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Early Intervention Approaches to Enhance the Peer-Related Social Competence of Young Children With Developmental Delays:

A Historical Perspective

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Abstract

This article presents a framework for future research and program development designed to support children's peer-related social competence. Intervention research is examined within a historical perspective culminating with a discussion of contemporary translational approaches capable of integrating models of normative development, developmental models of risk and disability, and intervention science.

Keywords

behavioral interventions; historical perspective; peer competence

Building relationships is at the core of a child's development, and this includes relationships with one's peers (see Guralnick, 2001b; Ladd, 2005; Rubin, Bukowski, & Laursen, 2009). The dynamic, often exuberant give-and-take features of social exchanges that occur between peers across the early childhood period typically result in creative and increasingly sophisticated forms of social play. At the same time, and in general contrast to the various adaptations made by parents, teachers, and other adults to initiate and maintain their interactions, relationships with peers are often unpredictable and unforgiving. Despite this fragility, interactions with peers at home, school, child care, and numerous other contexts throughout early childhood provide children with the experiential foundation for developing an array of social skills generally referred to as "peer-related social competence" (Guralnick, 1999a). In fact, the rudiments of peer competence can be observed during the toddler years, and this competence represents an underlying set of psychological processes governing the increasing complexity of social skills required to master the social challenges presented by peers throughout early childhood (Howes, 1987, 1988). However, and central to many points in this article, these peer competence processes are highly sensitive to and easily perturbed by adverse environmental and biological factors. As a consequence, and discussed shortly, children with general developmental (cognitive) delays or related disabilities may well be unusually vulnerable to peer competence difficulties.

The purpose of this article is to establish a framework for future research and program development designed to support the peer-related social competence of young children with developmental delays and related disabilities. To accomplish this, the defining characteristics

of peer competence and the peer relationship concerns of young children with developmental delays will first be considered. With this as a foundation, behavioral interventions designed to enhance peer competence will be examined in historical perspective. This discussion will encompass the period ranging from an emerging recognition of the problem in the 1970s to contemporary translational approaches seeking to integrate developmental models of normative development, developmental models of risk and disability, and intervention science.

PEER-RELATED SOCIAL COMPETENCE DEFINED AND MEASURED

Young children's competence with peers represents, at minimum, their ability to utilize appropriate and effective social strategies to achieve their interpersonal goals in contexts involving peers (Guralnick, 1990). Given the remarkably dynamic nature, rapid pace, and changing characteristics of peer relationships, the identification of children's interpersonal goals provides an important framework within which peer competence can be understood. Three overarching interpersonal goals have proven to be extremely useful and relevant to peer competence in terms of both assessment and intervention: (1) peer group entry, (2) conflict resolution, and (3) maintaining play. Appropriate and effective use of social strategies on a regular basis within these 3 goals or social tasks reflect high levels of peer competence (Guralnick, 1999a). This level of competence corresponds to positive relationships with one's peers and a generalized pattern of successful social problem solving in the peer context.

Measures that represent important aspects or manifestations of peer competence come from many diverse sources (see Fabes, Martin, & Hanish, 2009; Kaczmarek, 2002; Ladd, 2005). These include parent and teacher reports of the characteristic patterns in which children relate to other children and their degree of success in accomplishing goals, as well as children's reports about other children's peer status. More indirect measures of peer competence such as the extent and quality of their peer social networks, including friendships, can also provide an important perspective. Of considerable value are observational techniques applied in natural or analogue contexts that can effectively extract information from the complex flow of peer interactions and parse that information into meaningful units. In fact, the ability to capture so many levels and forms of dynamic activity and complexity through observational measures makes this source of information especially useful in assessing key aspects of children's peer competence.

