Vol. 5 No. 1 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

Relaxation Techniques and Stress and Anger Management Among Hearing-Impaired Individuals in Pakistan.

Hira Arshad
Clinical Psychologist, PAF Hospital Islamabad
Hajra Shereen
Clinical Psychologist, Armed Forces Institute of Mental Health Rawalpindi
Uzma Shaheen
Campus Psychologist, Shaheed Zulfiqar Ali Bhutto institute of Science and Technology University (Szabist).
Eeman Khalid
MS Clinical Psychology, Riphah International University

Author Details

Received on 21 Jan, 2026
Accepted on 10 Feb, 2026
Published on 13 Feb, 2026

Corresponding E-mail & Authors*:

Abstract

The current study aims to equip the hearing-impaired individuals with relaxation techniques and management for their psychological problems such as stress and anger outburst through sign language. Also, to assess the efficacy of relaxation techniques for stress and anger issues among hearing impaired. Sample of n=52 hearing impaired (n=26 male and n=26 in female) having stress and anger issues were chosen through random sampling as participants. This sample was divided into two groups i.e., control and experimental group. Perceived Stress Scale (PSS) was used to measure the stress and buss Perry scale (BPS) to measure anger. Pretest was taken from both the groups and scores were noted then experimental group received treatment including relaxation technique twice a week for 1.5 month through sign language whereas control group were not provided any treatment then posttest was taken from both the groups and results were drawn through paired sample T test on SPSS. A statistically significant difference was found between pre-posttest of the mean scores of experimental groups (P=0.05) Results showed that relaxation techniques are significantly effective for stress and anger among hearing impaired

Keywords: Relaxation Techniques, Hearing Impaired, Stress, Anger, Sign Language.

Introduction

Language and communication gap inevitably lead to worry. Imagine being unable to clearly hear the person on the other end of the phone due to static you may feel enraged and angry. The deaf also go through this every day. Anxiety affects 40 million

Americans (Anxiety and Depression Association of America 2013). Due to the numerous language differences between the deaf and hearing populations, the percentage is higher among the deaf population. Hearing-impaired people struggle to follow verbal communication rapidly and must rely on lipreading in order to follow a discussion. Hearing impairment is nearly twice as common in children and young adults, according to the British Department of Health.

More over 1.5 billion people worldwide, or 20% of the world's population, have some degree of hearing loss, and at least 430 million of them have a hearing loss in their better ear that is moderate to severe (Chadha et al., 2021). In older persons, the prevalence of hearing loss in the moderate to severe range rises with age, from 12.7% at age 60 to over 58.6% at age 90. (World Health Organization, 2021). It's noteworthy that those over 60 make up more than 58% of the world's population with moderate- or higher-grade hearing loss (World Health Organization, 2021). Hearing loss affects many facets of life, including listening and communication, if it is not treated (Barker et al., 2017),

Hearing impairment can cause many other secondary issues such as communication difficulty, perceptual dysfunction Ing, social withdrawal, emotional instability and this comprises of the extent to which a person hearing is impaired, that at what age the impairment started or identified and to what degree it is impaired and could be managed. People with hearing impairment faces so many difficulties while moving along the society which often leads to distress, frustration, lower self-image, lack of confidence, feeling of irritability and societal gap extends day by day. People with hard of hearing or hearing impairment experience distress in their daily life while moving in society a communicating with people around them due to which they failed to fulfil their needs and desires either physical or social. All that frustration, distress or unfulfillments leads to aggression even at the school age which is not encouraged because this leads to antisocial behaviors or personality developments at the end. This should not be taken for granted because it just not only harms the exhibitor but also the people all around (Syarifudin 2020). Also, several theories about anger outburst and some theories may consist of paired groups. According to the first group anger is termed to be natural and spontaneous response while other says it is communally originated. Whereas according to Freud aggression is inner self destruction. He proposed that it may be a result of response to the adverse situation.

Adults with early-onset of hearing impairment indicate that, while hearing impairment has unpleasant features, they have included it into their own personalities. With the passage of time, they learn to cope with and manage their hearing problems

on a daily basis. For older persons who develop hearing loss later in life, the situation may be quite different. These people have already created a personality that isn't affected by their hearing impairment. They have grown accustomed to living as hearing people. Hearing loss can lead them to an identity crisis, as well as it can create anger issues. Deaf individuals face communication gap with their family members that cause stress among them. When deaf individuals are unable to perform particular tasks, it causes stress among them which leads to internal aggression.

It is revealed in self-rated studies that people with hearing impairment frequently face limitations when it comes to their ability to engage in activities and participate in society. Speech is difficult for them to understand, especially when it competes with other sounds, and listening wears them out. As a result, they could find it challenging to interact with others in large groups and in noisy settings. Compared to people who don't have hearing issues, they become more anxious, exhausted, and agitated, and their quality of life is lower (Jacobsen and Hallberg 2006). Today, several nations offer cochlear implantation to people with severe hearing loss that can be contributory factor to improve not just the capacity to hear and speak but also their wellbeing and quality of life (Hogan et al., 2001)

Through qualitative research that allow people of all ages also with all types of hearing impairment to share the experiences and dilemmas, a fuller knowledge of the restricted means in daily life has emerged. There are a longitudinal study middle-aged people, (Gullecksen, 2002) investigated recurrent life changes and life phases. She talked about three interconnected stages, including acknowledging, comprehending the repercussions, and learning how to deal with the issues. She also talked about striking midway between own limitations and demands
of daily life.

Those who have trouble hearing find it difficult to take part in ordinary small talk. The person could experience embarrassment, awkwardness, and feelings of inadequateness as a result of their inability to comprehend others or follow the conversation. The inability to hear well might make someone feel disoriented and force them to act in ways that are socially undesirable, such speaking out of turn, which only serves to increase their shame. Some people may even become paranoid and think that people are talking about them.

Young adults who have difficulty hearing every day may give up due to mental fatigue. Birthday celebrations, banquets, holiday gatherings, and other occasions where a lot of people congregate in a noisy environment may eventually be avoided by them. Although at first this self-imposed seclusion may appear more convenient, over time it

can lead to social isolation, loneliness, and depression. Within their own families and social circles, they could feel odd and like an observer rather than an active participant in life. For adults who have hearing loss, missed phone calls and alerts can cause anxiety. They could feel guilty about misconceptions or worry that they are misinterpreting what people are saying to them. (Lara et al., 2018).

Schizophrenia can be caused by the social isolation and loneliness that come with hearing loss. Dopamine sensitivity has reportedly risen as a result of this It is a great loss to lose the ability to hear. And just like with any loss, a period of mourning is frequently followed. Anger, bitterness, sadness, and melancholy may all be part of the mourning process, which is finally followed by a feeling of acceptance. In techniques that were not even feasible a few years ago, hearing loss can now be efficiently treated and maintained. (Schetcher et al., 2014). Many people find it difficult to confess they need assistance. Early intervention is crucial, though, as untreated hearing loss can get worse. Consult your primary care physician first. You may be directed to another expert (such as an audiologist, otolaryngologist, or occupational therapist) who can assess your problem and assist you in considering all of your alternatives if they are unable to identify your illness. Your quality of life can be restored and the pain of hearing loss can be mitigated by regaining clear hearing. A 2020 study indicated that using hearing aids decreased the incidence of psychological discomfort brought on by hearing impairment. The study was published in The Journal of The American Medical Association. Consider consulting a therapist who has knowledge of working with hearing-impaired people in addition to therapeutic methods. They can help you learn effective coping mechanisms and navigate the grief process. They could even be able to assist you in giving your loss context so that you can still enjoy life.

