Nonorganic hearing loss (NOHL) appears greater in magnitude than what might be expected on the basis of known auditory pathology (Martin, 2002). Depressed auditory thresholds in the absence of an organic pathology are commonly referred to as NOHL, malingering, pseudohypacusis, or psychogenic or functional hearing loss. In most instances, the presence of NOHL is related to some kind of personal gain, which may include monetary compensation, attention from others, or, especially in children, an excuse for poor academic performance (Barr, 1963; Rintelmann & Schwan, 1999). Although the diagnosis of NOHL is generally easier in children than adults, frequent instances of misdiagnosis of pediatric NOHL (PNOHL) have been reported (e.g., Bailey & Martin, 1961; Dixon & Newby, 1959). In a case study reported by Hallewell, Goetzinger, Allen, and Proud (1966), what appeared as a severe hearing loss in a 13-year-old boy was revealed as normal hearing sensitivity under hypnosis. More recent studies also have reported initial misdiagnosis of PNOHL (e.g., McCanna & DeLapa, 1981; Pracy, Walsh, Mepham, & Bowdler, 1996; Radkowski, Cleveland, & Friedman, 1998). In many instances, these children had been referred for medical evaluations when no medical condition was present. As a result of the initial misdiagnosis, costly diagnostic procedures including laboratory and serologic testing, autoimmune studies, and computed tomography (CT) scan imaging were performed (Radkowski et al., 1998).

Because financial gain and compensation issues, frequently cited predisposing factors for adult NOHL, are not generally associated with PNOHL (Chaiklin & Ventry, 1963; Dixon & Newby, 1959), audiologists consider it a minor clinical nuisance. The typical goal when dealing with PNOHL is essentially twofold: diagnosing the condition and determining true behavioral thresholds. According to Northern and Downs (2002), however, children presenting with PNOHL may have a basic underlying need that is unfulfilled and may choose from a variety of symptoms, ranging from the conscious to the psychosomatic, to express that need. When symptoms enter the psychosomatic realm, disorders such as eczema, chronic stomach problems, and even psychosis may occur. These issues, if not identified quickly and resolved, may be harmful for the child’s well-being. They also may result in the child engaging in harmful, self-destructive behaviors as an adult (Brooks & Geoghegan, 1992), and becoming a threat to family and society (Northern & Downs, 2002).

In this article, precipitating stressors that may lead to PNOHL in some children will be presented. The
psychosocial and personality profile of children who have been diagnosed with NOHL will be discussed. Techniques useful for diagnosis and management of this condition also will be presented.

**PRECIPITATING STRESSORS**

Different stressors can lead to the presentation of PNOHL, which usually has a sudden onset following a stressful event (Radkowski et al., 1998). The most common stressor is trouble at school. Common examples include problems with a teacher, using the hearing loss as an excuse for not doing school work (Brooks & Geoghegan, 1992), or difficulty adapting to the school environment (Hosoi, Tsuta, Murata, & Levitt, 1999). Problems at home, such as emotional and physical abuse (Lehrer, Hirschenfang, Miller, & Radpour, 1964; Qiu, Stucker, Yin, & Welsh, 1998), are other stressful events known to lead to PNOHL.

Radkowski et al. (1998) documented a history of physical trauma immediately preceding the onset of PNOHL. Examples of traumatic experiences varied from a teacher pulling a child’s ear to a football tackle.

Berger (1964) reported that a 12-year-old female presented with PNOHL following conflict with a teacher. Further investigation revealed that she was an orphan moving between foster homes who recently had experienced the death of a stepfather and grandfather.

Bailey and Martin (1961) reported a case study in which a boy presenting with NOHL later admitted to having normal hearing. He wanted to create the impression that he could not hear because he wanted to attend the state residential school for the deaf where his parents were teachers and his girlfriend was a student. Further investigation revealed that he was not doing well academically in high school.

Lumino, Jauhiainen, and Gelhar (1969) reported on three sisters who had a hearing loss develop rather rapidly over a period of a few months. Two of the three sisters also complained of visual problems and were fitted with eyeglasses. Hearing and visual problems apparently returned to normal one day during a visit with an aunt. The visual and hearing problems appeared related to family conflict and resolved upon resolution of that conflict.

Qiu et al. (1998) documented the case of a 9-year-old female who had a history of child abuse and learning disability. She demonstrated no response to pure-tone audiometry. She was later diagnosed with bilateral “psychogenic deafness” and referred for psychological rehabilitation.

Brooks and Geoghegan (1992) reported the case of a 28-year-old female with recurrent NOHL. At age 13 years, she had been diagnosed with a hearing loss and fit with amplification, but a year later decided that her hearing was normal and the aids were no longer necessary. Pure-tone audiometry confirmed normal bilateral hearing sensitivity. It was determined that the girl had been going through a stressful situation at school at the time that involved bullying. After that situation was brought to her parents’ attention and resolved, the hearing loss resolved as well. Fourteen years later, that same person, now a young woman, presented with recurrence of the hearing loss on the eve of her wedding, another possibly stressful event.

