Transforming Temperament Profile Statistics Into Puppets and Other Visual Media

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This article describes the evolution of visual media that was developed to enhance a clinical intervention called INSIGHTS into Children's Temperament. First, the theoretical and research studies that supported the intervention are presented. Then the iterative steps used to transform the statistical data that identified common school-age children's temperament profiles into puppets and other visual media are enumerated. Finally, the implications of conducting a theory-based intervention within a school environment are discussed.
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I T'S SATURDAY MORNING, but not just any ordinary Saturday, it's Amanda's birthday. She's 6 years old today and she is very excited because she's going to have a birthday party. Amanda has invited four of her classmates from Ms. Davis' first grade class to her birthday party. Amanda and her mother are busy this Saturday morning baking her birthday cake. But what's going on in the homes of Amanda's four friends?

Across the street, Fredico has been awake since early morning. Fredrico is not the only one awake. Because he was excited, he woke up his mother and his little brother. Fredrico is eager to go to Amanda's party. After all, this is the first time that he gets to go to a friend's birthday party without his mother and baby brother. Fredrico likes the idea of having a party with his friends that won't include grown-ups or little children.

In another apartment across the hall from Fredrico, Gregory is watching cartoons, but he's not happy, he's grumpy. "Why do I have to go over to a girl's house for a party?" he grumbles. "I'd rather watch TV."

Hilary, Gregory's sister, is hard at work wrapping the present that she carefully selected for Amanda. Hilary knows that Amanda likes dogs so she picked out a book that has pictures of all kinds of dogs.

A couple of blocks away, Coretta is feeling cautious. She's not sure that she wants to go to the party. She's never met Amanda's mother and she's worried that there might be other kids at the party that she doesn't know. Coretta's mom told her that Hilary would be at the party. Coretta likes Hilary

and hopes that she'll come to the party. But, Coretta is worried because if Hilary gets sick, Coretta won't know any one at the party. She's afraid that she won't have anyone to talk to unless Hilary comes.

Meet the INSIGHTS kids: Fredrico the Friendly, Gregory the Grumpy, Hilary the Hard Worker, and Coretta the Cautious. They are a loveable bunch of characters with distinctive temperaments that, along with Amanda and their other classmates, get into all kinds of interesting situations. The four characters are featured in INSIGHTS into Children's Temperament, a temperament-based intervention program for first and second grade children, their parents, and their teachers.

INSIGHTS is a 5-year clinical trial funded by the National Institute of Nursing Research. It consists of three integrated programs: a parenting program, a parallel one for teachers, and a universal

classroom program for the children. The parents and teachers of the children receive intervention in 10 separate 2-hour weekly sessions that include didactic content, discussion, videotaped vignettes, role-playing, and homework assignments. Actors portray the INSIGHTS kids in scripted vignettes that show how children with different temperaments react to daily life experiences. The videotapes also exhibit strategies that parents and teachers can use to be more effective in their caregiving role.

A different media is used to depict the characters in the children's program. Puppets representing each of the four temperament profiles are introduced to the targeted children and their classmates. Then the puppets and the children work together to solve daily dilemmas.

The creation of the INSIGHTS characters and the visual media that represent them evolved from a study of 883 school-age children (McClowry, 2002, this issue). The purpose of that study was to identify common temperament profiles of school-age children. Such typologies are used to classify individuals into qualitatively different categories in which groups of people share a pattern of being high or low on a combination of characteristics (Robins, John, & Caspi, 1998). This article describes how the statistical data that identified common school-age children's temperament profiles were transposed into visual media that included puppets and characters in the videotaped vignettes. The implications of conducting INSIGHTS within a school environment are also discussed. First, the theoretical and research studies that supported the INSIGHTS intervention are presented.