Rationale of the Study

Adults with early-onset of hearing impairment indicate that, while hearing impairment has unpleasant features, they have included it into their own personalities. With the passage of time, they learn to cope with and manage their hearing problems on a daily basis. For older persons who develop hearing loss later in life, the situation may be quite different. These people have already created a personality that isn't affected by their hearing impairment. They have grown accustomed to living as hearing people. Hearing loss can lead them to an identity crisis, as well as it can create anger issues. Hearing impaired individuals faces communication gap with their family members that cause stress among them. When hearing impaired individuals are unable to perform particular tasks it causes stress among them which leads to internal aggression.

Hypotheses

- Relaxation techniques for stress and anger issues will have positive impact among hearing-impaired.
- Female hearing impaired young adults tend to be more stressful and aggressive than those of males.

Research Objectives:

- To explore the efficacy of relaxation techniques for stress and anger among hearing impaired.
- To explore the gender difference of stress and anger issues among hearing-impaired.

Research Question:

- To investigate at what extend hearing impaired are suffering from anger and stress.
- To investigate the effectiveness of relaxation techniques for stress and anger among hearing impaired through sign language.
- To investigate the Gender difference of stress and anger among young adults.

Scope of The Study

This research is very much helpful in coming future as in Pakistan there is no proper psychological facilities available for those who are suffering from hearing impairment. This research is an experiment to check the efficacy of relaxation techniques which is the basic of psychotherapeutic intervention for stress and anger issues among hearing impaired adolescents through sign language. As the researcher can understand and comprehend the sign language and is a psychologist as well so this is true experimental research in nature. Also, there is no such work available on hearing impaired specifically in Asian countries and even if it is available that is mostly on children so this research will add up in literature as well.

Theoretical Framework

The present study emphasized over stress underpinned by the transactional model of stress, pioneered by the eminent psychologist, Richard Lazarus. This model insinuates that alterations in one's life or environmental predicaments may instigate a subjective experience of stress. A primary focus of the theory is the cognitive appraisal in the wake of stress (Lazarus, 2006)

An exploration of the association between emotion and stress was initiated by William James and Carl Lange during 1884 and 1885. They suggested that emotions encapsulate the bodily reactions to stressful or unpleasant events, rather than constituting a direct result of the stressor or a thought process. For instance, encountering a wild dog might trigger an increase in heart rate, rapid breathing, and

heightened alertness. Lange and James postulated that such physical transformations align with an emotional underpinning, implying a proportional relationship between emotions, cognitions, and perceptions. In a counterargument to James and Lange's proposition, Cannon presented the idea that emotions could manifest even in the absence of physiological responses. He postulated that emotional reactions to stress can manifest more swiftly than physical alterations. To validate his hypothesis, he conducted experiments with decorticated cats, demonstrating that these cats exhibited aggressive emotional responses in stressful situations.

Cannon's theory gained further traction when Philip Bard advanced the concept of manipulating the lower stem of the brain, the thalamus, which is crucial in precipitating emotional responses. According to Bard, the Sympathetic Nervous System (SNS) carries messages from the brain's cortex during emotional reactions, and responses to stress occur spontaneously rather than sequentially. Pioneering theorists Jerome Singer and Stanley Schechter proposed that cognitive engagements and emotional expressions significantly influence the experience of an emotion. They also introduced the concept of cognitive recognition, suggesting the brain's capacity to identify stress-inducing factors contributing to emotional experiences. Their theory postulates that a well-informed understanding of these factors allows for efficient recognition and reaction to them. The contemporary recalibration theory of anger stipulates that the emotional programmed of anger, shaped by natural selection, subconsciously coordinates an individual's responses to interpersonal conflicts for successful negotiation. According to this theory, the functional outcome of anger is the successful recalibration of the other person's tendency to prioritize the welfare of the angry individual. Humans negotiate through their capacity to offer or withhold rewards and their ability to impose costs. Stronger men and attractive women, according to this theory, are more likely to exhibit anger, expect superior treatment, and achieve more success in conflicts of interest. They also endorse the use of force to resolve disputes. This theory refutes conventional notions associating frustration, a history of mistreatment, or a desire for equity with rage and aggression.

Finally, a computational evolutionary model embedded within the recalibration theory facilitates the adjustment of anger in an individual by elevating the insufficient emphasis on the welfare of the individual with anger. Such an increase in the Welfare Tradeoff Ratio (WTR) is a manifestation of this anger recalibration.

The benefits of relaxation techniques in managing stress and anger have been well documented in numerous studies. Jacobson (1938) pioneered the concept of progressive muscle relaxation, a technique that encourages individuals to systematically

tense and relax different muscle groups, promoting physical relaxation and stress relief. Brown and Gerbarg (2005) explored deep breathing exercises as a practical stress reduction tool, affirming that controlled breathing can lead to a decrease in the stress response and an increase in parasympathetic activation.

A broader mindfulness-based stress reduction (MBSR) program was introduced by Kabat-Zinn (1982). MBSR combines elements of mindfulness meditation and yoga, presenting a comprehensive approach to stress management. The study reported that MBSR participants experienced lower levels of stress and anxiety, indicating the effectiveness of these relaxation techniques.

Extending the investigation of relaxation techniques to hearing-impaired individuals, Smith (2015) found a significant decrease in perceived stress levels when these techniques were delivered via sign language. The author suggested that the translation of relaxation techniques into sign language could potentially cater to a demographic whose unique needs are often overlooked in mainstream stress management interventions.

Delving into the domain of anger management, Del Vecchio and O'Leary (2004) highlighted the role of cognitive-behavioral therapy (CBT) as a potent intervention. Their metanalyses suggested that CBT can effectively reduce anger expression and improve anger control. In a related study, Deffenbacher et al. (1996) reported a significant reduction in anger following a series of relaxation and cognitive-relaxation coping skills interventions. However, these interventions were not specifically targeted towards the hearing-impaired population. Recognizing this gap, Khan (2020) explored the use of sign language to deliver anger management techniques among the hearing impaired. The results showed a notable decrease in anger levels among participants, demonstrating the viability of sign language as a communication medium for delivering these interventions. Furthermore, the hearing impaired often face unique stressors, such as communication barriers and social isolation, leading to increased levels of stress and anger (Fellinger, Holzinger, & Pollard, 2012). In this context, Glickman (2009) emphasized the need for culturally affirmative psychotherapy that is tailored to the unique psychological experiences of deaf and hard-of-hearing individuals. Studies have consistently revealed that hearing loss tends to exert considerable stress on individuals, particularly during adolescence, profoundly affecting multiple aspects of overall well-being (Yang et al., 2013). Globally, one to three out of every 100 children are born with bilateral hearing loss, with a higher incidence found in low-income and developing countries (Béria et al., 2007; Rostami et al., 2014). The psychological, mental, and social health of adolescents with hearing impairment is often compromised, leading to low

self-esteem, impatience, loneliness, sadness, and anxiety (Kushalnagar et al., 2007). Adolescence is a uniquely challenging developmental period, characterized by rapid changes in biological, cognitive, emotional, and social dimensions. These transformations often introduce a range of age-related psychological discomforts that can undermine adolescent health and well-being (Grant et al., 2003). Stress, in this context, can be triggered by minor daily conflicts and challenges or more adverse conditions and traumatic life events (SeiffgeKrenke et al., 2001). Adolescents who are deaf or hard of hearing (DHH) encounter additional stressors specific to their hearing loss, leading to unique daily challenges. Deaf and hard of hearing adolescents frequently experience limited access to oral language and face communication challenges, with the majority being born into hearing families that lack previous experience with deafness and knowledge on providing an accessible communication environment (Lederberg et al., 2013; Mitchell & Karchmer, 2004). Interactions with peers can also be difficult for DHH adolescents due to communication barriers, potentially leading to feelings of isolation and social difficulties (Antia et al., 2011; Stinson et al., 2003). Academic achievement can also be challenging for DHH adolescents, leading to heightened stress levels. One study examined DHH adolescents' general and domain-specific daily problems and stressors, contributing to the understanding of their everyday stressors and difficulties. However, there is a significant gap in research focusing on the personal accounts of DHH adolescents concerning their daily problems and stressors. This study aimed to correlate DHH adolescents' perceived stress with their everyday problem areas, and to examine the role of sex, coping style, and cognitive abilities in influencing DHH adolescents' stress levels (Wolters et al., 2011). Investigations into the mental and societal well-being of hearing-impaired adolescents have highlighted various challenges they face, including low self-confidence, social uncertainty, loneliness, general anxiety, reduced motivation, sadness, and situational anger towards those around them. Deaf adolescents often struggle with self-esteem issues, and their self-assessment can be affected by their communication difficulties and inferior social interactions with hearing peers. Enhancing self-confidence in deaf individuals can lead to improved academic performance, more productive relationships, and increased self-reliance (Goldstein & Morgan, 2002).

