

SPECIAL ISSUE

Who Are We and What Are We Doing? A Survey of Biofeedback Professionals Working with Children

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This article sought to understand the current training and activities of professionals providing biofeedback to children, via an anonymous survey administered through professional organization listservs. Based on 57 responders, we identified gaps in training and in the use of evidence-based interventions. However, these responders are communicating primarily with other biofeedback practitioners. The vast majority are not active in biofeedback research on children. We conclude by raising several questions for professionals and professional organizations to consider regarding the specialized training and evidence-based practice of biofeedback.

Throughout children's hospitals and mental health organizations, biofeedback is often requested and/or advertised as a service modality. However, as members of several related professional organizations, we have observed disparate trends in biofeedback practice. Based on these anecdotal data, we sought to quantify the clinical activity, specialized training, and technical or research pursuits of professionals involved in biofeedback with children. The primary purpose of this search was to start a serious conversation among professionals about the current state and direction of biofeedback with children.

As many readers know, biofeedback, in its current form, has been practiced in the United States since the late 1950s (Schwartz & Olson, 2003). Since then, we have seen developments in the field from a variety of perspectives. From an organizational perspective, the Biofeedback Research Society formed in 1969 and developed gradually into today's Association for Applied Psychophysiology and Biofeedback (AAPB). In similar vein, there has also been the development of several international and at least eight state and regional associations in recent years. From the perspective of a specialty field, biofeedback has witnessed some spurts and stops in its growth. The Biofeedback Certification International Alliance (BCIA) is the most recognized form of certification, with a mission "to certify

individuals who meet education and training standards in biofeedback and progressively recertify those who advance their knowledge through continuing education" (www.bcia.org). BCIA (2012) provides three areas of specialty certification in biofeedback (biofeedback, neurofeedback, or pelvic muscle dysfunction biofeedback), each with three levels of certification (clinical, academic, or technician). As of 1998, there were 1,961 professionals certified in biofeedback (biofeedback and neurofeedback combined). Today, there are a total of 1,693, this is despite the fact that there have been more than 500 new certifications in the past 5 years (data acquired from J. Crawford, personal communication, October 3, 2012, interpretation and emphasis belongs to the authors).

As a technical industry, however, there have been tremendous developments in biofeedback technology (both hardware and software), including sensor sensitivity, sampling rates, and enhanced audio-visual feedback options. Industry has also made significant advancements with handheld biofeedback devices/units and user-friendly training software. The recent rise in handheld and personal desktop programs with blood volume pulse (heart rate variability) biofeedback provides an excellent example. In some cases, these biofeedback units could arguably replace a biofeedback practitioner. Industry is aware of this, marketing to a much larger audience than biofeedback professionals. From a recent search, 286 devices were being sold on Google shopping and 189 devices were being sold on eBay.

As a field for research, biofeedback for children has not seen the same rate of growth. A recent PubMed search (October 31, 2012) identified only 222 articles published from 2008 to 2012 with the keywords "child AND biofeedback" (only 31 in the past year). Only 36 were identified as clinical trials, targeting cerebral palsy, attention-deficit hyperactivity disorder (ADHD), and elimination disorders predominantly as conditions of treatment. Unfortunately, most recent writings on this topic have involved secondary analysis, such that "there are about as

many reviews and overviews as there are empirical studies that provide actual treatment data on controlled single-case or group studies” (Hermann & Blanchard, 2002). As an example, 66 (30%) of the above 222 articles were identified as reviews of meta-analyses. There are still many conditions for which the efficacy of biofeedback has not yet been fully evaluated. In other words, the efficacy ratings of biofeedback for these conditions are low because no one has conducted well-constructed research trials. According to Yucha and Montgomery (2008), only the following are conditions in children with “probably efficacious” or “efficacious” biofeedback interventions: anxiety, ADHD, chronic pain, diabetes, epilepsy, fecal disorders, headache, insomnia, and traumatic brain injury. No interventions for a childhood condition met the highest rating of “efficacious and specific.”

Given the relative decline in professional biofeedback certification, the boom in cheaper and more user-friendly biofeedback devices, and the limited number of new articles being published on biofeedback treatment interventions for children, it is not clear the extent to which practitioners are trained to use the equipment or what efforts are being made in clinical research to advance the knowledge of the proper use of biofeedback. What seems most appropriate at this time is to pause and reflect on the current state of biofeedback for children, to better inform the direction of this field’s future.