Children with emotional problems also can present with NOHL. There are numerous accounts of children in the literature who have been diagnosed with NOHL who displayed emotional disturbances (e.g., Broad, 1980; Brooks & Geoghegan, 1992; Cobb & Butler, 1949). Lehrer et al., (1964) reported on 10 adolescents, ages 11 to 16 years, who had been diagnosed with PNOHL who had significant emotional problems such as free-floating anxiety and tension, feelings of inadequacy, aggression, hostility toward parents, and a need for attention and approval that were considered to be associated with PNOHL.

**PSYCHOSOCIAL AND PERSONALITY PROFILE ASSOCIATED WITH PNOHL**

There is little information regarding the psychosocial and personality profile of children presenting with PNOHL. Children who present with PNOHL often have a history of prior auditory disorders such as otitis media (Aplin & Rowson, 1986, 1990; Pracy & Bowdler, 1996). Many researchers believe that attention gained from a past medical problem may seem to be a logical way to gain attention/sympathy for a current underlying emotional/psychosocial problem (e.g., Aplin & Rowson, 1986; Berger, 1964). Several authors have stressed that NOHL in children should be detected as early as possible before children realize that there are secondary gains to be enjoyed from the hearing disorder (Barr, 1963; Martin, 2002; Miller, Fox, & Chan, 1968; Ross, 1964). Others believe that the choice of the ears as an expression of a troubled psyche may be related to the role audition plays in the psychological development of a child. Isakower (1939), for example, considered audition pivotal to the development of the superego. Shopper (1978) stressed the role of audition in “separation–individuation.” According to Shopper, developmentally, there is a natural progression of the child’s need for tactile and visual awareness of the mother to the reliance on auditory reassurance of her existence until the child attains emotional and cognitive object stability. It is, therefore, not surprising that audition becomes embodied in intrapsychic conflicts.

Earlier researchers (Cobb & Butler, 1949; Semenov, 1947; Ventry, 1971) had suggested that NOHL was a child’s way of avoiding unpleasant and/or dangerous situations or unpleasant memories that were usually related to a painful early childhood. The PNOHL was, therefore, the child’s denial mechanism. In a study, regarded as a classic in the psychiatric literature, Fromm (1946, as cited in Broad, 1980) documented the case of a 10-year-old male with congenital osteogenesis imperfecta that prevented him from walking. This child also exhibited a severe hearing loss. It was later determined that the child could hear but chose only to respond to “pleasant” auditory stimulation. Fromm reasoned that because the child could not walk, he
could not avoid situations he perceived as dangerous. The child’s reaction to perceived dangers was the hearing loss; in his mind, if he could not hear in those situations, they did not exist, sparing him the frightening and impotent realization of his own helplessness.

According to Broad (1980), the core psychopathology associated with PNOHL involves “poorly consolidated self representations” (p. 56) with the functional hearing loss serving to protect an enfeebled sense of self. He noted that these children exhibited poor self-concepts, low self-esteem, an extreme sensitivity to criticism, and an inability to deal with peers. In another study, Aplin and Rowson (1986) administered a personality inventory scale to 30 children who had been diagnosed with PNOHL. The children in their study had high scores for neuroticism and introversion, suggesting the possibility of a personality trait associated with PNOHL. Twenty-three of the children (77%) also had a history of middle ear pathology. The researchers suggested that PNOHL may be an adaptive mechanism for such children, allowing them to continue introverted behaviors yet also offering an excuse for them.

Psychological tests, such as the Rorschach test (Rorschach, 1921) for analysis of personality and psychopathology, were often used to determine the psychodynamics of PNOHL (Broad, 1980; Kodman & Waters, 1961). Kodman and Waters performed the Rorschach test on 8 children who had been diagnosed with NOHL and reported that these children demonstrated repressed and restricted affect that was characteristic of “hysteric.” The researchers, however, concluded that these children could not be considered “clinical neurotics.” Results from the Rorschach test should be interpreted cautiously. The Rorschach test also had been used in several studies of NOHL for adults, but the results were often inconclusive. There were difficulties identifying Rorschach differences between individuals with a nonorganic component and those without (Wolfe, 1960, as cited in Chaiklin & Ventry, 1963).

There is an ongoing debate regarding the intellectual ability and academic achievement of children who have been diagnosed with NOHL. It is generally believed that these children have normal intelligence, although as a group, their intelligence may be considered below average. They do not, however, demonstrate a particularly great ability for studying (Barr, 1960, 1963; Chaiklin & Ventry, 1963; Dixon & Newby, 1959; Trier & Levy, 1965).