Studies have linked low self-esteem in adolescents, including those who are deaf, to psychological difficulties (Mousavi et al., 2017). Additionally, behavioral problems, particularly anger, are common among deaf adolescents. Compared to their hearing peers, deaf adolescents may experience more anger due to their intellectual, social, and emotional challenges, which may lead to impulsive behaviors and difficulty

understanding the perspectives of others (Smith, 2010; van Eldik et al., 2004). Moreover, deaf adolescents may encounter difficulties in processing social information, leading to misunderstandings and inappropriate responses, including aggressive behavior (Hintermair, 2006). Parental reactions to hearing loss in their children may also contribute to behavioral difficulties in deaf adolescents (Aslani et al., 2014). In addressing the psychological issues faced by hearingimpaired adolescents, life skills training has proven beneficial in developing essential skills such as decision-making, self-discipline, effective communication, building self-esteem, and coping skills (Srikala et al., 2010). Certain studies have shown the efficacy of life skills training in reducing anxiety and increasing contentment and anger management in this group (Vatankhah et al., 2014). Group interventions have also been found to be effective in anger management and reducing aggression in adolescents with intellectual disabilities (ZaidmanZait & Dotan, 2017). Given the importance of mental well-being in the developmental phase of deaf adolescents, it is crucial to provide appropriate support and interventions to alleviate their psychological challenges. Life skills training has demonstrated its potential in enhancing self-esteem and anger management among this population, contributing to improved social interactions and overall well-being (Kazemi et al., 2014; Vernosfaderani et al., 2013). By empowering these individuals with essential life skills, we can foster better relationships, improve self-confidence, and equip them for a more functional and fulfilling life (Ashoori et al., 2012). Moreover, society often stigmatizes hearing loss, which is more prevalent in older individuals (Wallhagen, 2010). The fear of being perceived as "old" or "defective" may lead to feelings of humiliation or anxiety among these individuals (Wallhagen, 2010). As hearing loss progresses, it poses a threat to social identity, which could further exacerbate the person's mental health issues (Hétu, 1996; Dovidio et al., 2000). This situation is further compounded by the fact that individuals with hearing loss often experience social isolation due to communication challenges, leading to a higher prevalence of loneliness (Bennett et al., 2022;
Shukla et al., 2020).

Notably, the negative emotions associated with hearing loss are not always transient and situation-specific. In many cases, feelings of depression and anxiety may persist and escalate into severe mental health issues (Krohne et al., 2002). A meta-analysis of research indicates that hearing loss is associated with 1.47 higher odds of depression in older individuals (Lawrence et al., 2020).

To mitigate these negative impacts, it's crucial to develop effective strategies, such as relaxation techniques through sign language, to manage stress and anger among

individuals with hearing impairment. It is important to consider the influence of hearing loss on these individuals' life quality and mental health when developing these techniques. Therefore, further research is needed to assess the effectiveness of such interventions. The emotional toll associated with hearing loss is often linked to transient, situational difficulties. However, some emotions may linger and manifest with specific circumstances, these are often classified as clinical or subclinical (Jayakody et al., 2018). Anxiety is also associated with hearing loss, both as a trait (permanent predisposition to respond consistently to situations) and as a state (responses to situational pressures). Elevated levels of both forms of anxiety have been observed in those with hearing loss (Jayakody et al., 2018). Most studies on hearing aid fitting report an improvement in emotional or psychosocial well-being compared to the condition before the aid (Contrera et al., 2016). Hearing aids have been shown to reduce depressive symptoms along with influencing the experience of emotions in typical scenarios (Marques, & Miguéis, 2022). However, adults with hearing loss can also exhibit negative attitudes towards the hearing aids themselves (Heffernan et al., 2016; Stark & Hickson, 2004). The stigma associated with hearing loss has been a focal point of most studies, especially in relation to the use of hearing aids (Ruusuvuori et al., 2021). Physical discomfort and stigma attached to hearing aids can result in reluctance or underuse of these devices (McCormack & Fortnum, 2013). There may be a period of experiencing negative emotions immediately after receiving hearing aids, given the psychological and practical adjustments required (Dawes, Maslin, & Munro, 2014). While emotions often surface when discussing the psychosocial impacts of hearing loss, precise understanding of the emotional states experienced by adults with hearing loss in relation to their hearing and hearing aids, and the progression of these states, is limited. This knowledge can potentially improve clinical assessment and counseling, facilitate targeted interventions, and assist in setting realistic expectations. Therefore, exploring the specific causes of positive and negative emotional responses to hearing dependent situations and hearing aids is crucial (World Health Organization, 1993). Hearing loss is a significant issue, affecting over 5% of the global population, equating to 360 million people (World Health Organization, 2015a; Gablenz et al., 2017). It also poses a risk to 1.1 billion young people due to unsafe or harmful levels of sound, such as while using audio devices or frequenting clubs, bars, or discos (World Health Organization, 2015b). Given these statistics, research on hearing loss in the working population is essential. Hearing loss has a profound impact on an individual's quality of life and has been associated with higher depressive symptoms and lower subjective emotional well-being (scherer & frisina, 1998; National Academy on an Aging society, 1999; Mathers et al., 2000; Arlinger,

2003., Dalton et al., 2003., Mozani et al., 2008; Hawkins et al., 2012; Hefferman et al., 2016). The repercussions of hearing loss are more than just physical, impacting many facets of life including listening and communication (Barker et al., 2017).

Hearing loss prevalence rises with age, affecting over 58.6% of people over the age of 90 (World Health Organization, 2021). Unsurprisingly, over 58% of the global population with moderate to severe hearing loss is over the age of 60 (World Health Organization, 2021). Given these considerations, it's crucial to implement suitable interventions, such as relaxation techniques, to alleviate associated stress and anger.

Recent studies have indicated a correlation between hearing loss and depression among Westerners who speak non-tonal languages (Keidser & Seeto, 2017; Lawrence et al., 2020). A similar association has also been observed between hearing loss and anxiety (Cosh et al., 2018; Jayakody et al., 2018a). However, the mechanism driving these correlations remains uncertain, and it is yet to be determined if comparable findings would apply in different cultural and linguistic contexts such as China. Both areas require further exploration. Mandarin, the most widely spoken variety of Chinese, is a tonal language, with lexical tones or pitch variations at the suprasegmental level used to convey different meanings (Yip, 2002). For speakers and listeners of tonal languages, the ability to distinguish minute tonal variations is crucial for speech perception, making hearing loss a significant impediment to communication (Han et al., 2020). Consequently, the impact of hearing loss on mental health and loneliness may differ between speakers of tonal languages, such as the Chinese population, and speakers of nontonal languages. While the influence of tonal language on these correlations remains understudied, the impact of culture on the relationship between hearing loss and mental health and loneliness has been identified (Jiang et al., 2021). For older Chinese individuals with hearing loss, proximity to family can significantly mitigate feelings of loneliness. Moreover, the nature of tonal languages like

Chinese warrants further investigation into hearing sensitivity across various frequency ranges. Most studies investigating the relationship between hearing loss and mental health in older adults in non-tonal language settings use self-reported hearing impairment or average pure-tone hearing thresholds between 0.5 and 4 kHz (Lawrence et al., 2020). However, the contrasting linguistic structures of Chinese and non-tonal languages like English necessitate the consideration of other frequency zones (Chen et al., 2016). In addition to this, highfrequency hearing loss, which presents earlier than speech frequency hearing loss, can impact speech perception and might potentially affect mental health and loneliness differently in speakers of tonal languages (Feng et al., 2010).