For this reason, we sought to assess the current activity and skill set of professionals using biofeedback to treat children. Our goal was to provide descriptive (frequency) data regarding training and activities of professionals using biofeedback in children. Primary questions asked were:

1. What percentage of professionals uses biofeedback to treat children?
2. What methods of biofeedback are being used with children?
3. What amount of training do these biofeedback practitioners have?
4. What interactions do biofeedback practitioners have with others in the field?
5. What research activities are these professionals engaged in related to biofeedback?

Method

A 33-item survey was sent out to two listservs addressing biofeedback and psychology’s role in children’s health care (the Society of Pediatric Psychology and the AAPB). Because of restrictions in listserv posting, it was understood that this survey would not reach all biofeedback providers.

All survey items were evaluated by peers in research for face validity. No further validity or reliability has been established with these items. Items were analyzed individually. This survey was approved by an institutional review board as exempt research.

Results

Unfortunately, only 57 professionals responded to the survey, which may call into question selection bias or the generalizability of findings. Still, this is a starting point to document the training and practice of biofeedback professionals. We will report findings in terms of relative percentages.

The vast majority of responders (87%) reported “psychologist” as their profession. There was a wide range of years in professional practice (Figure 1). Of responders, 74% reported membership in the Society of Pediatric Psychology, and 23% reported membership in the AAPB.

Use of Biofeedback

Data suggest that biofeedback is frequently used, although not always employing evidence-based protocols. Three quarters of responders reported using biofeedback clinically with children. Years of experience using biofeedback is reported in Figure 2, and the vast majority (79%) has been in practice 0 to 10 years. Practitioners reported using biofeedback with 38% of their patients, on average. The biofeedback modality used most often by practitioners was heart rate variability, by a large margin (51%; Figure 3). However, when the question was asked differently (Figure 4), a number of modalities were reportedly used. Interestingly, 33% reported “rarely or never” following a specific treatment protocol for biofeedback, and 26% reported “sometimes” using a protocol. In addition, 16% reported “never” following evidence-based practice in biofeedback, while an additional 23% reported they were “unsure” if they were following evidence-based practice. Overall, a majority of practitioners presented themselves as early-career psychologists, actively using biofeedback, but less sure of the evidence-based practice of biofeedback.

Specialized Training

The absence of specialized training in biofeedback was an interesting, but not unexpected, finding. The vast majority of responders (70%) reported no formal training in biofeedback. Out of those who have completed training, 35% did not work with a mentor (this may be related to when they received certification). Of those who completed

