things. This is important for making compromises in social situations

**Capacity 9: Reflective Thinking and an Internal Standard of Self**

Growing sense of self and identity, ability to make inferences and think in more than one frame of reference at a time, consideration of past and future

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**Appendix B**

Social Skills Guide Satisfaction Survey

Thank you for reviewing our Social Skills Guide for individuals with Autism Spectrum Disorder (ASD). We appreciate your feedback to inform changes that may improve our product.

Please rate your degree of satisfaction with each of the following statements by checking the appropriate box (1 = Strongly Disagree and 5 = Strongly Agree)

	1 <b>Strongly Disagree</b>	2 <b>Disagree</b>	3 <b>Neutral</b>	4 <b>Agree</b>	5 <b>Strongly Agree</b>	N/A
Overall, the Social Skills Guide is a tool that I would use to help an individual with ASD						
The Social Skills Guide is convenient and easy to read/use						
Skill descriptions were clear and relevant						
Skill activities (interventions) were understandable and appear easy to implement						
Possible skill limitations were clear and relevant						
Ideas for advocacy could be useful for individuals with ASD						
Research evidence supporting activities was clearly communicated						

1. Do you have any recommendations of improvements that could be made for this guide?

2. Would you recommend this guide to parents with children with ASD? Please tell us why or why not:

3. Additional comments about the Social Skills Guide:

*Thank you for your participation*

## Appendix C

### For Therapists: How to Use the Social Skills Guide

The Social Skills Guide was developed specifically for use by parents and caregivers who have children with autism spectrum disorder (ASD), but the information can be useful to therapists as well. The knowledge translation activities were based in occupational therapy research and practice but were included in the guide only if they could to be implemented by parents and other disciplines as well. It is important that the therapists understand the guide so that they can use it themselves and know when it is appropriate to give to a parent.

As a therapist, you can use this guide to review social skills and their development, as well as why a particular social skill may be difficult for an individual with ASD. The advocacy methods can be used to offer helpful suggestions to parents and individuals with ASD about advocacy at home, at school, at a job, or other places in the community. The activities can be used as part of an intervention and can be suggested to parents to complete at home. It may be appropriate to recommend a few activities to parents rather than give them the entire guide.

It is important to remember that this guide is intended for use with adolescents with high-functioning ASD, as many of the activities require higher level cognitive skills including problem solving, anticipation, and reflection. If you are using these activities you may need to grade them up or down depending on an individual's needs and skill level. When recommending this guide for a parent or caregiver, the individual should have higher functioning ASD since that is the target population of the guide and parents and caregivers often do not have the education and training to effectively grade the activities. Make sure to go over the guide with them including the introduction, how the skills and activities are organized, and how to find resources at the end of the guide.

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