THEORETICAL FRAMEWORK

The interpersonal relationships that occur between children and their caregivers are pivotal to a child's emotional and social development. Parents, teachers, and significant adults have multiple opportunities during daily encounters to convey to the child warmth and acceptance (Macoby & Martin, 1983; Pianta, 1999). Caregivers also use these interactions to socialize children by relaying their expectations for behavior. But, if the child is noncompliant or does not in some way satisfy the adult, conflict between the dyad can result (Patterson, 1982). If repetitive, such negative transactions between the child and caregiver often escalate to higher levels of conflict and misunderstanding.

Changing ineffective or dysfunctional dyadic patterns is difficult because they transpire within an emotionally charged relationship that has become embedded with negative expectations for future interactions. One strategy to alter such transactions is to change the perceptions underlying the behavioral responses. Transformative learning occurs when a new or revised interpretation assists an individual to adapt a different understanding or action within a dyadic relationship (Mezirow, 1990). If this occurs, habitual nonreflective action is replaced by a new perspective that can lead to improved interactions. Such powerful changes can be prompted by a psychoeducational intervention in which an individual or dyad are assisted in reexamining not only the emotions affecting the relationship but also one's behavioral responses to it.

INSIGHTS is a preventive intervention aimed at changing the interpersonal dynamics between children and their caregivers through transformative learning based on child temperament theory. Temperament is the stylistic reactions that children exhibit in new or stressful situations (McClowry, 2002, this issue). It is also a social information processing system through which children view and interact with the world, both altering the responses of others and contributing toward their own development (Derryberry & Reed, 1994; Rothbart & Bates, 1998).

A central tenet of temperament theory, according to Chess and Thomas (1999), is goodness of fit, which is the consonance of the child's temperament to the demands, expectations, and opportunities of the environment. When goodness of fit is achieved, positive child development is anticipated. Conversely, when there is poorness of fit because the environment is in dissonance with the child's temperament, maladaption is likely to occur. A temperament-based intervention, like INSIGHTS, focuses on enhancing the fit between children and their caregivers.

An important precursor to improving goodness of fit is to assist the parent or teacher in recognizing the child's temperament. One method to facilitate this process is to classify individuals into qualitatively different typologies (Robins, John, & Caspi, 1998). Caregivers can use such categorizations as exemplars to which they can compare their child. Two research reports provide descriptions of temperament typologies of children.

EMPIRICAL INVESTIGATIONS OF TEMPERAMENT PROFILES

In their classic New York Longitudinal Study that began in 1956, Thomas and Chess (1977)

studied 136 mostly Caucasian children from middle to upper-middle class families. They described how the majority of children could be categorized within three temperament profiles. The difficult child was biologically irregular, withdrew from new stimuli, adapted slowly, and had a highly intense and negative mood. Easy children were depicted as biologically regular, approached new situations with moderate ease, adapted easily, and had a mild and generally positive mood. Those who were slow to warm up were high in negative mood, but showed it with less intensity than did difficult children. Given enough time, the children who were slow to warm up typically became comfortable and showed positive interest.

Thomas and Chess (1977) intentionally selected a homogenous sample of children to examine in their landmark study. Replication with a more heterogeneous sample was conducted to provide validation or clarification of the profiles. McClowry (2002, this issue) used 883 maternal reports on the School-Age Temperament Inventory (SATI) (McClowry, 1995) to identify the temperament profiles of school-age children. The SATI has 38 Likert-type items representing four dimensions of temperament: negative reactivity (intensity and frequency with which the child expresses negative affect), task persistence (the degree of self-direction that a child exhibits in fulfilling tasks and attending to other responsibilities), approach/withdrawal (the child's initial response to new people and situations), and activity (large motor activity).

The subjects of McClowry (2002, this issue) were between 4 and 12 years of age (M=9.31, SD=1.58). Almost equal numbers of boys and girls were included. But the children varied substantially in the socioeconomic status of their families and in their race/ethnicity. Using the criteria established by Hollingshead (1975), 23% of the children were from families that were unskilled, 14% semiskilled, 21% clerical, 30% technical, and 14% professional. The mothers described the race/ethnicity of the children as 57% White, non-Hispanic, 28% Black, non-Hispanic, 12% Hispanic, non-Black, 1% Asian, 1% Native American and 3% were described as other.