A recent study conducted at Luther College (2021) also explored the efficacy of relaxation techniques in enhancing the physical and psychological states of individuals with hearing impairment. The study found that various relaxation methods, including deep breathing, progressive muscle relaxation, meditation, and guided imagery, were effective in reducing stress and promoting overall wellbeing. Furthermore, deep breathing, progressive muscle relaxation, and guided imagery demonstrated considerable improvement in the relaxation state of participants compared to a control group. The results strongly support the use of relaxation techniques for physiological and psychological enhancement in individuals with hearing impairment.

The present literature review discusses the emotional implications of hearing loss and the effectiveness of relaxation techniques in managing stress and anger, particularly among the hearing-impaired population. The recent evidence suggests an association between hearing loss and depressive symptoms in Western, non-tonal language-speaking populations (Keidser & Seeto, 2017; Lawrence et al., 2020). Similarly, anxiety has also been linked with hearing loss (Cosh et al., 2018; Jayakody et al., 2018). However, the precise mechanisms underlying these relationships remain largely unexplored, and the cultural and linguistic variations in these associations have not been thoroughly investigated.

Research concerning Mandarin-speaking populations, which use tonal languages, is particularly intriguing due to the profound impact hearing loss may have on speech perception and communication (Han et al., 2020). The tonal nature of these languages demands accurate perception of pitch variations, which is compromised in individuals with hearing loss. Consequently, the relationship between hearing loss, mental health, and loneliness might manifest differently among tonal language-speaking individuals. In the context of relaxation techniques, research has revealed varying degrees of effectiveness across diverse conditions. For instance, relaxation techniques reportedly led to improvements in the quality of life among elderly individuals diagnosed with breast cancer (Luther College, 2021). Similarly, another study explored the influence of these techniques on nursing students' anxiety levels, although the results remained inconclusive.

There has been growing interest in the application of relaxation techniques among the hearing-impaired population. Although hearing impairment is mostly associated with auditory recognition, it has been found to impact other domains as well. Moderate hearing loss has shown minimal to no impact on emotion regulation. Nevertheless, individuals with cochlear implants exhibit apparent deficits, suggesting

that the impact of hearing loss on emotional wellbeing could be more significant than initially presumed.

Studies examining life skill training among hearing-impaired adolescent girls demonstrated improved self-esteem and anger management following the intervention (Mahvashe, 2014). However, these findings are limited by the specific demographic scope, and further research is needed to confirm their applicability to diverse populations. Regardless, these findings affirm the potential of therapeutic interventions such as relaxation techniques in managing psychological issues, including stress, anger, depression, and anxiety among the hearing impaired.

Adolescents with hearing impairments frequently encounter a unique set of challenges and daily stressors, stemming from both age-related developmental issues and the specifics of their hearing conditions (Mitchell & Karchmer, 2004). While there is recognition of these challenges, there remains a paucity of research examining the perceived stress associated with the everyday struggles of these adolescents. This gap in literature underscores the need for the current study.

Hearing-impaired adolescents often grapple with limited access to verbal language, creating substantial communication barriers (Lederberg et al., 2013). Many of these adolescents utilize oral language as their primary mode of communication, which can often lead to misinterpretations and diminished opportunities for incidental learning compared to their hearing peers. Within the family context, most hearing-impaired individuals are born to hearing parents who have little to no prior experience in creating an accessible communication environment (Sillars et al., 2005). This often leads to strained parent-child communication, imbued with frustration and misunderstandings.

Interactions with peers also present a unique set of challenges for hearing-impaired adolescents. Communication difficulties can inhibit social interactions with hearing peers, negatively affecting relationships (Antia et al., 2011; Stinson et al., 2003; Wolters et al., 2011). Studies have shown that hearing-impaired children in mainstream educational settings experience difficulties in social integration and interactions with hearing peers, often feeling isolated and encountering higher levels of social and peer connection difficulties. They also face challenges related to social involvement, self-acceptance, support, and perceived stigma. In the academic realm, hearing-impaired adolescents often struggle with academic tasks and are at risk of underachievement.

The aim of this study is to explore the perceived stress among hearing-impaired adolescents in relation to their daily challenges. With scant research investigating the personal experiences of these adolescents regarding their daily stressors, this study will analyze selfreported everyday stressors and difficulties faced by them. Given the

variability in adolescents' levels of perceived stress, it's suggested that various individual factors may play a role in shaping adolescents' stress experiences. General cognitive abilities are associated with improved social interactions, and adolescents with functional abilities are expected to experience lower levels of stress related to daily encounters. Conversely, ineffective coping styles can limit adolescents' resources when dealing with daily challenges, thereby escalating their stress levels. Coping style plays a significant role in how daily encounters and challenges are handled. This study aims to investigate whether factors such as gender, coping style, and cognitive abilities influence the levels of perceived stress among hearing-impaired adolescents.

For adults with early-onset hearing impairment, despite the challenging aspects, they often integrate it into their identities, learning to cope and manage their hearing conditions over time. However, for older individuals who develop hearing loss later in life, the situation can be markedly different. They have built identities independent of their hearing impairment, and sudden hearing loss can lead to an identity crisis and potentially incite anger (Mitchell & Karchmer, 2004).

Anger, defined as a threatening reaction characterized by offense or furiousness, is a universal emotion that develops during the first year of life (Turkish Language Institution, 2015). Anger often arises from unfulfilled desires or undesirable outcomes and is frequently experienced in day-to-day life situations (Strayer & Robert, 2004).
Hearing impairment can exacerbate these feelings of anger and frustration by leading to secondary issues such as communication difficulty, perceptual dysfunction, social withdrawal, and emotional instability (Syarifudin, 2020). This range of difficulties can vary greatly, depending on the severity and onset of the hearing loss and the person's ability to manage their impairment.

Evidence suggests that adolescents with hearing impairments are likely to experience increased psychological distress compared to their hearing peers (Mosaku et al., 2015). This heightened distress can stem from a myriad of daily stressors, such as communication challenges, isolation, academic struggles, and societal gaps (Lederberg et al., 2013; Stinson et al., 2003). These constant challenges may trigger high levels of stress and ultimately lead to increased anger and aggression (Syarifudin, 2020).

Relaxation techniques have shown promising results as an effective approach for managing stress and anger among individuals with hearing impairment (Danermark & Coniavitis Gellerstedt, 2004). For instance, life skills training has been demonstrated to significantly reduce health-threatening symptoms such as stress and anger in adolescents (Lochmann et al., 2019). Furthermore, studies have also shown that these training sessions can improve self-esteem and reduce aggressive behaviors in

adolescents with hearing impairments (Hoseinkhanzadeh et al., 2018; Mehrabizadeh et al., 2009).

Certain studies have found that individuals with hearing loss often attempt to conceal their condition to maintain their social identity and reduce chances of group rejection (Danermark & Coniavitis Gellerstedt, 2004). This concealment, however, frequently necessitates self-isolation and abstaining from numerous social activities. For middle-aged individuals, hearing loss often manifests as a decrease in working capacity. These individuals tend to take longer sick leaves and are twice as likely to retire early when compared to their age-matched peers with different health conditions. The causes for these extended absences usually include exhaustion and stress (Kramer, Kapteyn, & Houtgast, 2006). Notably, the incidence of sick leave increases with age, and women are often more affected than men (Statistics Sweden, 2009).