Children who have been diagnosed with PNOHL were assessed for an overall estimate of intelligence by Aplin and Rowson (1990) using the Wechsler Intelligence Scale for Children—Revised (WISC–R; Wechsler, 1974). These children demonstrated IQ scores that were significantly below the mean of 100. Measures of educational attainment also were obtained. Reading ability was assessed using the Burt Word Reading Test (Scottish Council for Research in Education, 1976). Approximately 30% of the children in the sample were reading at a level of 2 or more years below their chronological age, and all of those children had low verbal IQ scores on the WISC–R. The authors noted that almost all of these children had otitis media at a younger age; therefore, in addition to the PNOHL, continuing effects of the earlier occurrence(s) of otitis media may have some impact on the children’s current reading and verbal IQ scores.

Psychosocial and personality characteristics similar to those reported for PNOHL have been documented for adults with NOHL, which may suggest a “personality type” associated with NOHL. According to Trier and Levy (1965), adults who have been diagnosed with NOHL tend to score lower on all socioeconomic measures. They also score lower on tests of verbal intelligence and demonstrate a greater degree of clinically significant emotional disturbances. Gleason (1958) reported that these individuals typically tend to display emotional immaturity, instability, hypochondriasis, and an inadequate response to social demands. They also tend to manifest a reliance on denial mechanisms and appear to have a diminished sense of confidence in their abilities to meet the needs of daily living (Martin, 2002).

### INCIDENCE AND PREVALENCE OF PNOHL

According to some reports, the incidence of PNOHL ranges from 1% to 12% (e.g., Barr, 1960; Doerfler, 1951). The validity of these percentages may be questionable because of lack of consensus regarding the criteria used in arriving at a diagnosis (Broad, 1980). Prevalence rates of PNOHL are reported at approximately 5% to 7% (Hopkins, 1973; Rintelmann & Harford, 1963). Children typically present with PNOHL between 6 and 19 years of age (Dixon & Newby, 1959; Rintelmann & Harford, 1963), with peak occurrence at approximately 11 years of age. It was believed that for girls, the high prevalence of PNOHL at 11 years of age might be associated with stress related to menarche. Coles (1982), however, presented data showing similar peaks of maximum prevalence for both boys and girls, which he suggested may be related to “examination stress” at school. A review of the literature indicated a significantly higher incidence of girls presenting with PNOHL (Aplin & Rowson, 1986; Dixon & Newby, 1959; Pracy & Bowdler, 1996; Radkowski et al., 1998). The reasons for this gender difference are not fully explained. In addition, girls with adjustment problems may tend to adopt introverted, withdrawn, and anxious forms of behaviors such as PNOHL; boys may tend to display overtly aggressive behaviors (Aplin & Rowson, 1986).

Interestingly, the literature also indicated a higher incidence of conversion disorder in females (Wolf, Shoshan, Birger, & Kronenberg, 1993), with reported ratios varying from 2:1 to 10:1 (American Psychiatric Association, 1994). According to the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1994), a conversion disorder is a somatoform disorder with the symptoms or deficits affecting voluntary, motor, or sensory systems that suggest a neurological or other general medical condition. Hearing loss is one of several symptoms that may be associated with conversion disorder. The symptoms do not conform to known anatomical pathways or physiological mechanisms, but instead follow the individual’s conceptualization of a condition. The *DSM-IV*
(1994) definition indicates a temporal relationship between a psychologically stressful situation and the appearance or exacerbation of the symptom. A conversion disorder may present as NOHL, but it is not a conscious manifestation of deceit, deception, or exaggeration. Instead, the underlying problem is psychologic in nature. True reported cases of conversion hearing loss are, however, sparse in the literature (e.g., Coles, 1982; Mehta, 2003; Qiu et al., 1998; Ventry, 1968).

If underlying psychosocial issues of childhood are not resolved, they may have ramifications that last into adulthood. If children do not receive the help and/or attention they need for these psychosocial issues, they may replace the symptoms of a hearing loss with other functional symptoms that could be more damaging both emotionally and psychosocially. Brooks and Geoghegan (1992) identified individuals who had been diagnosed with PNOHL between 6 and 27 years before their study to determine whether there was evidence of long-term effects related to the PNOHL. The researchers found that among the 29 individuals identified, only 1 was a self-confessed malingerer. Approximately half of the individuals had psychosocial problems as adults. One individual was still complaining of subjective residual hearing problems that were not confirmed by audiology. Another person reported that her hearing was now satisfactory but she was having visual problems of some obscure pattern. She appeared to be enjoying the attention gained by her physical problems. Six people had speech disorders (including disfluency and one case of possible dyslexia). Five others had been referred to a psychiatrist and one to a psychologist. Issues that they had dealt with or were dealing with included alcoholism, drug abuse, compulsive behaviors, stealing, and suicide.

**ROLE OF THE AUDIOLOGIST**

Audiologists are not professional counselors. Moreover, the scope of practice for audiology does not include diagnosis and treatment of emotional and psychosocial issues. If a feigned hearing loss is a child’s chosen way of expressing an underlying psychosocial or emotional problem, the audiologist may be the first professional dealing with the issue. If audiologists simply serve as a means for accurate diagnosis of audiometric thresholds regardless of underlying problems a child may be facing, they act as technicians. They disregard their responsibility as professionals to make informed decisions for appropriate management of the condition necessary for the well-being of that child.

