

There is preliminary evidence that LEGO® therapy can improve social skills in children with Autism Spectrum Disorder

Prepared by: Danielle M^cCaffery (dan3107@hotmail.com)
4th year undergraduate occupational therapy student
University of Western Sydney

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CLINICAL SCENARIO:

Play is important for child development, as it allows for the learning and practice of new skills. Play also provides opportunities for developing social, cognitive and communication skills, therefore contributing to the normal development of a child. Children with Autism Spectrum Disorder (ASD) often experience difficulties with play, and may have decreased social interaction and social skills. This may affect a child's socialisation as they grow older. Occupational therapists have implemented play therapy to assist children with autism in the development of appropriate social skills. Does play therapy improve the social skills of children with autism?

FOCUSSED CLINICAL QUESTION:

Does play therapy result in improved social skills for children with autism, as compared to those who do not receive play therapy?

SUMMARY of Search, 'Best Evidence' appraised, and Key Findings:

Ten citations were located that met the inclusion/exclusion criteria, including one non-randomised controlled trial, six that used a case-series design, two literature/narrative reviews, and one evidence-based practice guideline. The best evidence was the non-randomised control trial by LeGoff (2004). Results were as follows:

- The use of LEGO® as a therapeutic medium resulted in improvements in social interaction and behaviour for children with ASD.
- Statistically significant *within*-group improvements were noted for all three outcome measures, for the group receiving 12 weeks of treatment (n=26). These improvements were both sustained and increased after 24 weeks of therapy. Clinically significant improvements were reported in self-initiated social contact, aloofness and rigid behaviour.
- *Between*- group differences were statistically significant for all three outcome measures, but clinically significant for only one outcome measure, self-initiated social contact.
- The study had some methodological limitations including concern about the reliability of outcome measures used.

CLINICAL BOTTOM LINE:

Preliminary evidence suggests that LEGO® used as a therapeutic play medium for children with Autism Spectrum Disorder may improve social interaction skills and behaviours

Limitation of this CAT: This paper has been individually prepared as part of subject requirements, and peer-reviewed by one lecturer.

SEARCH STRATEGY:

Using the levels of evidence defined by the Oxford Centre for Evidence-based Medicine (Phillips et al., 1998) the search strategy aimed to locate the best available evidence:

- Level 1a: Systematic reviews of randomised control trials
- Level 1b: Individual randomised control trials
- Level 2a: Systematic reviews of cohort studies
- Level 2b: Individual cohort studies and low quality RCT's
- Level 3a: Systematic review of case-control studies
- Level 3b: Case-control studies and non-randomised controlled trials
- Level 4: Case-series and poor quality cohort and case-control studies
- Level 5: Expert opinion

Terms used to guide Search Strategy:

- **P**atient/Client Group: Children with Autistic Spectrum Disorder, autism, autistic, autistic disorder, pervasive developmental disorder, paediatrics, pediatrics
- **I**ntervention: play therapy, play
- **C**omparison: Nil
- **O**utcome(s): Social skills, socialisation, social interaction

Databases and sites searched	Search Terms	Limits used
Clinical guideline Sites - National Health and Medical Council - New Zealand Guidelines - National guidelines clearinghouse - UK guidelines - Scottish Intercollegiate Guidelines Network (SIGN)	autism, autistic, autistic spectrum disorder, play therapy, occupational therapy	Exact phrase 'play therapy'
Systematic review sites Cochrane library, OTseeker, PEDro	autism, autistic, children, pediatrics, paediatrics, play therapy, play, occupational therapy, social skills, social interaction	
General Databases EBSCO (CINAHL, ERIC, PsycARTICLES, PsychINFO), PubMed, Google Scholar, ProQuest	autism, autistic, children, pediatrics, paediatrics, play therapy, play, occupational therapy, social skills, social interaction	Full text or links to full text English Humans
Specific Websites Autism Spectrum Australia (ASPECT)	occupational therapy, play therapy, social skills	
Autism Journal	play therapy, social skills, social interaction	
UWS Library- Journal articles	autism, play therapy, children, occupational therapy	
Reference lists from journal articles	autism, play therapy, social skills, social interaction	

INCLUSION and EXCLUSION CRITERIA

- Inclusion: Studies that involved play therapy as an intervention.
Studies that involved social skills outcomes for children diagnosed with ASD.
Full text published/ Available in English
- Exclusion: Studies that did not involve play therapy
Studies that involved children with other conditions
Studies that did not target social skills as an outcome.