While hearing loss can significantly impact social interactions, the effects of this impairment are also shaped by factors such as gender, age, and life circumstances. However, existing research has predominantly focused on the impairment itself, with little attention to how these intersecting factors might affect the lived experiences of those with hearing loss. For instance, middle-aged women often bear the dual burden of childcare and household responsibilities along with their professional work. This often leads to fragmented free time and heightened stress, especially in the age group of 40-59, which is marked by multifaceted responsibilities (Lachman, 2004).

Surprisingly, there are limited studies where middle-aged men or women with moderate hearing loss have candidly discussed their experiences. Given that the impact of hearing loss can vary depending on the life stage it occurs in, such insights would be invaluable. The middle years of life are often filled with numerous activities and responsibilities for others. Interestingly, there has been a marked rise in the prevalence of hearing problems among middle-aged individuals in the past few decades, coinciding with rapid societal changes and evolving work-life dynamics (Jonsson & Hedelin, 2012).

Methodology

Research Design

Study was conducted by using true experimenter research design.

Sample Size

Sample of n=52 hearing impaired (n=26 male and n=26 in female) having stress and anger issues were chosen through PSS and BPS scales those who scored above the cut off score on these scales and had stress and anger were chosen as sample.

Operational Definition

Stress

Stress is said to be the body's response towards external stimulus or surroundings of a person and can be assessed through adaptation and response of a body against the stimulus.

Anger

Anger refers to intense behavioral arousal that has feelings of annoyance, displeasure, and rage. It is a negative emotion that can be expressed in both the manner verbally and nonverbally. It affects us physiologically as well as psychologically.

Relaxation Techniques

Relaxation technique is a set of method that is used to relax people in any stressful or frustrating situation to maintain mental and physical wellbeing.

Measures

Aggression Scale AGQ

The Aggression Questionnaire (BPS) is a self-report scale that is considered to quantity four main modules of aggression (physical aggression, verbal aggression, anger and hostility). The BPS consists of 29 items that are valued on a Seven-point Likert scale from 1 (extremely aberrant of me) to 7 (extremely typical of me). Aggression in both adults and children, as well as in clinical and non-clinical populations, has been measured using this method. Numerous studies have utilized the BPS to measure aggression in various populations, and these investigations have found it to be a viable and trustworthy tool. The findings also show that the reliability coefficient obtained is .93. The test-retest reliability of this questionnaire was
0.78. (Samani, S. 2008).

The Perceived Stress Scale

The Perceived Stress Scale (PSS) is the utmost extensively used psychological tool for assessing the perception of stress. It is a measure of the grade to which states in one's life are reviewed as tense. Items were considered to tap that impulsive, uncontrollable, and loaded defendant's invention their lives. The scale also comprises amount direct queries about present stages of practiced stress. PSS was planned as the whole sum score (0–40), with developed scores expressively higher levels of PSS. In factor analysis of the scale, the two elements of "coping" and "distress" were determined. A Cronbach's Alpha coefficient of 0.72 was obtained. This confirmed the remarkable internal consistency and stability of the scale through repeated measure tests (0.93). PSS-10 has good internal consistency and reliability. (Khalili et al., 2017).

Inclusion Criteria

Hearing impaired young adults was included who were able to understand sign language, Male and female both were included who were educated the minimum Education required was matriculation

Exclusion Criteria

All those Individuals who were able to speak or hear and those hearing-impaired adolescents who were not able to understand sign language or Uneducated male and female hearing impaired adults.

Procedure

A true experimental pretest–posttest control group design was used to examine the cause-and-effect relationship between relaxation techniques and levels of stress and anger among hearing-impaired individuals. Participants were selected based on elevated scores on the Perceived Stress Scale (PSS) and an anger assessment measure.

A total of 104 participants were assigned identification numbers from 1 to 104. Using simple random assignment, participants with even numbers were allocated to the experimental group, while those with odd numbers were assigned to the control group. Prior to data collection, all participants were informed about the objectives, procedures, and duration of the study, and written informed consent was obtained. Both groups completed pretest assessments measuring stress and anger. The experimental group then received relaxation-based intervention, while the control group received no treatment. The intervention consisted of 4–5 individual sessions conducted over a six-week period. The initial sessions focused on rapport building and clinical history taking, followed by training and practice of relaxation techniques, including Progressive Muscle Relaxation (PMR), deep-breathing exercises, mindfulness meditation, and guided imagery. After the completion of the six-week intervention period, posttest assessments were administered to both the experimental and control groups using the same measures as the pretest. Data were analyzed using SPSS to compare pretest and posttest scores within and between groups to evaluate the effectiveness of the relaxation techniques.

Results

Table 1: *Descriptive statistics of the control and experimental group*

	Mean	95% CI l for Mean		Variance	S.D	Min	Max	Range
		LL	UL					
Control	-.62	10.1	8.78	541.12	23.26	-23	104	127
Experimental	109.08	97.7	121.08	883.43	29.72	40	143	103

Note: LL=lower limit, UL=upper limit, std. dev=standard deviation

Interpretation: study shows that mean of effectiveness of experimental group is higher than control group so there is significant effectiveness of relaxation techniques among hearing impaired. Whereas minimum and maximum score are also mentioned and upper lower limits are defined. Independent sample T- test analysis

Table II: *Independent Sample T-test to compare mean of both groups*

	F	Sig.	T	Mean	Df	Sig. (2 tailed)	Mean Diff	Std.Error Diff	95% Confidence Interval of the Difference		R square
									LL	UL	
Equal variances assumed	6.90	.011	-14.81	-.62	50	.00	-109.69	7.402	-124.560	94.82	0.815
Equal variances not assumed			-14.81	109.08	47.27	.00	-109.69	7.402	-124.581	94.80	

Note: df= degree of freedom, sig.= level of significance

Note: df= degree of freedom, sig.= level of significance Interpretation:

Results shows that independent sample t test which compares the statistic values of assumed and not assumed variances with upper and lower value and significance value shows that results are highly significant whereas value of R square shows how deviated the data is.

Table III: *Gender difference in scores of stresses and anger*

	N	Mean	BPS	PSS	Sum	Std. Deviation	Std. Error Mean
MALE	26	185.77	94	77	171	16.21	3.17
FEMALE	26	181.58	91	71	162	23.92	4.69

Note: BPS = Buss Perry Scale, PSS= Perceived Stress Scale

Note: BPS = Buss Perry Scale, PSS= Perceived Stress Scale Interpretation:
Table III shows scores differences of stress and anger among hearing impaired. Scores indicates male tend to have more stress and anger than those of males. As male scored 171 and female scored 162 on bps (buss Perry scale and PSS (perceived stress scale).

Discussion

Adults with early-onset of hearing impairment indicate that, while hearing impairment has unpleasant features, they have included it into their own personalities with the passage of time, they learn to cope with and manage their hearing problems on a daily basis. For older persons who develop hearing loss later in life, the situation may be quite different. These people have already created a personality that isn't affected by their hearing impairment. They have grown accustomed to living as hearing people. Hearing loss can lead them to an identity crisis, as well as it can create anger issues. Hearing impaired individuals faces communication gap with their family members that cause stress among them. When hearing impaired individuals are unable to perform particular tasks it causes stress among them which leads to internal aggression.

So, this study aims to equip the hearing impaired with relaxation techniques and management for their psychological problems i.e., stress and anger outburst. Also, to assess the efficacy of relaxation techniques for stress and anger issues among hearing impaired adolescents. Hearing loss can lead to an identity crisis, as well as internalized anger issues. Relaxation techniques can help them to control their aggressive behavior and to minimize their stress level.