The definition and measurement of peer-related social competence described in the preceding paragraphs applies to children developing typically as well as to those with a wide range of developmental problems. However, the research reviewed in this article will be limited to children with mild developmental (cognitive) delays, as most of the work during the early childhood period in the disability field has involved this large and heterogeneous group of children. Included here are children with specific etiologies such as Down syndrome or Fragile X syndrome along with the vast majority of children for whom the basis of their delay is not fully understood (Gallimore, Keogh, & Bernheimer, 1999). Nevertheless, peer competence problems also extend to groups of children with diverse disabilities (Diamond, 2002; Freeman & Kasari, 1998) and the perspective focusing on children with mild delays is relevant to those groups as well.

PEER COMPETENCE OF CHILDREN WITH MILD DELAYS

Focusing on observational methodologies, especially those using video technologies, a wide array of measures have been developed to capture both the quality and the quantity of social interactions with peers that index peer competence (Provost & LaFreniere, 1991). Most often these measures have been obtained during free-play or other unstructured contexts. The rationale here is that these contexts, unencumbered by adult-direction or activity-specific constraints, provide an ideal window to interpersonal expression and relationships. Key

measures are often directly linked to the interpersonal goals that are central to children's peer competence. These include the ability of children to sustain interactive play (often referred to as "group play") and to use social strategies that reflect a level of compromise and negotiation in order to help resolve conflicts. Other measures such as the ratio of positive to negative social exchanges, responsiveness to a peer's social bids, and similar more detailed measures have also been included to describe the pattern of peer interactions that represent peer competence.

On the basis of these and related measures, it has been well established that young children with mild developmental delays display an interaction pattern indicating the existence of major and pervasive peer competence difficulties (Guralnick, 1999a). These difficulties have been found for interpersonal or social task measures related to peer group entry (eg, Lieber, 1993; Wilson, 1999), maintaining play (eg, Guralnick, Hammond, Connor, & Neville, 2006; Guralnick & Weinhouse, 1984), and conflict resolution (eg, Guralnick et al., 1998). Group play, the primary index of the social task of maintaining play, has been especially problematic for children with delays, suggesting the existence of a very fragile set of peer interaction skills. Even when compared with younger typically developing children matched on mental age, preschool age children with delays still do not achieve equivalent levels of peer interactions (Guralnick & Groom, 1987). This occurs despite the far more extensive experiences with peers for children with delays in this comparison. As might be expected, these peer competence difficulties limit children's ability to form friendships and to benefit from those friendships that are established (Guralnick, Neville, Hammond, & Connor, 2007a). Important aspects of their peer social networks are also affected (eg, Guralnick, 1997). These problematic patterns persist over time, continuing to impose constraints on children's quality of life (eg, Williams & Asher, 1992). Taken together, these and numerous other studies clearly indicate the seriousness of the peer competence problems experienced by young children with mild developmental delays.

EARLY INTERVENTION APPROACHES

Given this state of affairs, the critical question revolves around how to intervene during the early childhood period in order to alter this developmental trajectory. Such efforts have not been lacking and have spanned at least a 40-year period (see Fig 1). As to be expected, specific intervention approaches conformed to the prevailing conceptual frameworks and empirical findings at the time and were also influenced by ideological, philosophical, and legal forces such as those associated with the early childhood inclusion movement (Guralnick, 2001a).

By way of overview, it was during the 1970s that the peer interaction problems exhibited by children with delays were beginning to become more apparent, leading to a number of very focused efforts to intervene by early childhood professionals. Interestingly, one of the early published studies in this connection anticipated the movement toward inclusion. In this approach, typically developing children were brought in from a neighboring classroom to engage in free-play activities with children with delays in their specialized program in order to facilitate the social play of the children with delays (Devoney, Guralnick, & Rubin, 1974). Although this study lacked the proper controls and design sophistication expected of contemporary research, it did suggest the important role for teachers in structuring social experiences for children with delays in order to take advantage of the advanced social opportunities created by the presence of typically developing children. Related work following social learning and reinforcement paradigms, also involving typically developing peers, did have better controls and suggested important possibilities for improving the peer interactions of children with delays (Guralnick, 1976).