What, then, is the role of the audiologist in such situations? Given the possible long-term ramifications of PNOHL and the cry for help and attention inherent in the presentation of PNOHL (Northern & Downs, 1974), it is a situation that should not be taken lightly. According to Northern and Downs (2002), any child who presents with an NOHL has a problem, whether it is a minor transient difficulty or a deep-seated permanent disorder. The NOHL is usually a symptom of some other problem and should never be disregarded or passed off as a temporary foible. The literature suggests that investigation of any underlying problem is warranted. This investigation might be accomplished by close attention to the case history and by looking for signs of a problem (Northern & Downs, 1974). Audiologists need to recognize that exaggerated behaviors such as verbosity, brashness, overwithdrawal, lack of personal affect, and exaggerated straining to hear test tones may be indicators of PNOHL (Northern & Downs, 2002).

If a child demonstrates poorer hearing thresholds than expected, it is important to determine whether the hearing loss is organic or nonorganic. Misunderstanding or unfamiliarity with the test procedure must be ruled out before making the diagnosis of PNOHL (Northern & Downs, 2002). In addition, environmental factors such as noise, insufficient motivation of the child, improper testing technique, and poorly calibrated equipment should all be discounted before making a diagnosis of PNOHL (Martin, 2002). Further, organic causes of sudden hearing loss such as viral infection, trauma, or toxins, which are more common than NOHL, also should be excluded (Bowdler & Rogers, 1989). If PNOHL is suspected, two factors must be determined: the true hearing sensitivity and the cause of the NOHL (Hosio et al., 1999).

**Determination of True Hearing Sensitivity**

Children with PNOHL typically show no evidence of hearing loss during normal conversational speech or outside of a testing situation (Dixon & Newby, 1959; Gelfand, 2001), which is why, for these children, failure on school hearing screening tests is the primary reason for audiologic referral (Bowdler & Rogers, 1989; Northern & Downs, 2002). PNOHL is typically easier to diagnose than adult NOHL because of the child’s naivete in understanding the relationship between test procedures and hearing loss and an inability to consistently provide erroneous test results. The child’s voice quality and performance during speech audiometry testing also may be better than suggested by the volunteered behavioral pure-tone thresholds. In addition, the needs that drive the child to present with PNOHL are typically more honest and engender more sympathy than those that drive an adult (Northern & Downs, 2002).

The classic literature suggests that there are no characteristic audiometric patterns that typify NOHL (Chaiklin, Ventry, Barrett, & Skalbeck, 1959; Ventry & Chaiklin, 1965). One aspect of NOHL, however, that is widely accepted in the adult literature is the high prevalence of the nonorganic component superimposed on an existing organic hearing loss (Chaiklin & Ventry, 1963; Gelfand & Silman, 1985, 1993). This finding also is reported for children (Aplin & Rowson, 1986, 1990; Pracy & Bowdler, 1996). The configuration of the nonorganic overlay in adults is related to the configuration of the underlying organic hearing thresholds (Coles & Mason, 1984; Gelfand & Silman, 1985, 1993) and is most evident in individuals with precipitously sloping hearing loss. In general, the nonorganic components are larger at the lower frequency levels where the organic thresholds are better and smaller at the higher frequency levels where the organic thresholds are worse because high-frequency hearing loss is so
common in adults (Gelfand 2001). In addition, loudness
cruitment, which is related to the degree of hearing loss,
also may result in smaller nonorganic components at the
higher frequency levels where the actual hearing loss is
worse. These findings also may be related to the internal-
ized reference levels for loudness or “anchor” used by most
indivduals feigning a hearing loss; they will not respond to
an auditory stimulus until its loudness reaches that of the
internal anchor (Gelfand, 2001; Gelfand & Silman, 1985,
1993; Martin, Champlin, & McCreery, 2001). Contrary to
what is observed for adults with NOHL, the nonorganic
overlay for children may not always present with larger
nonorganic components at lower frequency levels because
of hearing loss related to middle ear pathology (e.g., otitis
media), which is common in school children.

Several signs of a nonorganic component can be obtained
during routine audiologic evaluation. One of them is the
lack of false-positive responses (Gelfand, 2001). False-
positive responses are exhibited by listeners when no test
stimuli are present. These responses are common when
evaluating individuals with normal hearing or those with an
organic hearing loss because they want to cooperate with
the audiologist and establish accurate hearing thresholds.
Individuals presenting with NOHL have no such desire and,
therefore, false-positive responses are rare. Chaiklin and
Ventry (1965) reported in their study that 86% of listeners
with a true organic hearing loss gave one or more false-
positive response. By contrast, only 22% of listeners
presenting with NOHL gave one or more false-positive
response.