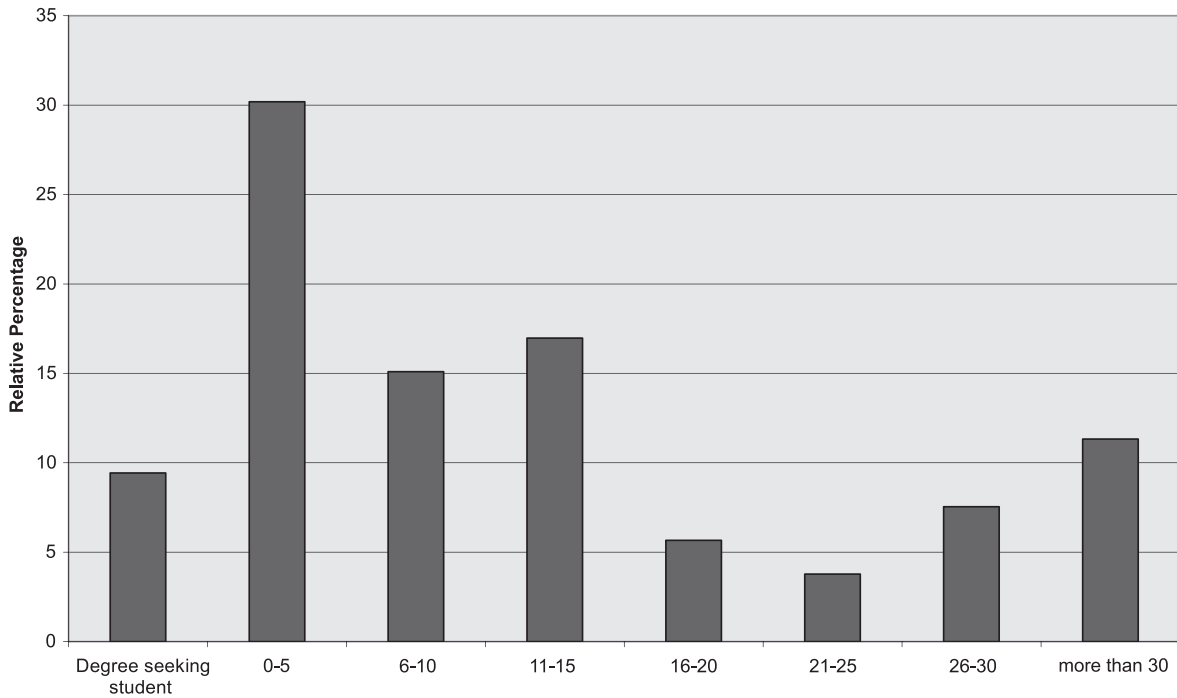


Figure 1. Number of years in professional practice.

mentoring, the majority received mentoring for 9 to 12 months. Beyond absence of formal training, 81% do not hold any form of publicly recognized certification in biofeedback.

A Biofeedback Community

Despite the lack of formal training or certification, practitioners are engaging with others regarding biofeedback. More than 80% reported active relationships with

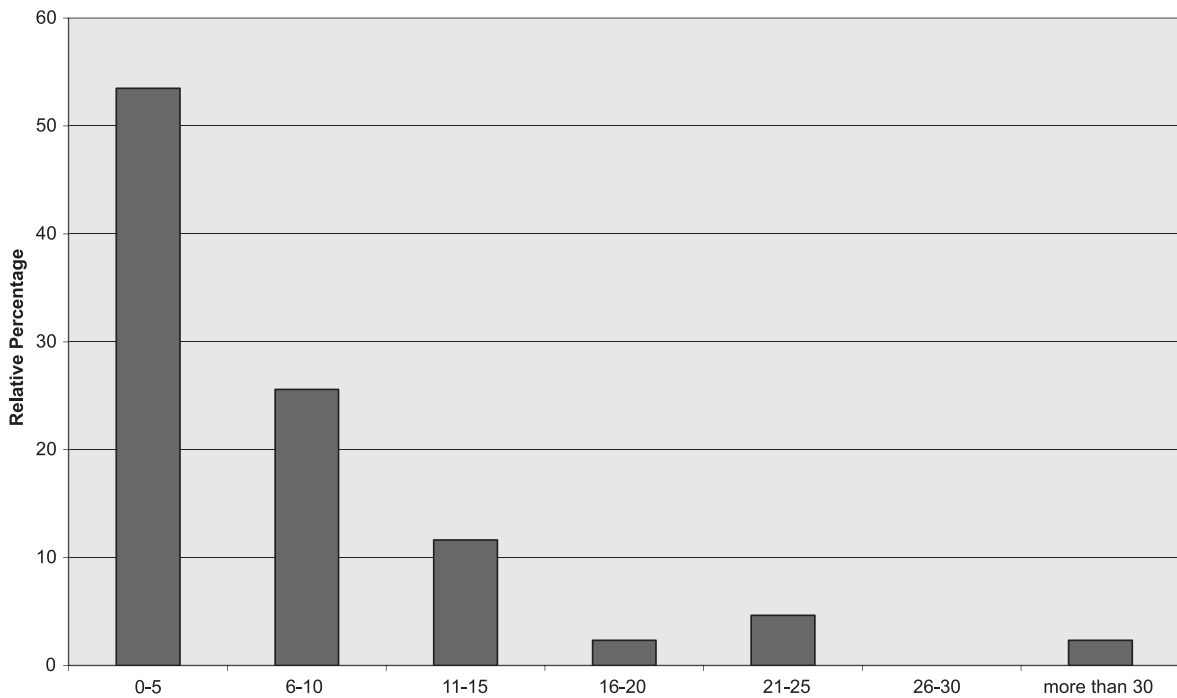


Figure 2. Number of years practicing biofeedback.