During the 1980s and 1990s there was a veritable explosion of intervention studies in this area for children with delays, corresponding to the increased recognition of the magnitude and

pervasiveness of the problem. The strategies developed by early interventionists to promote children's peer interactions during the 1980s and 1990s, usually within the context of classroom programs, were both creative and wide ranging. In addition to interventions utilizing more developmentally advanced peers as agents of change, teachers took major, active, and direct roles in all forms of social skills interventions. Strategies for promoting social skills included the use of teacher prompting and fading, priming children to enhance the probability of a socially skillful exchange with a peer, direct involvement of teachers in joint play activities to produce the necessary structure for the intervention activity, the use of scripts for play sequences as another means of providing a supportive structure to facilitate peer interactions, the careful selection of toys and materials that encourage relationships with peers, and the modification of architectural arrangements in the room to promote contact with peers. Over time, evidence mounted that these techniques could each contribute in some small way to promoting children's social development with their peers. As a result, these and other strategies became more integrated, evolving into "intervention packages" or curricula, which were then implemented and tested for various groups of children (see Brown, Odom, McConnell, & Rathel, 2008).

Of note, involving typically developing peers as agents of change in an intervention strategy became more prominent during this period with the growth of inclusive programs in child care and early intervention centers. In many respects, what was a highly focused, usually short-term, intervention strategy involving selected peers eventually became transformed into a broader intervention activity as inclusion programs, including full inclusion programs, became more common. That is, inclusive programs produced an entirely different social environment in which a relatively small number of children with delays became a regular part of early childhood programs consisting primarily of typically developing children. Although this movement to create inclusive programs was driven by many forces (Guralnick, 1978), one expectation was that this "immersion" strategy would enhance children's peer interactions as well as promote positive relationships between children with and without disabilities. With respect to peer interactions, this indeed turned out to be the case, as numerous studies of early childhood inclusion during this period revealed benefits to children with delays and no adverse effects to the typically developing children involved (Guralnick, 1999b; Odom et al., 2004).

Despite the remarkable progress that occurred during the 1980s and 1990s, a major concern became evident: studies of all types infrequently produced generalized and stable increases in children's peer interactions (Brown & Conroy, 2002). It seemed that only surface social behaviors were being altered by these specific strategies and even by the broader curricula, with enhancement of peer competence necessary for generalization occurring only to a minimal extent. This interpretation was supported by findings of the immersion studies of inclusion in which small groups of children with delays participated in programs primarily involving typically developing children. In these inclusive settings, children with delays became far more socially interactive (eg, higher frequencies of positive social interactions) in comparison to specialized settings. However, measures more indicative of improvements in the ability to effectively and appropriately carry out their interpersonal goals (ie, peer competence) such as group play were unaffected (see Guralnick, Connor, Hammond, Gottman, & Kinnish, 1996).

CONTEMPORARY MODELS

During this same period, the field of peer competence began to capture the attention of developmentalists who considered these issues from the perspective of the larger context of normative developmental science (Crick & Dodge, 1994; Dodge, Pettit, McClaskey, & Brown, 1986; Guralnick, 1999a; Lemerise & Arsenio, 2000; Rose-Krasnor, 1997). Despite differences among the conceptual frameworks that emerged, they shared many common features including an effort to identify underlying processes that governed children's peer-related social

competence. One model was designed explicitly with young children with developmental delays and disabilities in mind, as illustrated in Figure 2 (Guralnick, 1999a). As can be seen, 3 major categories of underlying psychological processes were proposed that operate in concert as social strategies are selected in the context of a social task: (1) foundation processes, (2) social-cognitive processes, and (3) higher-order processes. Specifically, as presented in the model, the selection of appropriate and effective social strategies depends heavily on the proper processing of social information. Key social-cognitive processes are involved with components that include that accurate encoding and interpretation of the social situation can be carried out, that prosocial strategies are at least available as part of the child's repertoire, and that the evaluation of a particular strategy to be selected occurs within the larger social context (eg, history of interactions with a peer). A positive outcome is also likely to result if children's foundation processes, such as a shared understanding of social roles, social rules, and related expectations (ie, knowledge of possession rules), and the ability to regulate one's emotions during a social task support rather than interfere with the components of social-cognitive processes. Similarly, the ability to choose an appropriate and effective social strategy is diminished unless there exists a coherent organizing framework consistent with the social task that facilitates persistence in that task and the ability to monitor and utilize prior feedback. This higher-order process represents many components of what is generally referred to as "executive function" (Banich, 2009; Welsh, Friedman, & Spieker, 2005). As depicted in the figure, all of these processes can directly affect social strategy selection.