RESULTS OF SEARCH

Ten citations were located and categorised as shown in Table 1 (based on Levels of Evidence, Centre for Evidence Based Medicine, 1998).

Table 1: Summary of Study Designs of Articles retrieved

Study Design/ Methodology of Articles Retrieved	Level	Number Located	Author (Year)
Systematic reviews of randomised control trials	1a	0	
Individual randomised control trials	1b	0	
Systematic reviews of cohort studies	2a	0	
Individual cohort studies and low quality RCT's	2b	0	
Systematic review of case-control studies	3a	0	
Case-control studies and non-randomised controlled trials	3b	1	1. (LeGoff, 2004)
Case-series and poor quality cohort and case-control studies	4	6	2. (Goldstein & Cisar, 1992) 3. (Koegel, Werner, Vismara, & Kern Koegel, 2005) 4. (Kok, Kong, & Bernard-Opitz, 2002) 5. (Stahmer, 1995) 6. (Thomas & Smith, 2004) 7. (Thorp, Stahmer, & Schreibman, 1995)
Expert opinion including literature/narrative reviews.	5	2	8. (Arthur, Bochner, & Butterfield, 1999) 9. (Rogers, 2000)

One evidence-based guidelines was also found (Roberts, 2003).

BEST EVIDENCE

The study by LeGoff (2004) was identified as the 'best' evidence and selected for critical appraisal. Reasons for selecting this study were:

- The research paper addressed the clinical question- compared one type of play therapy to no therapy, primary outcome measure was social skills, participant group included children with autism.
- Highest level of evidence found
- Recent research (2004)

SUMMARY OF BEST EVIDENCE

Table 2. Description and appraisal of non-randomised control study by LeGoff (2004)

Aim of the Study:

To assess the efficacy of individual and group LEGO® play in improving the social skills of children with ASD.

Study Design: This study appears to be a non-randomised controlled trial, with a waiting list control group. N=47. No subject, therapist or assessor blinding. Allocation was not random or concealed. Outcomes were measured for the first (experimental) group at baseline (week 0), after 12 weeks waiting period (C1, week 12), and after 12 weeks of treatment (T1, week 24). For the second (control) group, outcomes were measured at baseline (week 0), after 24 weeks waiting period (C2, week 24), and after 24 weeks of treatment (T2, week 48). No measurements were taken for the second (control) group at 12 weeks. There was only a true control group for 24 weeks, as after this period both groups had received treatment.

Table 2.1 Summary of group treatment regimes/times

	Weeks 1-12	Weeks 12-24	Weeks 24-36	Weeks 36-48
Group 1 (TP1), n=26	No treatment	12 weeks treatment	←.....No treatment→	
Group 2 (TP2)*, n=21	←.....No treatment.....→		←.....24 weeks treatment.....→	

* Control group

Setting: Researcher's office, in the LEGO® Room, United States of America.

Participants: N= 47, children diagnosed with Autism Spectrum Disorder (ASD), Asperger's Disorder (AS), or Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS). Children were recruited for the study following referral to the researcher's private practice. Eligibility criteria included no severe behaviour problems (eg. aggression), and responsiveness to the medium. Convenience sample.

Key demographics: 34 males, 13 females, between the ages of six and 16 years (mean age= 10 years six months, SD =2.8). All children had been on the waiting list for treatment for at least three months, with 21 subjects on the waiting list for six months. Children were allocated to each group according to the availability of therapy.

Baseline Equivalence: There was a large age range with considerably more males than females (Experimental group, n=26, 19 males:7 females; Control group, n=21, 15 males:6 females), significant differences in waiting list times, and differences in the children's medications, therefore the two groups were not comparable at baseline. However analysis conducted by the author found that differences in age, gender and waiting period would not affect outcome scores.

Two subjects out of 49 did not complete the 12 weeks of TP1 due to family relocation, and therefore were not included in number of participants and data analysis.

Intervention Investigated: All 47 subjects were described as serving as “their own control group” for three months (12 wks) whilst on a waiting list, with 21 subjects serving as “their own control group” for six months (24 wks) while on the waiting list. During this time the subjects did not receive any play therapy.

Two treatment groups were established, with subjects being allocated to groups according to the waiting list duration.

Control (n=21): Subjects in the Treatment Phase 2 group (TP2) waited 24 weeks, then received 24 weeks of treatment (referred to as the Control group in this CAT).