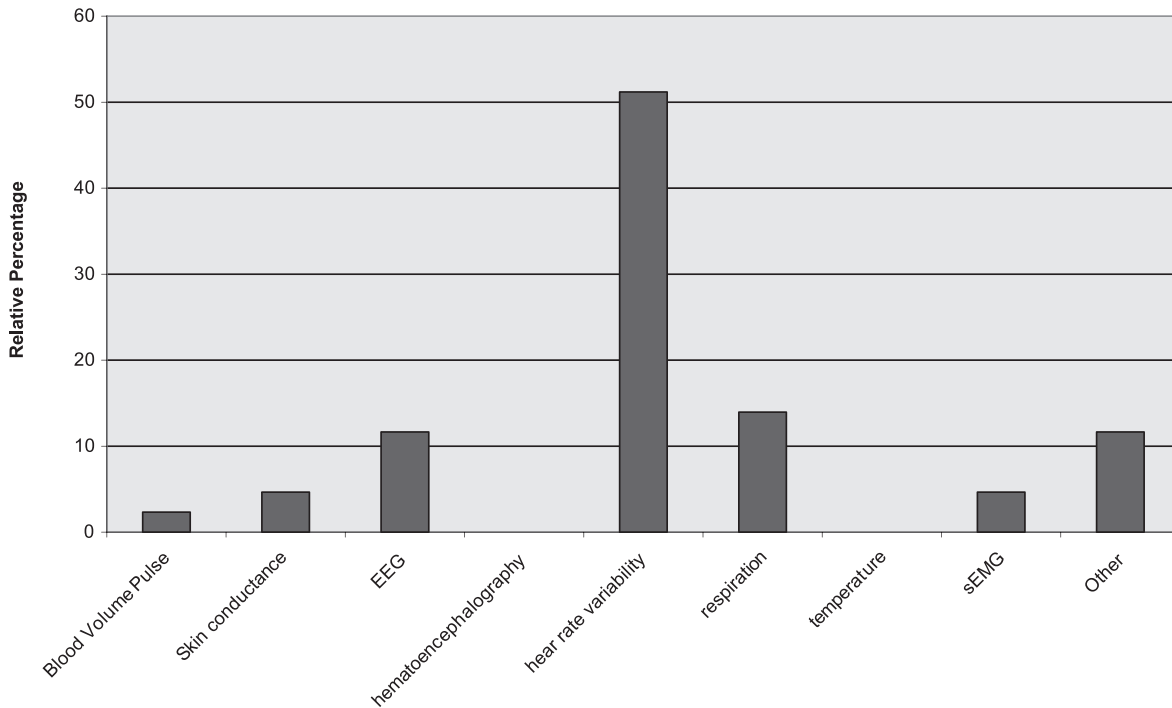


Figure 3. Single biofeedback modality used most often during treatment of children.

other biofeedback practitioners, for varying purposes (Figure 5). Almost one half (48%) reported a relationship with at least one manufacturer of biofeedback; those who do are mainly in contact to purchase equipment (47%) or

to receive training on equipment use (28%). With regard to research involving biofeedback, 71% reported that they do not interact with anyone actively involved in research on biofeedback. Almost the entire sample (95%) has not

