PSYCHOLOGICAL REPORTS, vol. 84, núm. 2, 1999, pp. 611-616.

Peer acceptance and cognitive development.

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Psychological Reports, 1999, 84, 611-616.

PEER ACCEPTANCE AND COGNITIVE DEVELOPMENT[1]

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Summary.—To verify whether development of cognitive skills and peer acceptance are necessarily linked, 212 students of low socioeconomic status in the first, second, and third grades of a public school in Brazil were studied. A sociometric evaluation of peer group acceptance in play and study situations was conducted. The cognitive tasks were the mental imaging and conservation of mass and length (operative tasks) as well as location of dice and equidistancing arrangements (creation of possibilities tasks). Analysis showed the children identified as desirable study companions had highly developed general cognitive abilities, and those chosen as desirable for both study and play not only had highly developed general cognitive abilities but also highly developed operativeness. Children who were socially isolated, however, had even higher mean cognitive assessment score in relation to both creation of possibilities and general cognitive development than did those with ratings of negative or positive salience.

Many psychologists have long shared an interest in children's peer-group interactions since a relationship between social and cognitive development is to be expected. Piaget (1973, 1976, 1994) emphasized that superior cognitive development should be associated with the cooperative capacity to establish social relationships and defended the idea that children are inevitably confronted with different viewpoints of the world through interaction with their peers. Such confrontations engender a cognitive conflict or a cognitive disturbance although the situation returns to normalcy when the equilibration process compensates for the novelty. According to this perspective, young children overcome their early, egocentric view of the world by being forced to accept social rules by their peers. Piaget thus postulated that operativeness makes the integration of different viewpoints possible, and, as a consequence, overcomes preoperational thought.

On the negative side, there is reason to believe that a lack of interaction with peers may be associated with undesirable developmental consequences. Many studies, using a variety of subjects and sociometric measures, have consistently demonstrated the lower popularity of children with learning disabilities (Bryan, 1974, 1976; Bruininks, 1978; Siperstein, Bopp, & Bak, 1978;

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Scranton & Ryckman, 1979; Harris, & King, 1982; Perlmutter, Crock, Corday, & Garsted, 1983; Silver & Young, 1985; Toro, Weissberg, Guare, & Liebenstein, 1990). Other studies based on quantitative observational data tend to show generally negative and inappropriate types of social behavior by children with learning disabilities (La Greca, 1981; Pearl, Bryan, & Donahue, 1983); however, one study has obtained results not entirely consistent with this pattern (Markoski, 1983), although it was based on a relatively small sample ($N = 30$).

Unfortunately, relatively little is known about the acceptance of children without learning disabilities. Only a few studies relate children's popularity to egocentrism (Rubin & Maioni, 1975; Karmos & Milcic, 1975, 1978), unpopularity to emotional maturity (Rubin & Hayvren, 1981), and social to cognitive development (Krappmann, Weiss, & Oswald, 1993). Although sociometric scores of popularity are often related to egocentrism and cognitive development, they may also be linked to academic achievement (Rubin & Maioni, 1975; Karmos & Milcic, 1975, 1978). The play of children who are unpopular with their peers was also cognitively and socially less mature than that of children who are popular (Rubin & Hayvren, 1981).

It is reasonable to hypothesize that, in accordance with Piaget's theory, strongly rejected children have great difficulties in interacting with and confronting other children, and, as a consequence, will have difficulty in changing the structure of their thought. Hence, considering that the relationships established among classmates may be related to the socialization of the children, it seems that strongly rejected children may have limitations in (a) the extent of their construction of operational thought, (b) the extent of their formation of cognitive possibilities, or (c) both of these aspects of cognitive development, even though such limitations are not found for strongly accepted children. However, no theoretical basis is provided for establishing a relationship between the social isolation of children as reflected in their failure to be chosen by peers and the extent of their cognitive development.

Method

A sociometric test was administered to 211 lower-class students in the second semester of the academic year in the first-, second-, and third-grade classrooms of a public school in Campinas, Brazil. The measures included (1) the choice and ranking of the three classmates they would most like (a) to play with and (b) study with and (2) the choice and ranking of the three classmates they would least like (a) to play with and (b) to study with. This psychological procedure can show various aspects of the social relations among children inside their social group (in this case, the classroom), describing possible conflicting relations and revealing the social dynamics of the group.

Social attraction scores were considered positive, and social rejection scores negative. Separate sociometric scores were derived from the sum of the rankings given to each individual by his classmates with respect to each of the two situations of play and study as well as for over-all preference, assessed by combining the two. Those children ranked in the lowest 25% of the negative scores were considered to be strongly rejected, whereas those rankings among the highest 25% of the positive scores were considered to be strongly accepted. A salience rating was also made by identifying the highest and lowest 10%. Those children who were not mentioned, either positively or negatively, were considered to be isolated by the children in their grade.