Experimental (n=26): The 26 participants in Treatment Phase 1 group (TP1) waited 12 weeks then received 12 weeks of treatment (referred to as the Experimental group in this CAT). Each week, the subjects each received one individual LEGO© therapy session for 60 minutes, and one LEGO© Club group session for 90 minutes. Treatment was provided in the researcher’s office, in the LEGO© Room. The therapy sessions were conducted by the researcher, with therapeutic aides and graduate students helping on occasions.

Outcome Measures:

The author did not indicate which of the three outcome measures was considered the *primary* outcome measure. As the aim of the study was to examine the effect of LEGO© therapy on social skills, a measure of social skills (SISC) will be considered the *primary* outcome measure for the following reasons: The GARS-SI measures social interaction, but has reported psychometric problems. The SI subscale has not been established empirically as a measure of clinical change. The DSI measures duration of social interaction, but does not measure the number of interactions per hour, only the average duration of each interaction, and therefore does not provide a clear measure of social competence. The SISC measures a component of social competence and has moderate reliability.

Primary Outcome Measure:

Self-initiated social contact (SISC)- frequency count of number of self-initiated social contact during a half-hour observation. Criteria for a self-initiated social contact included those which were unprompted, not part of a daily routine or activity, where there was a clear attempt to communicate either verbally or non-verbally, the peer was of the same age, and it was not a reciprocal response to another child’s approach. This measure was taken during play-time after lunch. Observations were recorded by the researcher or a qualified behavioural observer (eg. graduate student or therapist), and expressed as number of contacts per ½ hour.

Secondary Outcome Measures:

Duration of social interactions (DSI)- the average duration of social interactions during a one hour period. This measure was taken during after-school recreation time and recorded in seconds/interaction. Criteria for interactions included that the event must have been a clear social interaction and not part of a daily routine, involved no adult supervision or prompting, the subject must be involved in an activity continuously for more than 30 seconds and it was clearly interactive play and an ongoing exchange. The study did not report who took this measure.

Aloofness and rigid behaviour- measured by the Social Interaction subscale of the Gilliam Autism Rating Scale (GARS-SI). The maximum raw score is 42, however this is then converted into a standard score with a range of 1-20, with 10 representing an average level of disturbance of social interaction for a child with an autistic disorder. This measure was administered during intake and follow-up evaluations, and based on parent, therapist and teacher input. A lower score on this scale indicates improvement.

Main Findings:

Table 3: Mean *within-group* differences in social interaction for **Group One** (Experimental group, n=26) from C1 (week 12) to T1 (week 24), following 12 weeks of treatment. Results adapted from Table III. (LeGoff, 2004, p. 566).

	Baseline Mean Score (SD)	C1 (Wk 12) Mean Score (SD)	Mean Difference Baseline- Wk 12 (95% CI)	T1 (Wk 24) Mean Score (SD)	Mean Difference C1 - T1 (95% CI)	P-value
GARS-SI	10.15 (1.47)	10.25 (1.39)	*+0.1 (-0.7 to 0.9)	8.87 (1.56)	*-1.38 (-0.6 to -2.2)	p<0.01
SISC	2.53 (1.9)	2.40 (1.99)	*-0.13 (-1.2 to 1.0)	4.06 (1.72)	*+1.66 (0.6 to 2.7)	p<0.01
DSI	19.83 (12.89)	21.00 (12.04)	*+1.17 (-5.8 to 8.1)	36.55 (13.18)	*+15.55 (8.5 to 22.6)	p<0.01

* Calculated by D.M^cCaffery from original paper.

Index: C1= week 12, T1= week 24, CI= confidence interval, SD= standard deviation

Table 4: Mean *within-group* differences in social interaction for **Group Two** (Control group, n=21) from C2 (week 24) to T2 (week 48), following 24 weeks of treatment. Results adapted from Table III. (LeGoff, 2004, p. 566).

	Baseline Mean Score (SD)	C2 (Wk 24) Mean Score (SD)	Mean Difference Baseline- Wk 24 (95% CI)	T2 (Wk 48) Mean Score (SD)	Mean Difference C2 - T2 (95% CI)	P-value
GARS-SI	10.15 (1.47)	10.00 (1.69)	*-0.15 (-1.1 to 0.8)	7.19 (1.29)	*-2.81 (-1.9 to -3.7)	p <0.01
SISC	2.53 (1.9)	2.40 (1.99)	*-0.13 (-1.3 to 1.1)	4.38 (1.28)	*+1.98 (0.9 to 3.0)	p <0.01
DSI	19.83 (12.89)	19.71 (9.17)	*-1.12 (-7.1 to 6.9)	55.71 (20.60)	*+36 (26.1 to 45.9)	p <0.01

* Calculated by D.M^cCaffery from original paper.