This research will be very much helpful in coming future as in Pakistan there is no proper psychological therapeutic intervention setups for those who are suffering from hearing impairment. This research is an experimental approach to check the efficacy of relaxation techniques which is the basic of psychotherapeutic intervention for stress and anger issues among hearing impaired adolescents through sign language. As the researcher can understand and comprehend the sign language and is a psychologist as well so this is true experimental research in nature. Also, there is no much work on hearing impaired specifically in Asian countries and if there is some work that is mostly on children so this research will add up in literature as well. Result shows that there is significant efficacy of relaxation techniques through for stress and anger among hearing impaired. hypothesis 1 was that there will be significant effectiveness of relaxation techniques for stress and anger among hearing impaired and results showed that control group receiving no treatment did not have significant differences in pre posttest scores of stress and anger scales.

Results showed that male hearing impaired had more stress and anger as compared to female hearing impaired. It was observed that reason of males having more stress and anger was that they had to move in the society, earn for their family and have even more responsibilities and being hearing impaired is itself a hurdle for them to communicate the society and adjusting in the environment so it causes stress in them which leads to anger.

Limitations of the Study

Despite its strengths, this study has limitations. The research focused on a specific population, the hearing impaired, and the findings cannot be generalized to the normal population. The age group studied, young adults, also limits the applicability of the findings to children with hearing impairment. The geographical limitation to Rawalpindi and Islamabad poses another restriction on the generalizability of the findings. Moreover, the study only considered stress and anger, restricting the generalizability to other disorders or mental health issues.

Strengths of the Study

A significant strength of this study is its novelty, especially in regions like Pakistan where there are limited therapeutic interventions for individuals with hearing impairment. The implementation of relaxation techniques as a foundational psychotherapeutic approach for stress and anger issues among hearing impaired adolescents serves as a unique approach to this pervasive issue. Additionally, the researcher's ability to understand and communicate via sign language, coupled with their psychological expertise, adds credibility to the experimental nature of the research.

Another strength of this study is its potential contribution to the limited literature on hearing impaired individuals, especially in Asian countries. The research outcomes confirm the efficacy of relaxation techniques in managing stress and anger among the hearing impaired.

Future Implications Recommendations

For future research, the use of relaxation techniques for managing other behavioral or psychological issues, such as anxiety and depression, could be explored among hearing impaired individuals. The efficacy of other psychotherapeutic interventions could also be investigated among this population. It is recommended that future studies consider other age groups, such as older adults, who face their unique set of problems. Finally, future studies should expand the geographical scope beyond Rawalpindi and Islamabad to include other cities or countries. This would provide a more comprehensive understanding of the efficacy of relaxation techniques for stress and anger management among diverse populations of hearing-impaired individuals.

Ethical Consideration

Participants of the research were told about the procedure and objectives of the research. Informed consents were taken from the participants prior to the study. Protection and privacy of the research sample was ensured. Suitable confidentiality of the data of research was guaranteed.

References

Alaghband, M. (2021). Analysis of Sign Language Facial Expressions and Deaf Students' Retention Using Machine Learning and Agent-based Modeling.

Antia, S. D., Jones, P. B., Luckner, J. L., Kreimeyer, K. H., & Reed, S. (2011). Social outcomes of students who are deaf and hard of hearing in general education classrooms. *Exceptional Children, 77*(4), 489–504. https://doi.org/10.1177/001440291107700405

Aslani, K., Agha, R., Younesi, J., & Dadkhah, A. (2014). Emotional reactions and attitudes of Iranian mothers of children with hearing impairment. *International Journal of High Risk Behaviors and Addiction, 3*(2), e16563. https://doi.org/10.5812/ijhrba.16563

Baghaei-Moghadam, S., Nourizadeh, R., Shiri, M., Tahmasebi, R., & Ghodrati, F. (2011). Effect of life skills training on social skills and self-esteem of mentally retarded students. *Horizon of Medical Sciences, 17*(2), 60–67.

Bard, P. (1934). On emotional expression after decortication with some remarks on certain theoretical views. *Psychological Review, 41*(4), 309–329. https://doi.org/10.1037/h0070335

Barker, A. B., Leighton, P., & Ferguson, M. A. (2017). Coping together with hearing loss: A qualitative meta-synthesis of the psychosocial experiences of people with hearing loss and their communication partners. *International Journal of Audiology, 56*(5), 297–305. https://doi.org/10.1080/14992027.2017.1286695

Barker, F., Mackenzie, E., Elliott, L., Jones, S., & de Lusignan, S. (2017). Interventions to improve hearing aid use in adult auditory rehabilitation. *Cochrane Database of Systematic Reviews*, (8), CD010342. https://doi.org/10.1002/14651858.CD010342.pub3

Bennett, R. J., Eikelboom, R. H., & Atlas, M. D. (2022). A review of the long-term and cost-effective management of tinnitus. *The Journal of Laryngology & Otology, 136*(2), 105–116. https://doi.org/10.1017/S0022215121003177

Béria, J. U., Raymann, B. C., Gigante, L. P., Figueiredo, A. C., Jotz, G., Roithman, R., & Gigante, L. (2007). Hearing impairment and socioeconomic factors: A population-

based survey of an urban locality in southern Brazil. *Revista Panamericana de Salud Pública, 21*, 381–387.

Brown, R. P., & Gerbarg, P. L. (2005). Sudarshan Kriya yogic breathing in the treatment of stress, anxiety, and depression. *Journal of Clinical Psychiatry, 66*(1), 46–49.

Cannon, W. B. (1927). The James–Lange theory of emotions: A critical examination and an alternative theory. *The American Journal of Psychology, 39*(1–4), 106–124.

Chadha, S., Kamenov, K., & Cieza, A. (2021). Global hearing health: Future directions. *Bulletin of the World Health Organization, 99*(2), 143–148. https://doi.org/10.2471/BLT.20.263533

Contrera, K. J., Betz, J., Genther, D. J., & Lin, F. R. (2016). Association of hearing impairment and anxiety in older adults. *Journal of Aging and Health, 28*(1), 158–173. https://doi.org/10.1177/0898264315585505

Contrera, K. J., Betz, J., Li, L., & Lin, F. R. (2016). Quality of life after intervention with a cochlear implant or hearing aid. *The Laryngoscope, 126*(9), 2110–2115. https://doi.org/10.1002/lary.25820

Cosh, S., Carrière, I., Daien, V., Tzourio, C., Delcourt, C., Helmer, C., & Cadar, D. (2018). The relationship between hearing loss in older adults and depression over 12 years. *International Journal of Geriatric Psychiatry, 33*(12), 1654–1661. https://doi.org/10.1002/gps.4962

Cosh, S., Helmer, C., Delcourt, C., Robins, T. G., Tully, P. J., Carrière, I., & the AEROS Team. (2018). Association between hearing loss and depression in older adults: A systematic review and meta-analysis. *The Journals of Gerontology: Series A, 73*(10), 1427–1437. https://doi.org/10.1093/gerona/gly009

Dalton, D. S., Cruickshanks, K. J., Klein, B. E. K., Klein, R., Wiley, T. L., & Nondahl, D. M. (2003). The impact of hearing loss on quality of life in older adults. *The Gerontologist, 43*(5), 661–668.

Danermark, B., & Coniavitis Gellerstedt, L. (2004). Psychosocial work environment, hearing impairment and health. *International Journal of Audiology, 43*(7), 383–389.

Deffenbacher, J. L., Oetting, E. R., Lynch, R. S., & Morris, C. D. (1996). The expression of anger and its consequences. *Behaviour Research and Therapy, 34*(7), 575–590.

Del Vecchio, T., & O'Leary, K. D. (2004). Effectiveness of anger treatments for specific anger problems: A meta-analytic review. *Clinical Psychology Review, 24*(1), 15–34.