To develop the profiles, the dimensions derived from the SATI were subjected to a second order principal factor analysis with varimax rotation. Only loadings greater than .40 were considered. The results supported two secondary order factors. The loadings for factor 1 included high activity (.72), high negative reactivity (.67), and low task persistence (−.65). The factor was named high maintenance. The second factor included high withdrawal (.51) and high negative reactivity (.43). It was named cautious/slow to warm up.

The results of McClowry (2002, this issue) have theoretical and clinical applicability. They contribute to the theory of child temperament by extending and revising the results of Thomas and Chess (1977). Applying the results clinically is more complicated, however, because it requires making the empirical findings understandable and pertinent to the intended clients. Several approaches are used in the INSIGHTS program to achieve this goal.

TRANSFORMATION OF THE DATA INTO VISUAL MEDIA

To make child temperament more recognizable for participants in INSIGHTS, the data have been transformed into visual media. A number of iterative steps were taken in the process. The temperament profile statistics were first transposed into verbal descriptions of typologies of children. The identified two temperament profiles described challenging children who were high in negative reactivity. But by reversing the signs of the factor loadings, mirror images were created that described profiles of easy children. Children whose temperaments were low in activity, low in negative reactivity, and high in task persistence were named industrious. The temperament profile for children who were high in approach and low in negative reactivity was called social/eager to try. The expanded verbal descriptions of these four temperament profiles are shown.

1. Industrious. The child whose temperament profile is industrious is a hard worker whose mood is usually pleasant. The industrious child can sit for long periods of time while working on school assignments, a puzzle, or when playing with his or her toys. When there is a change in plans, the industrious child usually handles the disappointment well. However, the industrious child might object if interrupted while engaged in an activity he or she has started. Industrious children are usually good students who try to please their teachers and their parents. Sometimes they need help learning to be assertive.

2. Social/eager to try. The child whose temperament is social/eager to try is driven by a need to be with people and to try new experiences. The child is usually pleasant and has a zest for life that often draws others to him or her.

Friends and family are important to the social/eager to try child. New experiences are greeted with enthusiasm because they provide the child with additional opportunities to meet and be with people.

Many social/eager to try children are excited about going to school because it provides them with an opportunity to be with their friends. Safety is a concern with social/eager to try children. They may be at risk because they are so eager to try new experiences and make new friends. Their eagerness to please may mean that they are not always as assertive as they should be.

3. High maintenance. Children whose temperament profile is high maintenance react strongly and negatively to change. They get upset easily and can be very moody. High maintenance children often have problems completing tasks such as when they are asked to put away their toys or to finish their homework assignment. They are also high in activity so that they find it difficult to sit still. However, the high activity level of the high maintenance child can be positive because it can energize other children. High maintenance children can also become effective leaders because they are comfortable making decisions and expressing their opinions even when others disagree.

4. Cautious/slow to warm up. The tendency of a child with a temperament profile that is cautious/slow to warm up is to withdraw from new situations and new people. The child's mood is at first mildly negative in these situations and consequently the cautious/slow to warm up child often seems shy and hesitant to try new experiences. However, with time and with the right amount of support, the cautious/slow to warm up child will feel comfortable and will be pleasant.

The next step was to convert the profiles from verbal descriptions into actual characters so that adults and children could relate to them. The titles of the profiles seemed appropriate for adults, but more developmentally appropriate synonyms were needed for children. The high maintenance profile was deemed grumpy. The industrious child was called a hard worker. The cautious/slow to warm up profile was cautious. And the social/eager to try profile was described as friendly.