Index: C2= week 24, T2= week 48, CI= confidence interval, SD= standard deviation.

Statistically Significant Results: As shown in Tables 3 and 4, there were statistically significant *within-group* differences (i.e not likely to be due to chance) on all three outcome measures, for both groups after the LEGO play therapy had been provided. Statistically significant improvement was found in T1 and T2, whilst scores only slightly changed during the control (waiting list) period (no statistically significant difference) for both groups.

Original Authors' Conclusions:

LEGO® as a therapeutic medium resulted in both statistically and clinically significant improvements in the social skills of children with ASD after 12 weeks of therapy. These improvements were sustained and increased after 24 weeks of therapy.

Critical Appraisal

Validity:

Relevant background literature was reviewed, and the need for the study was justified. Study design was appropriate for the study question, comparing play therapy with no therapy, focusing on social competence as the primary outcome. However, a single control group would have been more appropriate to accurately test treatment outcomes, as compared to subjects serving as their own control group. No power calculations were reported. Ethics procedures were not described. Intervention was described in detail and could be replicated in occupational therapy practice. Participant drop-outs were reported and reasons given.

PEDro score = 3/10.

Potential Biases:

No subject, therapist or assessor blinding.

No random or concealed allocation of subjects to the two groups- potential for children with greater impairments to be allocated to control or experimental group.

Subjects were referred to the study, therefore potential for referral bias.

Subjects were excluded from the study if not responsive to the medium, therefore potential for sample bias.

Co-Interventions - some subjects were taking medications, which may influence outcomes i.e medication may increase their behaviour and social skills.

Furthermore, the study did not identify whether children were receiving other therapy programs or services, therefore potential for cointervention.

Two different control group waiting times (three months versus six months)- allows potential for maturation effects and also cointervention, which may have accounted for treatment effect.

Potential for selection bias, as there was no clear description of how subjects were allocated a group and therefore a waiting list duration period.

Subjects were not comparable at baseline for age, gender, language impairment and waiting period (see baseline equivalence on p.4 of this report).

Baseline assessments were not recorded for each group separately, therefore potential for the children in the treatment group to have better social skills before treatment began.

Outcome Measures:

Moderate to good inter-rater and test-retest reliability was found for SISC and DSI (SISC: $r = .866$, DSI: $r = .825$).

Test-retest reliability: SISC: $r = .861$, DSI: $r = .797$ (r above 0.7 is good reliability).

GARS has reported psychometric problems; the SI subscale has not been established empirically as a measure of clinical change. Analysis was completed to test sensitivity to change, correlation with the Vineland Adaptive Behaviour Scale Socialization Domain was statistically significant $p < .01$.

Interpretation of Results:

The author described changes in social interaction scores on all three measures as clinically significant, but did not present an explanation of what the minimal clinically significant score was. Results for GARS-SI showed improvements of 6.9% and above. For the SISC scale, results showed an improvement of almost twice as many contacts in a half hour duration following treatment, therefore this would be of value and a clinically important outcome for the client. For the DSI scale, results were almost twice the duration of social interaction following treatment, which the author considered clinically significant. However, mean difference in the number of seconds' duration is still very small considering the age of the subjects. For these reasons, change in duration of social interaction is not regarded as a clinically significant change.

Treatment was found to be statistically significant in all three outcome measures, however only clinically significant in two outcome measures.

Within-Group Differences:

GARS-SI: Large decreases were found in scores. For group one, from C1 (10.25) to T1 (8.87) a decrease was found of **1.38 (6.9% decrease)**, with a small 95% confidence interval around the mean of 0.6 to 2.2. For group two, from C2 (10.00) to T2 (7.19) a decrease of **2.81 (14.05% decrease)** was found, with a small 95% confidence interval of 1.9 to 3.7. Both results from C1 to T1 and C2 to T2 were statistically and clinically significant. However, results from C2 to T2 were greater than from C1 to T1, indicating that a longer duration of treatment results in greater improvements in social behaviour.

SISC: Following 12 weeks of treatment, T1 subjects in group one improved from 2.4 to 4.06 number of contacts per ½ hour (95% CI, 0.6 to 2.7), which is almost twice as many contacts per ½ hour. In group two, T2 subjects increased by 1.98 SISC points, from 2.40 to 4.38 (95% CI, 0.9 to 3.0), again that is nearly twice as many contacts per ½ hour. This shows a statistically and clinically important improvement for both groups following treatment, with a slightly greater improvement made following a longer duration of treatment (T2 subjects). In contrast, from intake to control phase, subjects had a decrease in scores.