Typically, individuals with NOHL have exaggerated
responses or no responses on behavioral tests. It is impor-
tant to perform a complete diagnostic test battery whenever
possible because then the responses obtained can be
compared, and inconsistent inter- and intratest results
become apparent. Common inter- and intratest inconsist-
ences include (a) lack of reliability across test sessions, (b)
wide threshold ranges, (c) speech recognition threshold
(SRT)–pure-tone average (PTA) disagreement, (d) half-
sponse responses, (e) pure-tone bone-conduction thresholds
poorer than pure-tone air-conduction thresholds, (f) lack of
cross hearing (Gelfand & Silman, 1993; Martin et al., 2001),
and (g) audiometric threshold variations of as much as 15
to 25 dB HL at the same frequency (Northern & Downs, 2002).
Speech audiometry alone often is sufficient for detecting
PNOHL. In most cases, the SRT is significantly better than
the PTA (500, 1000, and 200 Hz) by as much as 20 to 40
dB HL (Hosoi et al., 1999; Lehrer et al., 1964). An SRT–
PTA discrepancy of 12 dB HL or more is considered an
indication of NOHL (Chaiklin & Ventry, 1965). According
to Chaiklin and Ventry, SRT–PTA discrepancy and false-
positive responses, when used together, compare favorably
with other screening tests for detecting NOHL and result in
a high percentage of correct identifications.

Because the child presenting with NOHL typically is less
sophisticated than an adult, and the deception is generally
easier to detect, the use of other diagnostic behavioral tests,
such as the Doerfler-Stewart test (Doerfler & Stewart,
1946) and the Lombard reflex test (Lombard, 1911), is
rarely required. The Stenger test (Stenger, 1907; Taylor,
1949) may have to be performed if the suspected PNOHL
is monaural. Other behavioral tests designed specifically for
diagnosis of NOHL and particularly useful with the
pediatric population include the Yes-No test (Frank, 1976),
the Swinging Story test (Newby, 1979), and its later
variation, the Varying Intensity Story test (Martin,
Champlin, & Marchbanks, 1998). Currently, however, some
behavioral tests such as the Doerfler-Stewart test and the
Lombard reflex test have limited usefulness because even
though these tests are useful in identifying a nonorganic
component, they fail to quantify its degree. If discrepancies
are still present between behavioral test results, despite
repeating instructions and behavioral test procedures, the
best approach is to schedule another appointment (Chaiklin
& Ventry, 1963; Gelfand, 2001).

Behavioral tests alone may not be reliable in diagnosing
PNOHL or determining actual hearing sensitivity. Physi-
ologic measures should be used to rule out organic pathol-
y and to confirm the diagnosis of NOHL (Durrant,
Kesterson, & Kamerer, 1997; Gelfand, 1994; Mehta, 2003;
Qiu et al., 1998). Possible physiologic procedures include
middle ear muscle reflexes (MEMRs), otoacoustic emis-
sions (OAEs), and auditory evoked potential measurements.
Certain conditions such as neurological disorders (e.g.,
Katz, 1980) and auditory neuropathy may present as NOHL
and may not be diagnosed on a pure-tone audiogram. The
true diagnosis may be missed if physiologic tests, such as
the MEMR, OAEs, and evoked potentials measures (e.g.,
the auditory brainstem response [ABR] measurement), are
not performed (Berlin, 1999). One limitation of OAEs is
the prevention of recording of responses due to attenuative
influences of the external and middle ear on reverse energy
transmission and their insensitivity to disorders affecting
inner hair cells or higher levels of the auditory pathway
(Norton et al., 2000). Similarly, a possible limitation of the
MEMR when used as a diagnostic tool for PNOHL may be
the extreme sensitivity to the presence of conductive
pathology (Jerger, Anthony, Jerger, & Mauldin, 1974). With
conductive pathology, more intensity is needed to reach the
reflex threshold, which may exceed the maximum available
stimulus level (Gelfand, 2002). In which case, changes in
acoustic immittance occurring at the probe tip will not be
recorded even if the stapedius muscle were contracting.
Both OAEs and MEMRs can, therefore, be absent in
children presenting with PNOHL who have an underlying
middle ear pathology, limiting their diagnostic value.