Assigning a gender was necessary to create actual characters. Since McClowy (2002, this issue) showed that boys and girls were represented in

each of the profiles, a decision was made to make two characters male and two female with the stipulation that each gender was represented by one of the more challenging temperaments. Then teachers selected names of children from their classrooms that would provide alliteration with the descriptive adjectives. The characters for the children's program became Gregory the Grumpy, Hilary the Hard Worker, Coretta the Cautious, and Fredrico the Friendly.

To relay the content to the adult participants, scripts were written that showed how the characters with their distinctive temperaments would react in various situations with their friends, family members, and teachers. Topics for the vignettes came from a variety of sources. Many resulted from a content analysis of two open-ended questions, "What concerns you most about your child?" and "Please describe the best things about your child." These questions were asked of the 635 mothers who participated in the initial development of the SATI (McClowry, 1995). Others were derived from situations that parents and teachers described during pilot studies. Items on instruments, examples described in the literature, and clinical experiences were also used.

Because 42% of the children in McClowry (2002, this issue) had temperaments that matched one of the four profiles, it was important to write the vignettes so that parents and teachers whose children/pupils did not fit one of the profiles could still benefit from the content. This was easy to do because all but 1.5% of the children in McClowry (2002, this issue) had at least one salient temperament dimension on which they were high or low. Consequently, although the depicted characters were consistent with the profiles, a narrator reminded viewers on which temperament dimensions the characters were high or low. The narrator also encouraged the parents and teachers to relate to the characters by dimensions if the overall profile did not fit their particular child. The vignettes included at least one example of how a child who was high or low on each of the temperament dimensions might react to a specific situation.

In total, 50 vignettes were written. Half of the vignettes were directed at parents with the remainder written for teachers. Most of the parent and teacher vignettes contained parallel content. Each was set in an appropriate location for interactions with families, teachers, and friends to take place. The settings included the children's homes, classroom, school playground, and a fast food restau-

rant. For example, a parent vignette focused on what happened when Coretta lost her barrettes. In the teacher version, Coretta's math book was missing.

After the vignettes were written, five experts in temperament theory were asked to assess them for content validity. They scored each vignette on a 1 to 4 rating scale for content relevancy and developmental appropriateness. The experts strongly endorsed the program materials. The average for the relevancy index was 3.72 and the developmental appropriateness was 3.86. After revisions suggested by the experts were incorporated, two cultural experts reviewed the materials and assessed them as culturally appropropriate. Finally, professional actors were hired and the scripts were produced into videotapes by Euro-Pacific (McClowry & Moss, 1999). A story line from one of the parent and one of the teacher vignettes is shown.

Parent Vignette: Being Easy Isn't Always Easy

In this vignette, Hilary is having trouble participating in a community center art project. She spends all of her time giving the other children markers so that they can draw. Hilary is low in negative reactivity and has trouble getting her own needs met because she's more concerned about pleasing other people. Hilary's mother gives her suggestions on how she might be more assertive in such situations.

Teacher Vignette: Ms. Davis is Absent

This vignette illustrates how the each of the four characters react when they have a substitute teacher, Ms. Moore. Fredrico is pleased that Ms. Moore is pretty. Coretta is upset because she thinks Ms. Moore looks stern compared with Ms. Davis, their usual teacher. Hilary wonders what kind of work Ms. Moore will ask her to do. Gregory complains that they had another substitute last month and that this one might even be worse.

To present the temperament-based content to young children in developmentally appropriate ways, other types of visual media were developed. In collaboration with the principal investigator, puppets were designed by a puppet maker to match each of the four profiles. The puppets were sketched and then resketched until consensus was reached that they were adequate representations of the profiles. The puppets were made using bright primary color materials and textures that were suitable for young children. Fredrico the Friendly is

green. Like the green color on a stoplight, he sends a signal welcoming others to approach him. Coretta the Cautious is yellow also like a stoplight, but one that suggest the need to approach her cautiously. Hilary the Hard Worker is orange like the safety cones that are placed on streets while workers make repairs. Gregory the Grumpy is bright purple, a color associated with intense negative feelings, such as anger. Clothes and accessories that matched their respective temperament were added.