DSI: In group one, TP1 subjects improved their average duration of social interaction from 21.00 seconds to 36.55 seconds in 12 weeks, a mean increase of 15.55 seconds (95% CI, 8.5 to 22.6), which is almost twice the duration of social interaction. In group two, TP2 subjects increased from 19.71 seconds to 55.71 seconds in 24 weeks, a mean increase of 36 seconds (95% CI, 26.1 to 45.9), which is almost three times the duration of social interaction. This shows that a statistically important improvement was made following treatment, with a greater improvement found over a longer period of time (T2 subjects). In contrast, there was virtually no change in scores from intake to control phase. However, these results were not considered to be clinically significant, as the number of seconds duration that the subjects spent socially interacting with others is still very small, less than 60 seconds.

These results indicate greater improvements in social interaction and social behaviour are found following a longer duration of treatment. Overall, improvements in social behaviour patterns take longer than gains in initiating interaction.

BETWEEN- GROUP DIFFERENCES:

The author did not provide comparisons between the groups. For the purpose of providing between-group comparisons in this critically appraised paper, data were analysed up to the 24 week period, as this is the only period where a true control group existed. Group one was labelled the experimental group, as during the 24 week period this group received 12 weeks of treatment. Furthermore, during this 24 week period, group two were serving as their own control group and received no therapy, and therefore will be labelled the control group.

Table 5: Between-group mean differences at 24 weeks for measurement of aloofness and rigid behaviour on the **GARS-SI scale**. Results adapted from Table III. (LeGoff, 2004, p. 566).

	GARS-SI (1-20)			
	Baseline Mean Score (SD)	24 weeks Mean Score (SD)	Mean Change (95% CI)	Mean Difference between groups at 24 weeks
Group 1: Exp Group	10.15 (1.47)	8.87 (1.56)	-1.28 (-0.4 to -2.1)	-1.13 (95% CI, -0.2 to -2.1) <i>in favour of the experimental group</i>
Group 2: Control Gp	10.15 (1.47)	10.00 (1.69)	- 0.15 (-1.1 to 0.8)	

For GARS-SI, a reduction of 1.13 points on a 20 point scale was found in favour of the experimental group (95% CI, -0.2 to -2.1). These children were slightly less aloof and rigid in their behaviour children in the control group. As the confidence interval did not cross the line of no effect, this indicates the difference between groups was statistically significant and did not occur by chance. Further, the 95% confidence interval was narrow, increasing certainty about the results. The mean difference between groups of -1.13 in favour of the experimental group was **not considered clinically significant**, as this represents a small change (**5.65%**) on a 20 point scale.

Table 6: Between-group mean differences at 24 weeks for number of self-initiated social contacts on the **SISC scale**. Results adapted from Table III (LeGoff, 2004, p. 566).

	SISC (number of contacts/half hour)			
	Baseline: Mean Score (SD)	24 weeks: Mean Score (SD)	Mean Change (95% CI)	Mean Difference between groups at 24 weeks
Group 1: Exp Group	2.53 (1.9)	4.06 (1.72)	1.53 (0.5 to 2.5)	1.66 (95% CI, 0.6 to 2.8) <i>in favour of experimental group</i>
Group 2: Control Gp	2.53 (1.9)	2.40 (1.99)	-0.13 (-1.3 to 1.1)	

For SISC, a difference of 1.66 self-initiated social contacts in favour of the experimental group (95% CI, 0.6 to 2.8) was found. As the confidence interval did not cross the line of no effect, this indicates the difference between groups was statistically significant and did not occur by chance. Further, the 95% confidence interval was narrow, indicating that we can be more certain about the results. The mean difference of 1.66 self-initiated social contacts in favour of the experimental group **was clinically significant** as during a half hour period almost double the number of social contacts was observed, when length of social contact is not known, and therefore would be considered an important change in social behaviour.

Table 7: Between-group mean differences at 24 weeks for duration of social interactions on the **DSI scale** (seconds/interaction). Results adapted from Table III. (LeGoff, 2004, p. 566).

