

Creation of Play Context

This section will include articles from literature on play and the importance of play (both to learning and for its own sake).

Peyton, J.L., Bass, W. T., Burke, B. L., Frank, L. M. (2005). Novel motor and somatosensory activity is associated with increased cerebral cortical blood volume measured by near-infrared optical topography. *J Child Neurol*, 20(10), 817-21.

Recent reports suggest that learning is enhanced by emotion, spontaneity, and play. The mechanisms of this enhancement are unclear and might involve increased cortical stimulation by the limbic system. Since neuronal activity is tightly coupled to changes in cerebral blood flow and volume, the demonstration of increased cortical blood volume during playful versus routine motor and somatosensory activity would imply enhanced neuronal activity and provide insight into the complex interaction between play and learning. Near-infrared spectroscopy was used to detect changes in cortical blood volume during performance of (1) rudimentary visual, motor, and speech tasks; (2) integration of the tasks in a familiar routine manner; and (3) integration of the tasks in a novel, spontaneous, playful manner. No significant differences in cortical blood volume were found during the performance of the individual rudimentary tasks and their routine integration. However, the novel integration activity was associated with a significantly greater increase in frontal lobe oxyhemoglobin, deoxyhemoglobin, and total hemoglobin, as well as parietal lobe total hemoglobin. This small pilot study provides a limited measure of physiologic support for a relationship between play and learning.

Pellis, S. M., McKenna, M. M. (1992). Intrinsic and extrinsic influences on play fighting in rats: effects of dominance, partner's playfulness, temperament and neonatal exposure to testosterone propionate. *Behav Brain Res*, 50(1-2), 135-45.

Play fighting is a frequent activity of juvenile rats and appears to show marked variability amongst individuals in that some rats play a great deal and others very little. This study attempted to identify some of the factors

involved in producing this individual variability. The major influence over an individual's frequency of play as a juvenile was found to be the frequency of play by the partner. That is, play appears to be contagious, in that a high playing animal stimulates its partner to play frequently as well. In male juveniles, but seemingly not in female juveniles, the subsequent adult status of one partner as dominant influences the subordinate-to-be to initiate more playful contacts. In addition to these extrinsic influences, however, there appear to be intrinsic factors that influence whether an individual is a high or low playing animal. One intrinsic factor appears to be 'boldness', so that bolder animals tend to initiate more playful contacts. Higher players tend to be more susceptible to the stereotypy-inducing effects of the dopamine agonist, apomorphine, and tend to be more dependent upon the playful activity of the partner to maintain their own high levels of play. Both of these characteristics are consistent with other studies comparing bold and timid rats. Boldness, however, only seems to influence how much play a rat will exhibit, not how much play it is capable of exhibiting. Neonatal testosterone augmentation increases juvenile play fighting but not apomorphine susceptibility, suggesting that a high player need not be a bold animal. The total frequency of play an individual is capable of initiating appears to depend upon perinatal exposure to androgens. Boldness and the playfulness of the partner appear to modulate the expression of this hormonally set value.

Fiese, B. H. (1990). Playful relationships: a contextual analysis of mother-toddler interaction and symbolic play. *Child Dev*, 61(5), 1648-1656.

The relation between social interaction and complexity of toddler's symbolic play was investigated. 57 toddlers between 15 and 24 months of age were observed under 4 conditions: (1) child play alone, (2) child play with mother, (3) child modeling mother, and (4) child play with mother following the modeling condition. Each subject was rated on complexity of play, maternal attention directing, reciprocity, and maternal intrusiveness. Significant condition effects were found in which more complex forms of play were observed when the children were playing with their mothers than when playing by themselves. Maternal intrusions and questioning were negatively related to symbolic play. Turn-taking was negatively related to simple exploratory play. Results of a sequential analysis demonstrated that turn-

taking was more likely to precede symbolic play, and maternal intrusiveness was more likely to precede simple exploratory play. The role of active partnership in symbolic play development is discussed.

Cross, L. A., & Coster, W. J. (1997). Symbolic play language during sensory integration treatment. *Am J Occup Ther*, 51(10), 808-814.

OBJECTIVE: Clinical writings on sensory integration treatment and theory have long professed that play serves as an important means of implementing treatment goals. However, to date, there has been little research that examines this aspect of the intervention. With the use of play language as an indicator for the occurrence of play, this study examined the frequency and characteristics associated with symbolic play language that therapists and children use during sensory integration therapy. This study is part of an ongoing research program designed to examine therapist-child interactions.

METHOD: The frequency of symbolic play language observed in 41 videotaped treatment sessions of therapist-child dyads (21 children, 12 therapists) was recorded with the Challenge Coding System. The presence of symbolic play language was recorded if the child or therapist used language that incorporated the child, therapist, equipment, or activity into a symbolic or pretend play theme. The frequency of symbolic play language and percentage of time spent using play language were calculated. Associations among frequency of play language, child age, and behavior during the session (e.g., seeking assistance, cooperation) were also examined.