Further, Gelfand (1994) reported that although the MEMR
is an effective nonbehavioral tool for detection of NOHL, it
cannot identify a functional component if the volunteered
thresholds are less than or equal to 60 dB HL because the
MEMR would normally be present with a cochlear hearing
loss of that magnitude. Even with these limitations,
immittance measures should be performed initially for all
routine audiologic assessments because they can discourage
pseudohypacusis (Martin, 2002) and alert the clinician to
the possible presence of NOHL. The presence of normal
OAEs, normal tympanogram, and bilateral MEMRs rule out
the possibility of a conductive hearing problem. The ABR
threshold exploration procedure can be used to validate
hearing thresholds (Northern & Downs, 2002).
Other evoked potential measures such as middle and long latency auditory evoked responses can be beneficial in ruling out neurological conditions beyond the level of the brainstem before establishing a diagnosis of NOHL. Middle latency auditory evoked potentials (MLAEPs) consist of a series of auditory-evoked responses that occur between 10 and 80 ms following the onset of an acoustic stimulus. By definition, MLAEPs follow the ABR and precede the long latency auditory evoked potentials (LAEPs) (Kraus, McGee, & Stein, 1994). Clinical uses of MLAEPs include the estimation of frequency-specific hearing thresholds, especially in the lower frequencies (Musiek & Geurnink, 1981; Scherg & Volk, 1983); assessment of auditory pathway function, including ruling out a central auditory pathology when NOHL is suspected; and localization of auditory pathway lesions (Buchwald, Erwin, Read, Van Lancker, & Cummings, 1989; Jacobson & Grayson, 1988; Kileny, Paccioretti, & Wilson, 1987; Kraus & McGee, 1988). The LAEPs are recorded in a time period from approximately 50 to 250 ms after acoustic stimulation by a transient sound such as a click, toneburst, or speech element at a relatively slow rate (approximately 1 to 2 stimuli per second) and include both exogenous and endogenous potentials (Scherg, Vajsar, & Picton, 1989; Velasco, Eelasco, & Velasco, 1989). Exogenous auditory responses are those responses that are generated primarily by the physical characteristics of the stimulus. Endogenous auditory responses are those that are produced after internal processing of the stimulus has occurred. The LAEP can be a useful clinical tool in the estimation of hearing sensitivity of individuals when a nonbehavioral, frequency-specific, and sensitive measure is needed, such as for medicolegal and compensation assessments and the evaluation of a suspected NOHL (Hyde, 1994). Currently, only a small percentage of clinicians routinely use MLAEPs and LAEPs (Martin, Champlin, & Chambers, 1998), probably due to the limitations of availability of equipment, experience of clinicians, and third-party reimbursement issues.

**Determination of the Cause of PNOHL**

A good case history can be quite helpful in determining the cause and nature of PNOHL; it can help the audiologist determine whether it is a transient, isolated event or the manifestation of a more severe underlying problem. Some events in a child’s life that indicate that the hearing loss may be nonorganic include (a) recent history of ear-related problems (e.g., otitis externa or media), (b) recent relocation, (c) transfer to a new school, (d) recently falling grades, (e) poor peer relationships, (f) poor relationships with parents and/or other family members, (g) parental inadequacies, (h) a new baby in the family, (i) a recent death in the family, (j) a sick child in the family who requires a great deal of caregivers’ time and attention, (k) recently divorced parents, and (l) recent adoption or transfer to foster care. Establishing a relationship of trust with the pediatric client is as important as it is with adult clients. Children may sometimes be more open to talking and discussing a stressful situation, such as problems in school, with a trusted professional than with caregivers.

Most cases of PNOHL are isolated events that are resolved fairly quickly and present no additional concerns. In those instances, retraining and repeating the behavioral test procedures, talking to the child in a respectful, non-confrontational manner and, therefore, allowing the child a way out often is all that is needed. Nonthreatening statements are recommended, such as, “All these tests tell me that you should be hearing well, except this one test. Let’s try again. This time I will do a better job of explaining exactly what you need to do and you can try and listen carefully for me one more time.” Such statements that do not assign any blame toward the child, coupled with encouragement during the behavioral threshold search, can be helpful in establishing actual hearing threshold levels. A follow-up evaluation, typically within the next 3 months, often is helpful. The follow-up evaluation can serve two purposes: (a) establish reliability of the obtained behavioral hearing thresholds and (b) dictate direction of management. Reassuring caregivers that the child’s hearing appears normal but explaining that a follow-up appointment will help ensure that there are no lingering problems can alleviate caregivers’ anxieties without any confrontations or assigned blame. If, on the other hand, the child is showing signs of a psychosomatic problem (e.g., chronic stomach ache and eczema) or other psychosocial issues, or if the NOHL is not resolved despite the best efforts of the audiologist, the PNOHL may be deeply entrenched. Psychological referral may then be warranted.

**MANAGEMENT OF PNOHL**

Chaiklin and Ventry (1963) stated that the negative emotional reactions of professionals toward clients with NOHL are reflected dominantly as a preoccupation with the “unmasking” of malingerers. They also stated that these negative reactions may have impeded or contaminated research in this area and, even worse, may have occasionally resulted in clinical mismanagement of such clients. Although great strides have been made in the management of newly diagnosed hearing loss in children, little progress has been made on how to manage newly diagnosed PNOHL. It is unrealistic to think that early intervention in every case of PNOHL would necessarily produce a better outcome. If early intervention can, however, minimize ensuing problems in only a few cases, timely and appropriate action is justified (Brooks & Geoghegan, 1992).