The cognitive tasks of Piaget include mental imaging and the conservation of mass and length (all operative tasks), as well as the location of dice and equidistancing arrangements (tasks involving the creation of possibilities). These tasks were administered individually in random order by five previously trained undergraduate students, and then children were classified according to the traditional Piagetian criteria. For the operative tasks, the nonconserver category was given a score of zero, with one point attributed to the intermediate category and two points to the conserver. For the tasks related to creation of possibilities, the most elementary analogical answers (level Ia) were assigned a score of zero, with more advanced analogical answers (level Ib) being attributed one point and those answers revealing co-possibilities (level II) receiving two points.

The extent of operativeness and of Piagetian creativity were evaluated by summing the scores obtained in operative and possibility creation tasks, respectively; the extent of general cognitive development was derived from the sum of the two types.

Results

The first set of analyses involved only 112 subjects, those who had been identified as being either strongly rejected or strongly accepted. The association of age and peer group acceptance was not statistically significant ($t = 0.11$, ns), which means that strongly rejected and strongly accepted children were found at all ages.

Separate 2×4 analyses of variance were used to verify the association of acceptance or rejection and age for each task, as well as for over-all score, extent of operational thought, extent of creation of possibilities, and general cognition. The results were not significant, suggesting that cognitive development is not significantly related to peer acceptance, at least as measured here.

The second set of analyses involved analysis of covariance to investigate only those individuals identified as isolated ($n = 15$) or having a high salience

ating [either positive ($n=22$) or negative ($n=21$)]; age was used as a covariate. In this case, a few statistically significant differences were found between the means of sociometric measure scores and Piagetian assessment. When all three groups were considered, Piagetian general cognition and total sociometric scores showed significant differences ($F=3.45$, $p=.04$); the Piagetian assessment was lowest for those individuals with negative ratings of salience and highest for those with positive ones.

The data also showed that the mean scores of the most rejected children (those with a negative salience rating) were generally the lowest and that in the play situation, the isolated children systematically had the highest mean scores, slightly above the mean of the most accepted children. These facts led to the performance of further analyses of covariance taking these observations into consideration.

When comparing children with ratings of positive and negative salience, three different analyses gave statistically significant differences: that of general cognitive assessment in relation to the study situation ($F=4.09$, $p=.05$), that of general cognitive assessment in relation to over-all preference ($F=6.18$, $p=.01$), and that of operativeness in relation to over-all preference ($F=4.55$, $p=.04$). In all cases, children with a rating of positive salience had a mean cognitive assessment higher than that of those with a negative one. In other words, the children chosen to study with had more highly developed general cognitive abilities, and those chosen in relation to both study and play not only had more highly developed general cognitive abilities but also showed more highly developed operativeness.

The analyses comparing isolated children and those with negative salience indicated two statistically significant differences in relation to the play situation: creation of possibilities ($F=6.10$, $p=.02$) and general cognitive development ($F=5.54$, $p=.03$); and in both cases, isolated children had a higher mean cognitive assessment score than did those with negative salience.

Discussion

The interaction of children with their peers is considered to provide unique opportunities for social and cognitive development. In the ecosystem of the school, interrelations among children reflect not only social relationships but also cognitive possibilities; consequently, various aspects of peer acceptance were considered, including not only positive and negative acceptance but also isolation. Moreover, both the traditional criterion utilizing the 25% parameter and the more extreme one of salience, which considers a parameter of only 10%, were included.

With the criterion of 25%, neither acceptance nor rejection was based on creativity and operative development, i.e., socialization in Piagetian terms; thus, the presence of operative and creative mechanisms seems unnecessary.

Similar results have been reported by various studies (Rubin & Maioni, 1975; Karmos & Milcic, 1975, 1978; Bryan, 1974, 1976; Bruininks, 1978; Siperstein, Bopp, & Bak, 1978; Scranton & Ryckman, 1979; Harris & King, 1982; Perlmutter, Crock, Corday, & Garsted, 1983; Silver & Young, 1985; Toro, Weissberg, Guare, & Liebenstein, 1990), all of which suggest the need for greater attention to the relationship between development and sociometric status.

Nevertheless, when the criterion is changed and the study is limited to more extreme cases involving salience, cognitive abilities do seem to have an influence. Play preferences often isolate the most creative children and those with the most highly developed general cognitive abilities but do not cognitively differentiate between positive and negative status. Study preferences also reflect general cognitive abilities, with positive preferences linked to higher mean scores. Finally, in over-all social interaction involving both play and study, preferences reflect the level of operativeness as well as general cognitive development, with high mean scores linked to positive preferences and low ones to negative preferences.