Important features of this and other contemporary models include their integrative and coordinating functions. Displays of socially competent behavior for a particular social task require the synchronous and harmonious integration of processes and their components. In the sequence of social exchanges, failure of any one component at any level is likely to create a cascade of events that can severely reduce the likelihood of a successful experience with peers. As an example, failure to encode social information accurately will make it difficult to properly interpret a peer's behavior. In turn, this will likely lead to an inappropriate and ineffective choice of a social strategy. Similarly, a lack of understanding of generally accepted "social rules" or an inability to regulate one's emotions, especially during conflicts, will certainly alter many aspects of social-cognitive and higher-order processing in a manner that leads to less effective or less appropriate social strategy selection.

These contemporary models can also help to understand why children with developmental delays (or related disabilities) may have such unusual peer competence difficulties described earlier. To be sure, children with delays, as is true for children in general, exhibit a complex and highly diverse pattern of developmental strengths and vulnerabilities in the peer context. Nevertheless, it is also apparent that children with delays are at far greater risk for experiencing problems with respect to virtually all processes identified. For example, attentional difficulties affecting encoding are frequently found in this population, and recent work has clearly identified how the frequent emotion regulation problems of children with delays can affect their peer competence (eg, Baker, Fenning, Crnic, Baker, & Blacher, 2007). Of course, children's overall developmental (cognitive) levels clearly influence and constrain peer competence (Brownell, 1986). However, the peer context exposes the types of vulnerabilities of children with delays that affect precisely those processes that can easily depress their ability to appropriately and effectively accomplish social tasks. The consequence of this cumulative impact is to create peer competence limitations that often extend beyond children's overall developmental level.

Another important contribution of contemporary models has been based on findings from normative developmental science in which linkages have been clearly established between peer competence and family patterns of interaction (see Ladd & Pettit, 2002; Ross & Howe, 2009). Numerous family influences on children's peer competence have now been identified

including the degree of socioemotional connectedness between parent and child, especially attachment relationships, as well as specific aspects of parent-child discourse. More direct family influences such as helping to establish their child's peer social network as well as parental monitoring and directly facilitating their child's peer interactions also have been shown to contribute to children's peer competence. As illustrated in Figure 3, contemporary models based on normative development suggest that these factors exert their influence on children's peer competence through one or more of the processes discussed earlier. Of importance, available evidence focusing on children with delays indicates that these processes also appear to mediate many of the linkages between these same family factors and peer competence (eg, Baker et al., 2007; Guralnick, Neville, Connor, & Hammond, 2003; Guralnick, Neville, Hammond, & Connor, 2007b).

TRANSLATIONAL RESEARCH AND PEER COMPETENCE

This brings us to the current period in the history of behaviorally based efforts to enhance the peer competence of children with delays and related disabilities. Clearly, possibilities now exist for the development of new approaches through a process of translating contemporary models into intervention programs. Of course, understanding the neurobiology of peer competence is certainly relevant to translational efforts (see Yeates et al., 2007) and may be of special value in the future with respect to broader issues in the field of social competence (Iarocci, Yager, & Elfers, 2007). However, applying conceptual frameworks and knowledge obtained primarily from contemporary developmental models to intervention science, especially in relation to children with delays or related disabilities, clearly constitutes an important form of translational research that should be pursued. The expectation is that by bringing developmental and intervention science into better alignment, core aspects of children's peer competence will more likely be affected. Indeed, absent in most previous intervention efforts to promote peer competence for children with delays has been a developmental orientation. As a consequence, the multidimensional and process-based features of peer competence were not fully appreciated nor was their relevance to the design of highly individualized interventions. Even social withdrawal observed in otherwise typically developing children has many complex causative elements that require careful assessment and correspondingly highly individualized interventions (see Coplan & Armer, 2007). Moreover, family influences have been rarely acknowledged in past work with children with delays, clearly limiting both our understanding of factors affecting their peer competence and opportunities for designing and implementing a comprehensive intervention. These and other factors likely contributed to the difficulties noted earlier in achieving generalized effects of interventions to improve the peer competence of young children with developmental delays.