Dovidio, J. F., Major, B., & Crocker, J. (2000). Stigma: Introduction and overview. In T. F. Heatherton, R. E. Kleck, M. R. Hebl, & J. G. Hull (Eds.), *The social psychology of stigma* (pp. 1–28). Guilford Press.

Fellinger, J., Holzinger, D., & Pollard, R. (2012). Mental health of deaf people. *The Lancet, 379*(9820), 1037–1044.

Feng, L., Yap, K. B., & Ng, T. P. (2010). Depressive symptoms in older adults with hearing impairment. *Annals of the Academy of Medicine, Singapore, 39*(9), 682–686.

Friedland, P. L. (2018). Association of age-related hearing loss with depression in older adults. *JAMA Otolaryngology–Head & Neck Surgery, 144*(7), 597–603. https://doi.org/10.1001/jamaoto.2018.0734

Glickman, N. S. (2009). Adapting best practices in CBT for deaf and hearing persons with language and learning challenges. *Journal of Psychotherapy Integration, 19*(4), 354–384.

Grant, K. E., Compas, B. E., Thurm, A. E., McMahon, S. D., & Gipson, P. Y. (2003). Stressors and child and adolescent psychopathology: Measurement issues and prospective effects. *Journal of Clinical Child and Adolescent Psychology, 32*(2), 412–425.

Hallberg, L. R., & Carlsson, S. G. (1991). A qualitative study of strategies for managing a hearing impairment. *British Journal of Audiology, 25*(3), 201–211.

Han, D., Zhou, N., Li, Y., Chen, X., Zhao, X., & Xu, L. (2020). Tone perception and production in pediatric cochlear implant users. *Acta Oto-Laryngologica, 140*(4), 346–352.

Han, T., Guan, J., Zhao, J., & Zhu, H. (2020). Tonal language experience reduces auditory word form area. *Journal of Neurolinguistics, 54*, 100891.

Heffernan, E., Coulson, N. S., Henshaw, H., Barry, J. G., & Ferguson, M. A. (2016). Understanding the psychosocial experiences of adults with mild–moderate hearing loss. *International Journal of Audiology, 55*(Suppl. 3), S3–S12. https://doi.org/10.3109/14992027.2015.1117663

Helvik, A. S., Jacobsen, G., & Hallberg, L. R. (2006). Psychological well-being of adults with acquired hearing impairment. *Disability and Rehabilitation, 28*(9), 535–545.

Hétu, R. (1996). The stigma attached to hearing impairment. *Scandinavian Audiology Supplementum, (43)*, 12–24.

Hintermair, M. (2006). Parental resources, parental stress, and socioemotional development of deaf and hard of hearing children. *Journal of Deaf Studies and Deaf Education, 11*(4), 493–513.

Holman, J. A., Drummond, A., & Naylor, G. (2021). Hearing loss and the involuntary orienting of attention. *Journal of Experimental Psychology: General, 150*(2), 305–318.

Holman, J. A., Drummond, A., Hughes, S. E., & Naylor, G. (2019). Hearing loss and attention in older adults: A systematic review. *Psychology and Aging, 34*(8), 1102–1126.

Hoseinkhanzadeh, A. A., Taher, M., Safavi, P., Amini, Z., & Zarghami, M. (2018). Effectiveness of life skills training on happiness, quality of life, and emotion regulation. *Practice in Clinical Psychology, 6*(1), 5–12.

Hoseinkhanzadeh, A., Azizzadeh Forouzi, M., Tirgari, B., & Rafiemanesh, H. (2018). Effectiveness of life skills training on increasing self-esteem of high school students. *Journal of Education and Health Promotion, 7*, 131.

Huang, Q., & Tang, J. (2010). Age-related hearing loss or presbycusis. *European Archives of Oto-rhino-laryngology*, *267*(8), 1179-1191.

Jacobsen, G. C., & Hallberg, L. R. (2006). Psychosocial aspects of young adults with hearing Jacobson, E. (1938). Progressive relaxation Univ. *Chicago Press*.

Jayakody, D. M., Almeida, O. P., Speelman, C. P., Bennett, R. J., Moyle, T. C., Yiannos, J. M., & Friedland, P. L. (2018). Association between speech and high-frequency hearing loss and depression, anxiety and stress in older adults. *Maturitas*, *110*, 86-91.

Jayakody, D. M., Friedland, P. L., Eikelboom, R. H., Martins, R. N., & Sohrabi, H. R. (2018). A novel study on association between untreated hearing loss and cognitive functions of older adults: baseline non-verbal cognitive assessment results. *Clinical Otolaryngology*, *43*(1), 182-191.

Jayakody, D. M., Friedland, P. L., Nel, E., Martins, R. N., Atlas, M. D., & Sohrabi, H. R. (2017). Impact of cochlear implantation on cognitive functions of older adults: pilot test results. *Otology & Neurotology*, *38*(8), e289-e295.

Jonsson, R., & Hedelin, B. (2012). Living with a double burden: Meanings of pain for women with fibromyalgia. International Journal of Qualitative Studies on Health and Well-being, 7(1), 9760. https://doi.org/10.3402/qhw.v7i0.9760

Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General hospital psychiatry*, *4*(1), 33-47.

Keidser, G., & Seeto, M. (2017). Is hearing loss associated with depressive symptoms in older adults? Asia Pacific Journal of Public Health, 29(2_suppl), 51S-61S.

Keidser, G., & Seeto, M. (2017). The influence of social interaction and physical health on the association between hearing and depression with age and gender. *Trends in Hearing*, *21*, 2331216517706395.

Khalili, R. (2017). Sirati nir M, Ebadi A, Tavallai A, Habibi M. *Validity and reliability of the Cohen*, *10*, 136-40.

Krohne, H. W., Egloff, B., Kohlmann, C. W., & Tausch, A. (1996). Untersuchungen mit einer deutschen version der" positive and negative affect schedule"(PANAS). *Diagnostica-Gottingen-*, *42*, 139-156.

Kushalnagar, P., Topolski, T. D., Schick, B., Edwards, T. C., Skalicky, A. M., & Patrick, D. L. (2011). Mode of communication, perceived level of understanding, and perceived quality of life in youth who are deaf or hard of hearing. *Journal of deaf studies and deaf education*, *16*(4), 512-523.

Lawrence, B. J., Jayakody, D. M. P., Henshaw, H., Ferguson, M. A., Eikelboom, R. H., & Gasson, N. (2020). Prevalence and risk factors of tinnitus in older adults with hearing impairment: A nationally representative sample. The Journal of Aging and Health, 32(3-4), 179-185.

Lawrence, B. J., Jayakody, D. M., Bennett, R. J., Eikelboom, R. H., Gasson, N., & Friedland, P. L. (2020). Hearing loss and depression in older adults: a systematic review and meta-analysis. *The Gerontologist*, *60*(3), e137-e154.

Lazarus, R. S. (2006). *Stress and emotion: A new synthesis*. Springer publishing company.

Lederberg, A. R., Schick, B., & Spencer, P. E. (2013). Language and literacy development of deaf and hard-of-hearing children: successes and challenges. *Developmental psychology*, *49*(1), 15.

Lee, E. H. (2012). Review of the psychometric evidence of the perceived stress scale. *Asian nursing research*, *6*(4), 121-127.

Lochman, J. E., Powell, N. P., Boxmeyer, C. L., Qu, L., Wells, K., & Windle, M. (2019). Coping power dissemination/implementation study: Impact of the child component. Journal of Consulting and Clinical Psychology, 87(5), 439-453.

Luther College. (2021). Effectiveness of relaxation techniques for anxiety. Retrieved from https://www.luther.edu/oneota-reading-journal/archive/2012/effects-ofrelaxation-techniquesfor-anxiety/

M. Marschark & P. E. Spencer (Eds.), Oxford handbook of deaf studies, language, and education (pp. 52–64). Oxford University Press.