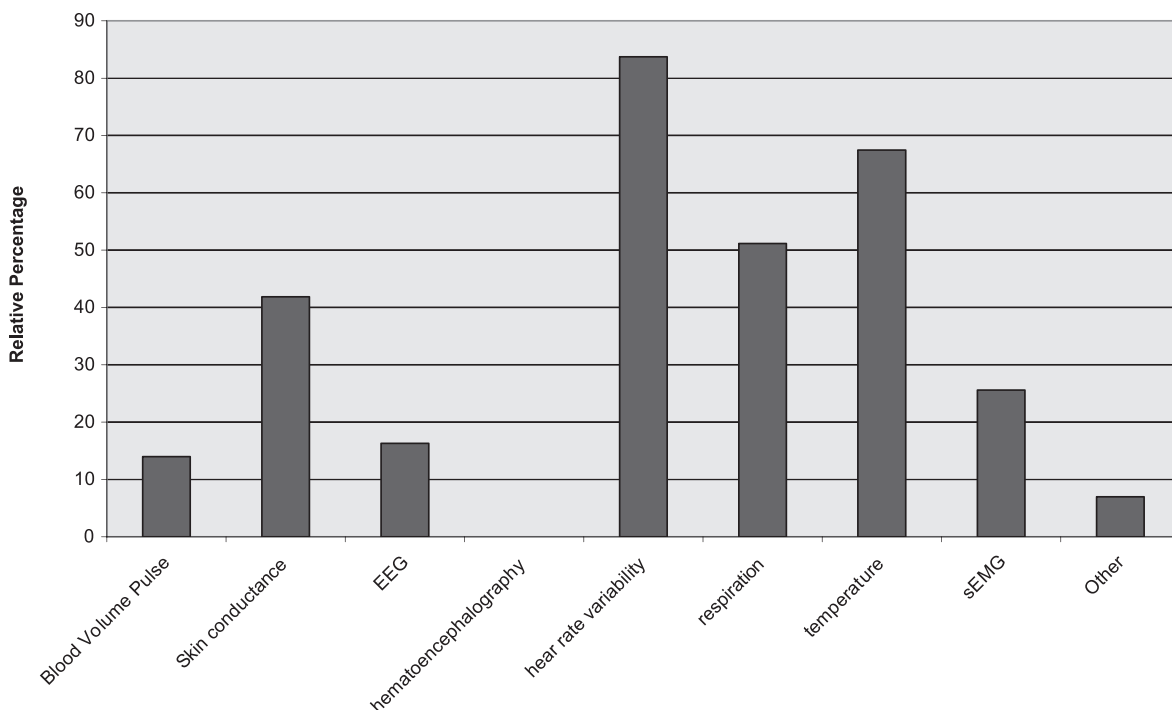


Figure 4. Biofeedback modalities used in treatment or research in the past year.

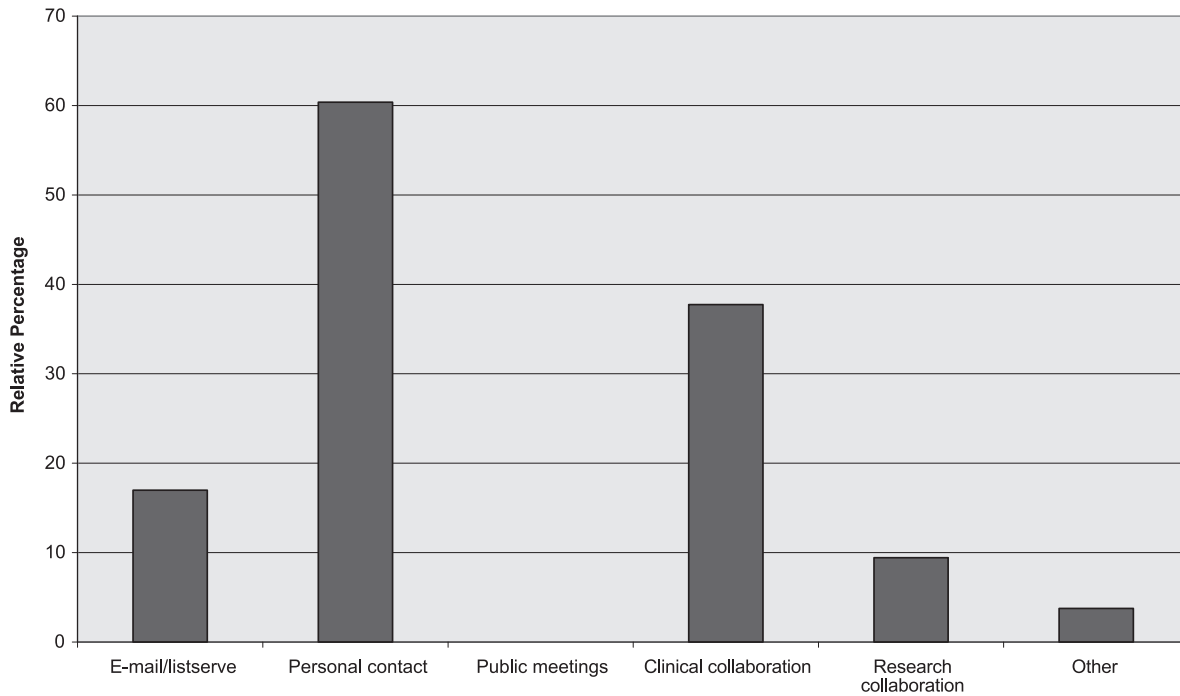


Figure 5. Quality of relationships with other biofeedback practitioners.

published an article on biofeedback in the past 5 years. Only 7% reported currently conducting research using biofeedback, and only 11% are involved in reviewing articles for peer-reviewed journals that involve biofeedback.