Contemporary models, then, provide an alternative conceptual and design framework that appears to hold considerable promise for enhancing children's peer-related social competence. For this to occur, however, it is suggested that intervention design should begin by organizing efforts within the framework of social tasks. In so doing, it becomes immediately apparent that this framework must include a sequential process of interpersonal problem solving that is dynamic. To capture the complexity of the process of social exchange, a careful analysis of each social task is required in order to extract the structural elements that constitute the common core components of each task. This is certainly a difficult undertaking in view of the diversity of children's interests, styles, and activity settings. Yet, it is quite possible to identify "nodes" for each key component of a social task and organize them, for example, within social scripts that correspond to social task sequences (see Nelson, 1981; Seidman, Nelson, & Gruendel, 1986). Within this dynamic social task scripted framework, interventions can be designed to address one or more of the processes identified that are at the core of peer competence. By embedding scripts and other techniques within the social task framework, children's emotion regulation issues, encoding concerns, or even limitations with respect to retaining a focus on

the goal of the social task (higher-order processes) can be directly addressed. Approaches such as incorporating fictional characters with characteristics easily identifiable to the child into scripts that can highlight and be used to mitigate processes of concern (eg, play spy scripts for encoding difficulties) or the application of video technologies and class play activities are examples of the types of approaches that could be considered. Creative translational efforts are now emerging that can transform complex constructs or processes into feasible interventions as suggested by successful approaches to improve the executive functioning of young children (Diamond, Barnett, Thomas, & Munro, 2007).

For these translational efforts to be effective, assessment tools that are consistent with contemporary models are essential. These tools need to be structured within the social task framework, recognize the dynamic features of corresponding structural as well as behavioral patterns within these tasks, and create a profile of strengths and vulnerabilities with respect to specific processes governing peer competence. Two such tools are currently available, one focusing on toddlers (Bruder & Chen, 2007) and the other focusing on preschool age children (Guralnick, 1992). These are clearly only initial efforts, requiring considerable refinement, but do suggest that contemporary models can be translated into useful assessments.

Finally, contemporary models suggest that best results will be obtained by utilizing a comprehensive approach. Relationships with peers develop in numerous settings, including schools, homes (eg, play dates), and communities (eg, playgroups, child care). Each provides a unique opportunity for intervention. Moreover, peers, parents, teachers, and others can have important, sometimes independent, influences on a child's competence with other children. Yet each influences similar developmental processes. Accordingly, at minimum, assessment and intervention efforts must involve children's teachers as well as parents. To be sure, modifications of assessment tools will be needed for these different contexts, and interventions will take correspondingly different forms. Taking this one step further, if parents are involved directly, a comprehensive approach requires consideration of broader ecological factors, such as levels of parent stress and social support. These factors are clearly associated with children's peer competence, including children with developmental delays, and operate through complex developmental pathways (Guralnick et al., 2003).