In many respects, detecting PNOHL and determining true hearing sensitivity is often the easy part of the process. The difficult decision is what to do with that information. Should the caregivers be informed? Is a talk with the child warranted? Are there underlying psychosocial issues that need to be addressed? Should counseling be recommended? Should all children who are diagnosed with PNOHL be referred for counseling and/or a psychological evaluation? It is at this time that the judgement and experience of the audiologist becomes important before making a decision. Each individual case is different, and there is no “cook book” approach that is appropriate for every client. The
guiding principles for professionals should be to handle situations within their scope of practice and professional comfort level and to enlist the help of appropriate professionals for issues outside their scope of practice and professional expertise.

Some authors suggest a “no interference” approach when dealing with PNOHL (e.g., Pracy & Bowdler, 1996); once it has been established that the child has thresholds within normal limits, reassuring the caregivers and child that the hearing “will improve” may be sufficient without trying to determine the underlying cause of the problem. Pracy and Bowdler also recommend that audiologists should not attempt to identify the loss as nonorganic. Other authors suggest talking privately and frankly with caregivers, explaining the situation to them, encouraging them to try and understand why the child has chosen to fake a hearing loss, and suggesting professional counseling (e.g., Northern & Downs, 2002). Confronting or accusing the caregivers, however, is not recommended (Berger, 1964). When talking with caregivers about PNOHL, it is important for professionals to choose their words carefully and think of how those words will be perceived by the listeners. According to Gelfand (2001), professionals should avoid using judgmental or accusatory language and labels when counseling caregivers of children presenting with a non-organic overlay. In the listener’s mind, use of words such as “malingering” and “feigning” may translate into “liar.” Use of clinical terms such as “functional,” “psychogenic,” and “nonorganic” hearing loss may be equated with “crazy liar.” It also is important to point out that counseling by student clinicians is not recommended when NOHL is an issue because of their lack of expertise and experience. New clinicians also should be advised to involve more experienced professionals when these situations arise (Gelfand, 2001).

Professionals need to understand the impact on families of a sense of loss that may accompany the diagnosis of a communication disorder (Stone, 1992). Not unlike caregivers of children with an organic hearing loss, these caregivers also may suspect that there is a problem but may not be ready to admit it to themselves. They also may go through similar stages of guilt and grief (Friehe, Bloedow, & Hesse, 2003; Kubler-Ross, 1969; Tanner, 1980). Strategies similar to those used for counseling caregivers of children with a newly diagnosed hearing loss can be used to counsel caregivers of children with a newly diagnosed PNOHL. According to English (2002), it is important to talk to caregivers in a private area without the child present so that they can express their emotions and ask questions. It also is important to be sensitive to the time that caregivers may need to comprehend and resolve the emotions they are experiencing before they can discuss options for management of the condition (Tanner, 1980). Professionals also need to use active listening strategies. Active listening conveys empathy, which communicates support, rather than sympathy, which communicates pity (Jenkins, 1996). Presenting the results in a factual yet empathetic manner allows caregivers the opportunity to ask questions and talk among themselves, which may clarify the underlying problem/concern that led to the PNOHL.

Such information would not only be useful in management of the condition, but also may allow the adults to realize what is bothering the child and resolve the situation. Again, it is important to neither confront the caregivers nor assign blame, but instead to report the test results factually and, if needed, recommend professional counseling for the child. It also is important to advise the child’s physician of the outcome (Northern & Downs, 2002) after receiving consent from the caregivers.

Although there are differing opinions on how to deal with caregivers, the literature advocates avoiding confrontation with the child (Bowdler & Rogers, 1989; Rintelmann & Schwan, 1999). Confrontation produces unfavorable results because the child has no chance to back down and is not provided with an opportunity to “save face,” which is usually an important step toward resolution of the problem (Gelfand, 2001; Northern & Downs, 1974, 2002). In addition, if the child’s emotional or psychological state is fragile, the audiologist does not possess the professional knowledge and skills needed to deal with such a situation. It is inappropriate, however, to operate on the assumption that if the hearing loss is not genuine, the problem can be ignored (Brooks & Geoghegan, 1992).

Although audiologists are not trained counselors, nonprofessional counseling is within the scope of practice of audiology. When counseling caregivers of children with PNOHL, informational and personal adjustment counseling are both necessary. Informational counseling provides clients with the relevant knowledge necessary to understand the nature of the disorder and recommendations for its management. Personal adjustment counseling helps clients deal with the emotional aspect of the information provided. One critical but often ignored variable associated with informational counseling is client recall. Clients do not remember all that is said by the health care provider. When anxiety levels are high (Kessels, 2003), or if the client is in denial (Scheitel, Boland, Wollan, & Silverstein, 1996), even the most obvious findings including the diagnosis can be forgotten. Anxiety and denial often are present when dealing with caregivers of children with PNOHL. It also is important that clinicians and caregivers agree on the diagnosis and the need for follow-up because if they do not, the likelihood of appropriate management can be significantly lower (Starfield et al., 1979). The way in which information is presented becomes important when trying to maximize client recall. Margolis (2004) recommends that information be presented simply and in an easy-to-understand format. The most important information should be presented first as that tends to be remembered better by the listener. It also is important to restate critical pieces of information such as the diagnosis and recommendations. The listener should be given the opportunity to ask questions before moving on to the next category because that also can enhance recall.