Discussion

Biofeedback has been a therapeutic benefit to children for decades. Recently, we have seen developments in biofeedback technology, improving the quality of physiological data and the innovation and user-friendliness of how these data are presented and used by the patient. Unfortunately, we have not seen the same growth in training, certification, and development or use of evidence-based practice of biofeedback.

To summarize the response to our initial questions:

1. What percentage of professionals use biofeedback to treat children? Three quarters of our sample reported using biofeedback to treat children. Because the sample was drawn from a society of biofeedback specialists (AAPB) and a society of child mental and physical health specialists (SPP), we can anticipate a shared interest in both societies.
2. What methods of biofeedback are being used with children? Heart rate variability is the most frequent

single modality used. However, respiration and temperature biofeedback were used by more than half of the sample.

3. What amount of training do these biofeedback practitioners have? Seventy percent have no formal training, and 81% have no certification meeting a minimal requirement for the professional use of biofeedback. Still, those who completed training spent 9 to 12 months in a mentoring relationship. This is encouraging, because certification requirements are based on hours of training and not the duration of the mentoring. This suggests that mentors and mentees see benefit to a relatively long period of supervised training.
4. What interactions do biofeedback practitioners have with others in the field? Eighty percent are interacting with other biofeedback professionals (practitioners), and almost half are interacting with manufacturers. The exact contact and benefit of these communications, given the relative lack of training, would be further enlightening to this discussion.
5. What research activities are these professionals engaged in related to biofeedback? Sadly, very few responders are active in research. This suggests either a relative lack of clinical research in general or a division between those conducting research and those in clinical practice using biofeedback.

These data are by no means a manner of chastising current biofeedback practitioners or our responders. We are grateful for their candid responses. In truth, the limited response and the skewed responding from an early-career demographic may call into question the representativeness of this sample. The responding sample itself may suggest a group of young professionals with high interest yet relative lack of knowledge regarding biofeedback training and professional certification.

More important than evaluating our sample's efficacy, we believe these data raise important questions for all professional societies involving biofeedback with children to consider. What is the value of specialized training and certification in biofeedback to providers in your organization? What is the value of this training or certification to hospitals, insurance companies, or consumers? What is the value of evidence-based practice and how can an organization increase use of evidence-based practice by its membership? Is our current use of biofeedback "good enough," and is it acceptable to practice some modalities without clear evidence of effectiveness? On the other hand, practitioners who use biofeedback for their patients could ask themselves: Am I proficient in my use of this specialized skill? If not, where are the gaps in my knowledge, and how could I improve my patient care? Am I using evidence-based practice? And perhaps most important to the future of the field: How can I contribute to the knowledge of biofeedback in the treatment of children?

These are only cursory reflections that require more in-depth consideration. Again, this article is meant to start the conversation among professionals and professional societies. It is hoped that ideas and objectives will develop to help unite the practice of biofeedback with the practitioners of biofeedback and engage researchers of children's health in meaningful biofeedback research. It may be helpful for researchers to conduct a thorough review of biofeedback in children, with a focus on new literature in the past 5 to 10 years and provide recommendations for where researchers can make the most meaningful impact. Also, professional societies should seek to understand the gaps in training/knowledge of their members, identifying factors that motivate practitioners for advanced training in biofeedback. Further, it may be helpful for professional societies to focus on engaging practitioners (both within and outside the profession) on the education and continued training in clinical use of biofeedback. Finally, and perhaps most important, it may prove beneficial for professional societies, such as AAPB, SPP, Society of Clinical Child and

Adolescent Psychology, Society of Behavioral Medicine, and Association for Applied Sport Psychology to partner for shared goals on improving the knowledge base in research, skill level in practitioners, and communication between clinicians, educators, researchers, and industry. This type of project is already occurring with a shared programming between organizations for a related purpose (Davis & Tercyak, 2012). Perhaps the first step in any of the above recommendations is to form a task force on biofeedback in children, with more defined objectives and metrics. In this vein, biofeedback in children may enter a period of tremendous growth in membership, skill level, and innovative research.

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