FUTURE DIRECTIONS

We have now reached an important stage in the history of our efforts to improve the peer competence of young children with developmental delays and related disabilities. Exciting possibilities present themselves, yet it must be acknowledged that the task of translational research in this area, as in other domains of development, is likely to be a difficult and complex one. We do not know yet how well we can practically measure these complex constructs (processes) that are central to contemporary models of peer competence and be able to develop compatible interventions that can be feasibly carried out. A major challenge is to identify intervention strategies that are able to incorporate the coordination and integrative features central to all contemporary models of peer competence. Certainly it will take highly creative efforts to develop approaches that capture the dynamic flow and social problem-solving nature of social tasks. Moreover, little guidance is available with respect to selecting the best models for delivering such an intervention. Can parents really do this? Can teachers find the time to include peer competence as an important area of concern? Is a consultant model best or will more direct intervention by specialists be required? Similarly, will it be possible to establish the level of intensity of intervention necessary to have an impact given constraints on time and resources? Findings based on a recent translational effort utilizing a contemporary model to promote the peer competence of children with delays are encouraging (Guralnick, Connor, Neville, & Hammond, 2006). However, this is only a beginning as an extraordinary amount of work lies ahead. Well-designed randomized clinical trials will require extensive resources

involving research teams that are willing to incorporate information from many different but relevant fields of knowledge.

Despite the complexities and the demanding nature of this program of intervention research, there is every reason to expect that contemporary approaches to peer competence will attract a large cadre of investigators from diverse disciplines to address these issues. Reasons why this may occur include the now firm recognition by the field of early intervention of the reality of the magnitude and scope of the problem and also that competence with peers is clearly associated with core values in the disability field. That is, interpersonal competencies with peers emerging during the early childhood period are directly associated with later quality-of-life issues involving independence, self-determination, and inclusion. Another reason is simply the intellectual attraction of research carried out within these types of contemporary frameworks. Involvement in this area provides unique opportunities to address and integrate many aspects of the developmental science of normative development, the developmental science of risk and disability, and intervention science (see Guralnick, 2006). Indeed, contemporary models are based primarily on findings from longitudinal studies and associations among variables from these and related developmental investigations. As such, these models are based on theories that can be informed by intervention science. Extremely valuable insights can be obtained from intervention studies relevant to both evaluating the validity of the processes involved and how they interact to yield varying degrees of peer competence. Moreover, knowledge of risk and protective factors associated with peer competence processes is now emerging from studies of etiology-specific subgroups of children, such as those with Down syndrome or Fragile X syndrome (eg, Wishart, 2007). This type of information can provide a unique perspective to help us understand the peer competence of children with delays and related disabilities within contemporary frameworks (Guralnick, Connor, & Johnson, 2009; in press). Hopefully, when the history of early intervention to promote children's peer-related social competence is revisited a decade from now, future work will have generated new levels of theory, knowledge, and practice.