Audiologists are generally comfortable providing informational counseling to their clients but not quite as comfortable providing personal adjustment counseling. According to Clark and English (2004), because audiologists are not trained as professional counselors, they may feel insecure in their client interactions, especially when
dealing with possible psychosocial issues. They may feel that they cannot provide the right response each and every time or minimize the problems in their clients’ lives. A straightforward, empathetic, human response, however, can allow the audiologist to concentrate on the crisis at hand and become an effective nonprofessional counselor. Clark and English also advocate recognizing the characteristics of clients that indicate their style of social interaction so that audiologists can adjust their behaviors to be more conducive to their clients’ needs and expectations. In the case of PNOHL, the success of dealing with the nonorganic component may depend significantly on the perception caregivers have formed of the clinician as a professional. If, for example, the caregivers are reserved individuals who want just the facts, an over-friendly or over-empathetic clinician may not come across as a competent professional, and the gravity of the situation may not be appreciated nor the recommendations taken seriously. On the other hand, some caregivers, when presented with factual information without the interlude of friendly conversation, may not be able to absorb and retain all of the information, may feel overwhelmed with the facts and, therefore, be unable to make clear decisions about helping their child. It is beyond the scope of this article to provide an in-depth discussion of client–practitioner dynamics. For more on this topic, see Clark and English, who also provide a comprehensive discussion on styles of social interaction that would be helpful when counseling all clients.

One area that requires thoughtful consideration when dealing with PNOHL is report writing. To label a child as “functional,” “maligner,” or “psychogenic” implies deliberate falsification or the presence of a psychiatric disorder—charges that can be difficult to expunge and may be unjust (Martin, 2002), particularly when it is uncertain who will be reading the report over time. One way to address this issue is to state that the test results were inconsistent with a hearing disorder without assigning labels. If a psychologic evaluation or counseling appears necessary, a nonjudgmental statement can be made to that effect. Although the recommendation may be written on the report and caregivers made aware of the need for psychiatric counseling, they may not be ready to follow through at that time because of an unwillingness to accept the diagnosis and/or because of the social stigma attached to such referrals (Martin, 2002). Caregivers can be reminded during the follow-up visit that there are professionals available if they need to talk to someone. Recommending a pediatric clinical psychologist or psychiatrist that the clinician is familiar and comfortable with also may make it easier for caregivers to take that first step. It is common for children to initially present with PNOHL on school hearing screening tests. Reports of school hearing screening tests, therefore, should not include recommendations for preferential seating or other special classroom considerations based on those results. Recommendations should, however, include a comprehensive hearing evaluation to determine the nature of the hearing loss in order to rule out PNOHL.

In some instances, PNOHL may have its roots in physical and/or emotional abuse at home. If such a situation is suspected, it may be best not to discuss the outcome of the evaluation with the caregivers, but to report back to the referring authority, which in most cases would be the managing physician or school authorities. These entities typically have both the professional and legal authority and expertise to deal with such situations. Many states also have laws that require professionals to report suspected cases of child abuse to appropriate authorities.

CONCLUSION

The possibility of PNOHL should be considered for children with a new-onset hearing loss. PNOHL can occur in a diverse population with unpredictable audiometric patterns. Additionally, the clinical history or presentation may support the diagnosis of an organic hearing loss, which can confound the ability to discover the nonorganic component. The PNOHL also can present as an overlay to an existing organic hearing loss. Unfamiliarity with test procedures and hearing loss due to a medical pathology must be ruled out before making the diagnosis of PNOHL. A combination of behavioral and physiologic tests is generally needed to diagnose this condition.

Most children who are diagnosed with PNOHL have a history of otitis media. The attention gained from a past medical problem may seem to be a logical way for these children to gain attention and sympathy for a current psychosocial problem. The psychosocial and personality profile of PNOHL that emerges from the literature is that of children with poor coping skills, introverted behavior patterns, emotional immaturity, difficulty with peer and/or parental relationships, and often a history of a painful childhood. Their intellectual abilities, as a group, are generally normal, but they may not perform well at school. The PNOHL also may be used by these children as a denial mechanism, in their minds, protecting them from painful or dangerous situations in their lives. Research studies have shown that if the underlying emotional or psychosocial problems associated with PNOHL are left unattended, these problems can worsen and may persist into adulthood, sometimes manifesting as more detrimental behaviors. Timely recognition of the problem and appropriate recommendations are, therefore, important. Appropriate counseling of caregivers is critical for recommendations to be followed and for the child to receive the necessary help. The follow-up visit may be the most important part of the management of PNOHL. During a follow-up visit, reliability of behavioral thresholds can be assessed and the nature of the PNOHL can be determined, whether it is an isolated event or the result of an entrenched psychosocial problem. Once the nature of the PNOHL has been determined, further recommendations can be made accordingly.

REFERENCES


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