These results suggest three conclusions. First, play and study must be considered separately when analyzing the relationship between sociometric status and cognitive and educational variables because the indication of children with whom to play and study involves different cognitive criteria. Second, since the most highly cognitively developed children are often isolated by their peer group during play, the play situation probably is not the ideal context for the development of interaction and cognitive abilities, even though it does provide instances of confrontation of ideas from the interference of numerous social-psychological variables. Finally, many, although not all, of the children with the most highly developed cognitive abilities were recognized as having positive sociometric salience without any need for orientation about criteria of cognitive development.

These results suggest that in situations of preference, choices may be motivated by cognitive characteristics but only for individuals facing either isolation or extremely high positive or negative sociometric acceptance. If it is assumed that children are usually reinforced to behave in socially acceptable and appropriate ways, one can question why creative individuals are isolated in play situations, as well as why some individuals with very high cognitive development are not highly accepted, although many of them are, and why some with very low cognitive abilities are accepted anyway.

References

Bruininks, V. L. (1978). Peer status and personality characteristics of learning disabled and nondisabled children. *Journal of Learning Disabilities, 11*, 58-66.

Bryan, T. H. (1974). Peer popularity of learning disabled children. *Journal of Learning Disabilities, 7*, 31-35.

BRYAN, T. H. (1976) Peer popularity of learning disabled children: a replication. *Journal of Learning Disabilities*, 9, 307-311.

HARRIS, W. J., & KING, D. R. (1982) Achievement, sociometric status, and personality characteristics of children selected by their teachers as having learning and/or behavior problems. *Psychology in the Schools*, 19, 452-457.

KARMOS, J. S., & MILCIC, D. (1975) A study of egocentrism and socialization. (ERIC Research Reports) 17p.

KARMOS, J. S., & MILCIC, D. (1978) A study of egocentrism and popularity. *Journal of Experimental Education*, 46, 2, 27-30.

KRAPPMANN, L., WEISS, K., & OSWALD, H. (1993) Peer relationships of children in middle childhood. Paper presented at the 60th Biennial Meeting of the Society for Research in Child Development, New Orleans, LA.

LA GRECA, A. M. (1981) Social behavior and social perception in learning-disabled children: a review with implications for social skills training. *Journal of Pediatric Psychology*, 6, 395-416.

MARKOSKI, B. D. (1983) Conversational interactions of the learning disabled and nondisabled child. *Journal of Learning Disabilities*, 16, 606-609.

PEARL, R., BRYAN, T., & DONAHUE, M. (1983) Social behaviors of learning disabled children: a review. *Topics in Learning & Learning Disabilities*, 3(2), 1-14.

PERLMUTTER, B., CROCK, J., CORDAY, D., & GARSTED, D. (1983) Sociometric status and related personality characteristics of mainstreamed learning disabled adolescents. *Learning Disability Quarterly*, 6, 20-30.

PIAGET, J. (1973) *Estudos sociológicos*. Rio de Janeiro: Fiorense.

PIAGET, J. (1976) *A equilibração das estruturas cognitivas*. Rio de Janeiro: Edition Zahar.

PIAGET, J. (1994) *O juízo moral na criança*. São Paulo: Summus.

RUBIN, K. H., & HAYVREN, M. (1981) The social and cognitive play of preschool-aged children differing with regard to sociometric status. *Journal of Research and Development in Education*, 14, 16-22.

RUBIN, K. H., & MAIONI, T. L. (1975) Play preference and its relationship to egocentrism, popularity and classification skills in preschoolers. *Merrill Palmer Quarterly*, 21, 171-180.

SCRANTON, T. R., & RYCKMAN, D. B. (1979) Sociometric status of learning disabled children in an integrative program. *Journal of Learning Disabilities*, 12, 49-53.

SILVER, D. S., & YOUNG, R. D. (1985) Interpersonal problem-solving abilities, peer status, and behavioral adjustment in learning disabled adolescents. *Advances in Learning and Behavioral Disabilities*, 4, 201-223.

SIPERSTEIN, G. N., BOPP, M., & BAK, J. (1978) Social status of learning disabled children. *Journal of Learning Disabilities*, 11, 49-53.

TORO, P. A., WEISSBERG, R. P., GUARE, J., & LIEBENSTEIN, N. L. (1990) A comparison of children with and without learning disabilities on social problem-solving skills, school behavior, and family background. *Journal of Learning Disabilities*, 23, 115-120.

Accepted March 10, 1999.