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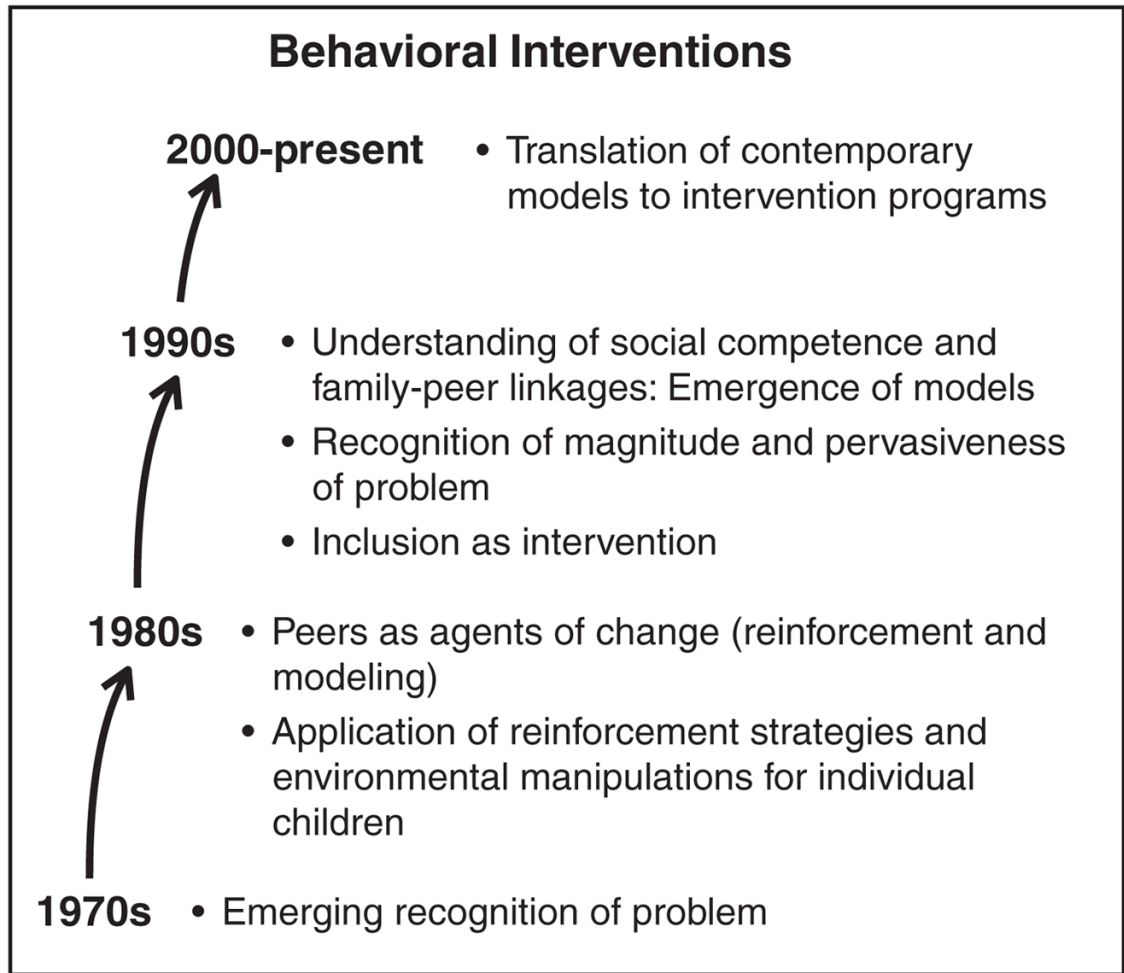


Figure 1.

Major milestones in the history of behavioral interventions to enhance children's peer-related social competence.

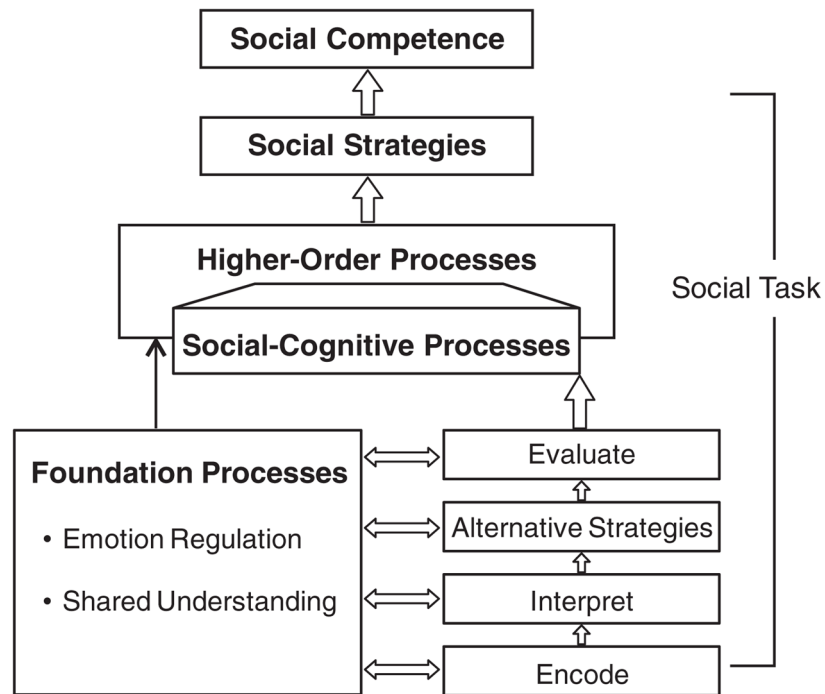


Figure 2. One contemporary model of peer competence identifying processes and their interrelationships within a social task framework. (Adapted and reprinted with permission from Guralnick, 1999a.)