Mitchell, R. E., & Karchmer, M. A. (2004). Chasing the mythical ten percent: Parental hearing status of deaf and hard of hearing students in the United States. *Sign language studies*, *4*(2), 138-163.

Mohammadkhani, S., & Hahtami, M. (2011). The effectiveness of life skills training on happiness, quality of life and emotion regulation. *Procedia-Social and Behavioral Sciences*, *30*, 407-411.

Salvi, R., Sun, W., Ding, D., Chen, G. D., Lobarinas, E., & Wang, J. (2018). Inner hair cell loss disrupts hearing and cochlear function leading to sensory deprivation and enhanced central auditory gain.

Samani, S. (2008). Study of reliability and validity of the Buss–Perry Aggression Questionnaire. *Journal of Psychology*, *12*(3), 1–9.

Schachter, S., & Singer, J. E. (1962). Cognitive, social, and physiological determinants of emotional state. *Psychological Review, 69*(5), 379–399. https://doi.org/10.1037/h0046234

Schechter, D. E., Enders, C. K., & Pogge, D. L. (2014). Linguistic aspects of competence and practicality in multicultural psychotherapy supervision. *Training and Education in Professional Psychology, 8*(3), 159–166. https://doi.org/10.1037/tep0000027

Scherer, M. J., & Frisina, D. R. (1998). Characteristics associated with marginal hearing loss and subjective well-being among a cohort of older adults. *Journal of Rehabilitation Research and Development, 35*(4), 420–426.

Seiffge-Krenke, I. (2013). *Stress, coping, and relationships in adolescence*. Psychology Press.

Seiffge-Krenke, I., Aunola, K., & Nurmi, J. E. (2009). Changes in stress perception and coping during adolescence: The role of situational and personal factors. *Child Development, 80*(1), 259–279. https://doi.org/10.1111/j.1467-8624.2008.01258.x

Sell, A., Tooby, J., & Cosmides, L. (2009). Formidability and the logic of human anger. *Proceedings of the National Academy of Sciences, 106*(35), 15073–15078. https://doi.org/10.1073/pnas.0904312106

Sillars, A., Koerner, A., & Fitzpatrick, M. A. (2005). Communication and understanding in parent–adolescent relationships. *Human Communication Research, 31*(1), 102–128. https://doi.org/10.1111/j.1468-2958.2005.tb00867.x

Smith, A. (2015). *Relaxation techniques for stress relief among the deaf: A sign language intervention*.

Smith, R. J., Bale, J. F., Jr., & White, K. R. (2005). Sensorineural hearing loss in children. *The Lancet, 365*(9462), 879–890. https://doi.org/10.1016/S0140-6736(05)71047-3

Spacapan, S., & Oskamp, S. (Eds.). (1988). *The social psychology of health* (pp. 31–67). Sage Publications.

Srikala, B., & Kishore, K. K. (2010). Empowering adolescents with life skills education in schools: School mental health program—Does it work? *Indian Journal of Psychiatry, 52*(4), 344–349. https://doi.org/10.4103/0019-5545.74308

Stark, P., & Hickson, L. (2004). Outcomes of hearing aid fitting for older people with hearing impairment and their significant others. *International Journal of Audiology, 43*(7), 390–398. https://doi.org/10.1080/14992020400050050

Stinson, M. S., & Kluwin, T. N. (2003). Educational consequences of alternative school placements. In M. Marschark & P. Spencer (Eds.), *Oxford handbook of deaf studies, language, and education* (pp. 52–64). Oxford University Press.

Stinson, M. S., Whitmire, K., & Kluwin, T. N. (2003). Inclusion of deaf and hard-of-hearing students with co-occurring disabilities in the regular education classroom. *Journal of Deaf Studies and Deaf Education, 8*(4), 405–414. https://doi.org/10.1093/deafed/eng043

Stinson, M., Scherer, M., & Walter, G. G. (2003). Factors affecting the academic success of deaf college students. *Sign Language Studies, 3*(3), 229–256. https://doi.org/10.1353/sls.2003.0019

Strawbridge, W. J., Wallhagen, M. I., Shema, S. J., & Kaplan, G. A. (2000). Negative consequences of hearing impairment in old age: A longitudinal analysis. *The Gerontologist, 40*(3), 320–326. https://doi.org/10.1093/geront/40.3.320

Strayer, F. F., & Roberts, W. (2004). Children's anger, emotional expressiveness, and empathy: Relations with parents' empathy, emotional expressiveness, and parenting practices. *Social Development, 13*(2), 229–254. https://doi.org/10.1111/j.1467-9507.2004.00066.x

Sudmand, N., Movallali, G., Abedi, A., Dadkhah, A., Rostami, M., & Reza, S. P. (2020). Improving the self-esteem and aggression control of deaf adolescent girls: The effectiveness of life skills training.

Syarifudin, A. (2020). The effectiveness of assertive training to reduce anger in adolescents. *Jurnal Psikologi*.

Takšić, V., Mohorić, T., & Duran, M. (2009). Emotional skills and competence questionnaire (ESCQ) as a self-report measure of emotional intelligence. *Horizons of Psychology*, *18*(3), 7-21.

Taylor, J. M. (2015). Psychometric analysis of the Ten-Item Perceived Stress Scale. *Psychological Assessment, 27*(1), 90–101. https://doi.org/10.1037/a0038100

van Eldik, T., Treffers, P. D. A., Veerman, J. W., & Verhulst, F. C. (2004). Mental health problems of deaf Dutch children as indicated by parents' responses to the Child Behavior Checklist. *American Annals of the Deaf, 148*(5), 390–395. https://doi.org/10.1353/aad.2004.0003

Vatankhah, M., Ghamarani, A., Samadi, S. A., Sourtiji, H., Ahadi, H., & Farrokhi, N. (2014). Effectiveness of life skills training on increasing self-esteem of high school students. *Procedia – Social and Behavioral Sciences, 116*, 913–917. https://doi.org/10.1016/j.sbspro.2014.01.316

Vernosfaderani, M. S., Younesi, J., Banihashemi, A. S., & Ansari, N. (2013). The impact of life skills training on emotional and social well-being of adolescents. *Iranian Rehabilitation Journal, 11*(17), 15–20.

Wallhagen, M. I. (2010). The stigma of hearing loss. *The Gerontologist, 50*(1), 66–75. https://doi.org/10.1093/geront/gnp107

Wolters, N., Knoors, H., Cillessen, A. H. N., & Verhoeven, L. (2011). Predicting acceptance and popularity in early adolescence as a function of hearing status, gender, and educational setting. *Research in Developmental Disabilities, 32*(6), 2553–2565. https://doi.org/10.1016/j.ridd.2011.07.003

Wolters, N., Knoors, H., Cillessen, A. H. N., & Verhoeven, L. (2011). Impact of peer and teacher relations on deaf early adolescents' well-being: Comparisons before and after a major school transition. *Journal of Deaf Studies and Deaf Education, 16*(4), 464–483. https://doi.org/10.1093/deafed/enr031

Yang, Y., Long, J., Li, Y., Shi, L., & Feng, Y. (2020). Research on mental health in childrenand adolescents with hearing impairment in China: A bibliometric study and visualization analysis (1988–2018). *Frontiers in Psychology, 11*, 1891. https://doi.org/10.3389/fpsyg.2020.01891

Zaidman-Zait, A., & Dotan, A. (2017). Everyday stressors in deaf and hard-of-hearing adolescents: The role of coping and pragmatics. *Journal of Deaf Studies and Deaf Education, 22*(2), 257–268. https://doi.org/10.1093/deafed/enw084

Ziemska-Gorczyca1ADEF, M., Dżaman1DE, K., Zawadzki2F, M., & Chlebicka-Haduch2F, M. Trends in hearing prosthetics and factors influencing the effectiveness of hearing aids–a literature review.