RESULTS: Symbolic play language proved to be a major feature of sensory integration treatment sessions. It also correlated with child age and with some features associated with therapeutic interactions (i.e., child tries hard, child seeks assistance, therapist assists child, therapist modifies activity, therapist structures activity). **CONCLUSION:** The results suggest that these therapists used play language frequently and that this usage may support children in sensory integrative therapy to successfully accomplish activities.

Dunkerley, E., Tickle-Degnen, L., & Coster, W. J. (1997). Therapist-child interaction in the middle minutes of sensory integration treatment. *Am J Occup Ther*, 51(10):799-805.

The purpose of this study was to describe the management of challenge during therapist-child interaction in sensory integration treatment. This

descriptive and relational study of the middle minutes of treatment sessions partially replicated an earlier study of the beginning minutes. One-minute videotape clips taken from the middle minutes of 38 treatment sessions were shown to therapist judges who rated qualities of therapist and child behavior. Two patterns emerged from the correlations of ratings: work and playfulness. Work for the child involved trying hard, cooperating and seeking assistance, whereas work for the therapist involved assisting and guiding the child. Play for the child included enjoying the activity, being successful and confident, and trying hard. For the therapist, play involved being creative and behaving playfully. Patterns of work and play were different across different levels of challenge to the child.

Tanta, K. J., Deitz, J. C., White, O., & Billingsley, F. (2005). The effects of peer-play level on initiations and responses of preschool children with delayed play skills. *Am J Occup Ther*, 59(4), 437-445.

The potential impact of peer-play opportunities on the overall development of young children has been well-documented in the social development, occupational therapy, and special education literature. However, the effect of peer characteristics on the manifestation and facilitation of specific types of play roles and behaviors has received little attention. This topic is of key importance to occupational therapists who are striving to develop interventions that enhance the development of social participation and play in preschool children. The purpose of this study was to examine the differences in initiation and response exhibited by preschool-aged children with social-play delays when participating in free-play dyads with peers of differing developmental levels. A single-subject alternating treatments design was replicated across five preschool-aged children with developmental play delays. Each child was paired with one peer who had lower developmental play skills and one peer who had higher developmental play skills. The arranged dyads were given the opportunity to play together in a specially designed playroom at their school. Their interactions were videotaped and later coded. All five children generally showed more initiation and response to initiation during play with higher-level peers, although one participant showed less differentiation for initiation than the other four children. An occupational therapist working with a preschool child with play delays and wanting to facilitate the child's initiation and response in play situations should consider pairing the child with play delays with a child who has higher play skills.

Ginsburg, K. R. (2007). American Academy of Pediatrics Committee on Communications; American Academy of Pediatrics Committee on Psychosocial Aspects of Child and Family Health. The importance of play in promoting healthy child development and maintaining strong parent-child bonds. *Pediatrics*, 119(1), 182-191.

Play is essential to development because it contributes to the cognitive, physical, social, and emotional well-being of children and youth. Play also offers an ideal opportunity for parents to engage fully with their children. Despite the benefits derived from play for both children and parents, time for free play has been markedly reduced for some children. This report addresses a variety of factors that have reduced play, including a hurried lifestyle, changes in family structure, and increased attention to academics and enrichment activities at the expense of recess or free child-centered play. This report offers guidelines on how pediatricians can advocate for children by helping families, school systems, and communities consider how best to ensure that play is protected as they seek the balance in children's lives to create the optimal developmental milieu.

Legoff, D. B., & Sherman, M. (2006). Long-term outcome of social skills intervention based on interactive LEGO play. *Autism*, 10(4), 317-329.

LEGO building materials have been adapted as a therapeutic modality for increasing motivation to participate in social skills intervention, and providing a medium through which children with social and communication handicaps can effectively interact. A 3 year retrospective study of long-term outcome for autistic spectrum children participating in LEGO therapy (N = 60) compared Vineland Adaptive Behavior Scale socialization domain (VABS-SD) and Gilliam Autism Rating Scale social interaction subscale (GARS-SI) scores pre and post-treatment with a matched comparison sample (N = 57) who received comparable non-LEGO therapy. Although both groups made significant gains on the two outcome measures, LEGO participants improved significantly more than the comparison subjects. Diagnosis and pre-treatment full-scale IQ scores did not predict outcome scores; however, Vineland adaptive behavior composite, Vineland communication domain, and verbal IQ all predicted outcome on the VABS-

SD, especially for the LEGO therapy group. Results are discussed in terms of implications for methods of social skills intervention for autistic spectrum disorders.

Bernard-Opitz, V., Ing, S., & Kong, TY. (2004). Comparison of behavioural and natural play interventions for young children with autism. *Autism*, 8(3), 319-333.

The article reports the results of a pilot study comparing traditional behavioural approaches and natural play interventions for young children with autism over a 10 week period. Two matched groups of eight young children with autism participated. Using a crossover design, children in both groups showed positive gains in compliance, attending, play and communication with their therapists and parents. Improvements in attending and compliance were higher following the behavioural condition compared with the natural play condition. Seven participants had reduced autism scores after the intervention. **The findings suggest that behavioural and play approaches affect behaviour in different ways** and that autistic symptomatology of young children may be amenable to treatment. The discussion focuses on the active ingredients of treatments and the need to base efficacy research on well-planned treatment comparisons.