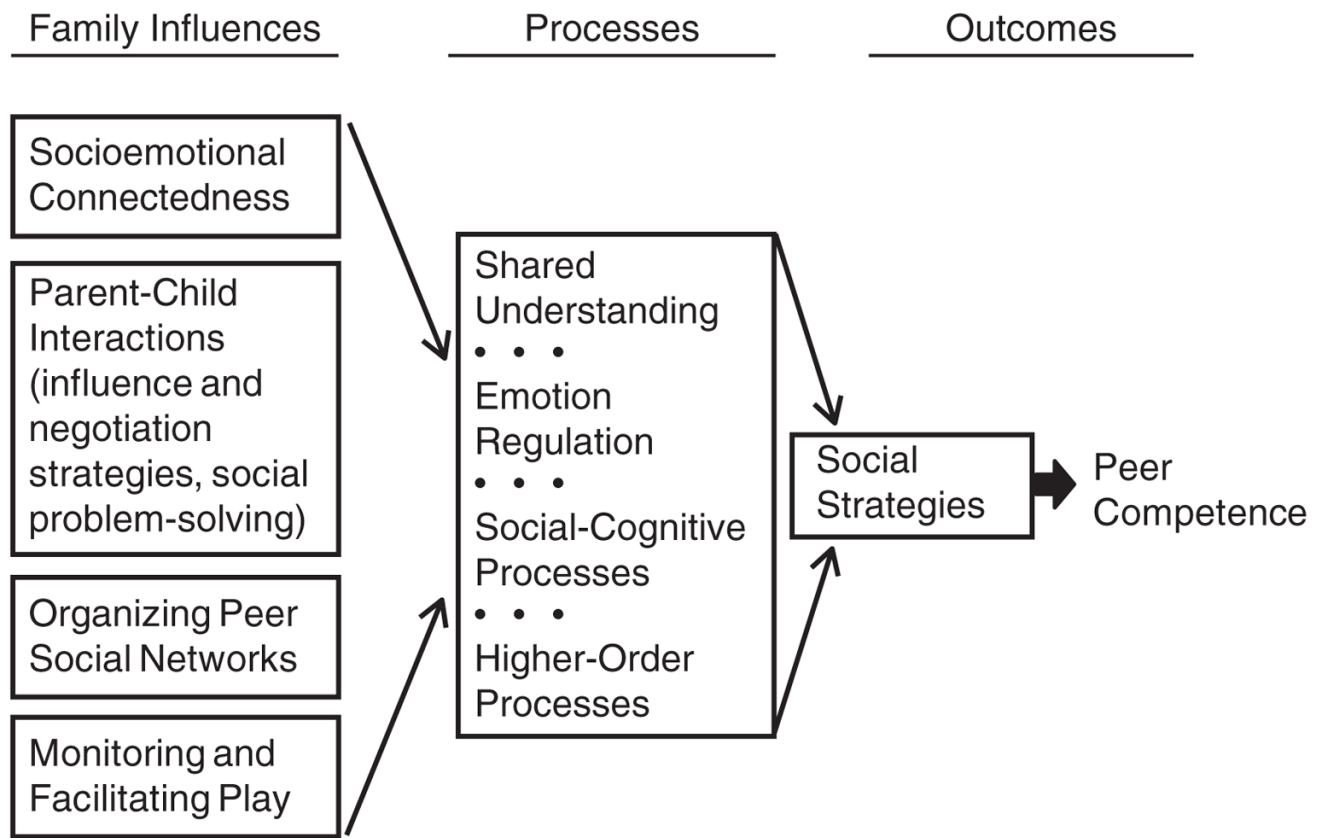


Figure 3. Model of family influence–peer competence linkages illustrating processes mediating that relationship.