Although the characters bring the content to life in the parent and teacher versions of INSIGHTS, it is the puppets engaged in drama therapy activities that are the focal visual media in the children's version. To show how children with various temperaments react differently, a story line is enacted about a representative day in the life of each of the puppets. After the children get to know the puppets, they are presented with dilemmas that require them to use a problem-solving approach. The dilemmas are intended to equip the children with enhanced skills in handling daily stressors and in interpersonal relationships. Examples of the dilemmas encountered by the puppets are listed below.

1. Hilary Gets Her Feelings Hurt: Hilary wants to play with Imani, but Imani says no. Imani tells Hilary nobody likes her because she's the teacher's favorite student.
2. Gregory Has a Bad Day: Gregory wants to listen to the mammals tape during science class, but Fredico already has the tape and he doesn't want to give it to Gregory.
3. Coretta Needs Her Teacher's Help: Coretta's teacher tells her to do a math worksheet. But Coretta was home with the chicken pox when the teacher explained how the children should do the problems.
4. Fredrico Wants to Go to Gregory's Home: Gregory invites Fredico to come and play at his house. Fredrico wants to go, but his mother says no because she doesn't know Gregory's mom.

The puppets were further transposed into another visual medium. A graphic artist drew them in both colored and black and white versions. A children's coloring book was created with the black and white graphics. The pages of the book are given to the children to provide a developmentally appropriate and enjoyable reinforcement activity. One of the pages of the coloring book that shows all four of the characters is shown in Figure 1.

Figure 1. Coretta the Cautious, Gregory the Grumpy, Fredrico the Friendly, and Hilary the Hard Worker.

DISCUSSION

The visual media created for the INSIGHTS into Children's Temperament program shows how statistical data and a midrange theory can be creatively used to enhance a clinical intervention. Nurses, as well as other clinicians, are advised to base their interventions on a theoretical framework and to incorporate evidence-based findings into their practice. Midrange theories, such as temperament, lend themselves toward prescriptive theories aimed at achieving concrete clinical goals with patients/subjects (Walker & Avant, 1995). In turn, practice theories test the validity of midrange theories. Such an iterative process strengthens research, clinical intervention, and theory development.

The early school years can have a profound impact on children's later development. By the end of third grade, the aggressiveness of children crystallizes (Huesmann, Eron, Lefkowitz, & Walder, 1984) and academic performance becomes predictive of future achievement levels (Pianta, 1999). Likewise, behavioral repertoires established during this time are difficult to alter in subsequent years. Unfortunately, many schools do not intervene with children until they exhibit serious disturbances so that their behavioral or academic problems have reached a diagnosable range. INSIGHTS as a preventive intervention targets first and second grade children and their caregivers who are not experiencing difficulties that are at a diagnosable level.

Nurses and other clinicians that work in schools, clinics, and hospital settings can apply the principles of INSIGHTS in their practice. Temperament-based anticipatory guidance and intervention can be offered to parents who are concerned that their children are exhibiting minor behavioral problems. By explaining the tenets of temperament theory, parents can be assisted in recognizing their child's temperament and understanding its impact on behavior and other developmental outcomes. Rather than attempting to change a child's temperament, which cannot be done, intervention can then focus on strategies that might enhance goodness of fit (McClowry, 1998).

The principles of INSIGHTS can also be applied for child advocacy and caregiver communication. One of the current trends in the education field is to foster parent-teacher collaboration (Godber & Esler, 1999). INSIGHTS provides parents and teachers with a common language and shared strategies for enhancing child development and for fostering communication between children and their caregivers and among the caregivers themselves.

Empirically testing the effectiveness of the INSIGHTS program is currently underway. Once completed, it is anticipated that the findings will influence

further development of the visual media, but also the underlying theory of the program, and its clinical applications. The program is also expected to expand its collaborative approach in the future by engaging other members of the multidisciplinary school team such as school nurses, psychologists, social workers, and administrators in its application.

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