	DSI (average duration of social interactions/one hour)			
	Baseline: Mean Score (SD)	24 weeks: Mean Score (SD)	Mean Change (95% CI)	Mean Difference between groups at 24 weeks
Group 1: Exp Group	19.83 (12.89)	36.55 (13.18)	16.72 (9.5 to 24)	16.84 (95% CI, 10 to 23.7) <i>in favour of exp group</i>
Group 2: Control Gp	19.83 (12.89)	19.71 (9.17)	-0.12 (-7.1 to 6.9)	

For the DSI, a difference of 16.84 seconds in favour of experimental group (95% CI, 10 to 23.7) was found. As the confidence interval did not cross the line of no effect, this indicates the difference between groups was statistically significant and did not occur by chance. However the 95% confidence interval is very wide which makes us less certain that our clients would achieve the mean of 16.84 seconds (some could have a result of 10 seconds and others as high as 23 seconds). The mean difference between groups would **not be clinically significant**, as the mean difference was only 16.84 seconds, which is a short duration of time, and therefore not providing a clinically significant outcome for the subject.

As the study excluded children not responsive to the medium of LEGO®, these findings cannot be generalised to the wider population.

Summary/Conclusion:

Although this study had limitations regarding methodology and outcome measures, findings suggest that the use of LEGO® as a therapeutic play medium resulted in improvements in social interaction and behaviour for children with ASD. Statistically significant improvements were found between groups in all three outcome measures, however clinically significant improvements were only found for self-initiated social contact (SISC scale).

IMPLICATIONS FOR PRACTICE, EDUCATION and FUTURE RESEARCH

- The above study had limitations regarding methodology and reliability of outcome measures, however it represents the best evidence on the effectiveness of one type of play therapy (LEGO®) for improving the social skills of children with ASD aged between six and 16 years (mean age 10.6 years). Between-group differences were statistically significant for all outcome measures, but clinically significant for only one of the outcome measures- self-initiated social contact (SISC).
- LEGO® is a low cost intervention/equipment (\$50/tub) item which many parents already have. However the nature of how the LEGO® is used and the need for a therapist to be present versus parent, is a focus for future research.
- This study provides a stepping stone towards a larger study. Further, more rigorous research needs to be conducted to support these findings for use in occupational therapy practice, to determine the generalisability of findings, and to examine individual components of the intervention.

- Outcome measures used only had moderate reliability and had some psychometric problems, however they were chosen as the best measures for use in measuring social competence for this client group. Further research and development of standardised outcome measures would prove useful for further research into this area.
- Although a detailed description was given, training in play therapy would be necessary for implementation in practice. Furthermore, this type of therapy is currently not taught in all university undergraduate curricula, therefore appropriate post graduate training would be required.
- Although this study found that differences in age and gender did not appear to affect outcome scores, it is important to consider the age and gender of children before using LEGO© therapy in practice, as not all children (particularly teenagers) will like LEGO© and therefore not all children will be responsive to this type of therapy.
- Safety issues concerning the use of small LEGO© pieces and young children (such as the risk of a child swallowing small pieces of LEGO©) must be acknowledged and appropriate supervision provided to ensure the safety of the child.
- Gains in social interaction were reported both in the therapy room and in unsupervised social situations outside of the therapy room.
- The use of LEGO© can be implemented in the home as well as during therapy sessions.

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Article critically appraised:

1. LeGoff, D. B. (2004). Use of LEGO© as a therapeutic medium for improving social competence. *Journal of Autism and Developmental Disorders*, 34(5), 557-571.

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Level Four Evidence:

2. Goldstein, H., & Cisar, L. (1992). Promoting interaction during sociodramatic play: Teaching scripts to typical preschoolers and classmates with disabilities. *Journal of Applied Behaviour Analysis*, 25(2), 265-280.
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Level Five Evidence:

8. Arthur, M., Bochner, S., & Butterfield, N. (1999). Enhancing peer interactions within the context of play. *International Journal of Disability, Development, and Education*, 46(3), 367-381.
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Evidence-Based Guidelines:

(Information about play therapy consisted of less than one page in the guideline)

10. Roberts, J. M. (2003). *A review of the research to identify the most effective models of best practice in the management of children with autism spectrum disorders*. Sydney: Centre for Developmental Disability Studies. Retrieved March 22, 2006, from <http://www.autismnsw.com.au/resources/ASDreview.pdf>.

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12. Phillips, B., Ball, C., Sackett, D., Badenoch, D., Straus, S., Haynes, B., & Dawes, M. (1998). Levels of evidence and grades of recommendation [Electronic Version]. Retrieved March 22, 2006 from http://www.cebm.net/levels_of_evidence.asp.