

Audiology Students' Perception of Hybrid Simulation Experiences: Qualitative Evaluation of Debriefing Sessions

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Abstract

Simulation-based research is still new in the audiology field and requires more research to better understand students' perspectives on standardized patients/parents (SPs) and manikins use. There is also limited research about debriefing practices in audiology. This qualitative study used a baby simulator and SPs to evaluate audiology students' reflection during three debriefing sessions conducted at the University of Arkansas for Medical Science (UAMS) Simulation Center. Seventeen Doctor of Audiology (AuD) students participated in the simulation event, and the data were collected using the transcripts of videotaped debriefing sessions. The qualitative content analysis of the transcripts revealed eight sub-themes: support, compassion, respect, teamwork, limited academic knowledge and practice, insufficient communication skills, low self-confidence, and undesirable emotional reactions. These items, in turn, fell under two main themes of Qualification and Lack of Preparation. Both main themes were included in one core category named Professional Dispositions and Competencies. Study findings indicated that audiology students demonstrated both promising professional dispositions and competencies as well as characteristics that may hinder students from developing their professional abilities. Thus, audiology programs will benefit from simulation use, including debriefing sessions, to emphasize professional efficiency.

Key Words: simulation, debriefing, reflection, audiology, counseling, hearing loss, hearing screening, standardized parents, manikins, dispositions, competency

Acronyms: ABR = auditory brainstem response, ACE = alternative clinical education, AP = active participant, ASHA = American Speech-Language-Hearing Association, CAA = Council for Academic Accreditation, CAE = Canadian Aviation Electronics, CBS = computer based simulation, IPE = interprofessional education, NASP = National Association of School Psychologists, NCATE = National Council for Accreditation of Teacher Education, NCHAM = National Center for Hearing Assessment and Management, NHS = newborn hearing screening, OAEs = otoacoustic emissions, OP = observer participant, SLP = speech-language pathologist, SP = standardized patient/parent, SSH = Society for Simulation in Healthcare

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Introduction

Background

Simulation is an activity designed to mimic real functions or behaviors for education and training purposes. In medical education, simulation can help to replicate realistic clinical scenarios rather than waiting for them to occur in real environments (Norman, 2012) and bridge the gap between academic and clinical performance where traditional clinical placement cannot meet that need (Quail,

Brundage, Spitalnick, Allen, & Beilby, 2016). Simulation is not just "playing with dolls" (Rosen, 2013, p. 5); it is an effective educational tool that provides powerful learning experiences (Siemens & Tittenberger, 2009). The use of simulation has increased in health education facilities to achieve patient safety and provide effective learning experiences to healthcare students. Therefore, most healthcare professional educators cannot think of a world without simulation (Rosen, 2013).

The Society for Simulation in Healthcare (SSH) had about 200 members in 2004 when it was first established, growing to more than 3,200 members from different healthcare disciplines by the year 2016 (SSH, 2016). Increased simulation use in health sciences education has also occurred in the fields of audiology and speech-language pathology. The American Speech-Language-Hearing Association (ASHA) now recognizes simulation use as an alternative clinical education (ACE) method for pre-professional education and professional continuing education (ASHA, 2016a; 2016b). Speech-language pathology students can count up to 75 hours (25%) of direct contact hours through ACE toward their ASHA clock hours (ASHA, 2016a). However, counting direct contact hours through ACE is currently not offered for audiology students.

Students in audiology (or any other field) are expected to develop professional dispositions and specific competencies during pre-professional simulated learning environments (e.g., simulation centers). Awareness and development of a professional disposition is fundamental to the development of competence as a professional. According to the National Council for Accreditation of Teacher Education's (NCATE) glossary of terms, professional dispositions are "professional attitudes, values, and beliefs demonstrated through both verbal and nonverbal behaviors as educators interact with students, families, colleagues, and communities" (NCATE, 2008, pp. 89–90). Gavett and Peaper (2007) suggested that the clinical educator must not only teach critical thinking skills, but also nurture this disposition toward the development of clinical thinking and clinical decision making skills. One way to accomplish these objectives is by asking questions that activate the student's knowledge and encourage analysis, synthesis, and evaluation of the situation.

There are five typical learning outcomes that may result from simulated learning experiences. These outcomes include knowledge, skill performance, self-confidence, critical thinking, and learner satisfaction (Jeffries, 2005). The ability of applying knowledge and experience to perform a task is known as a skill (Abbatt, 1992). Clinical skills can be cognitive (e.g., deciding to fit hearing aids), psychomotor (e.g., taking an ear impression), and communication (e.g., breaking bad news, i.e., a child has hearing loss) skills. Professional competency consists of many skills and is defined as "the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflections, in daily practice for the benefit of the individual and community being served" (Epstein & Hundert, 2002, p. 226).

Healthcare professions' curricula may have no formal courses that teach professional dispositions and competencies, such as communication and teamwork skills. Faculty members (or clinical preceptors) may not be able to address students' proficiency or weakness in dispositions and competencies due to the lack of these courses and appropriate assessments (Foster & McAdams, 2009).

Moreover, preceptors in traditional clinical placements focus on patient care while educators in simulation training focus on students' learning and development. "When I was in medical school I spent hundreds of hours looking into a microscope, a skill I never needed to know or ever use; yet, I did not have a single class that taught me communication and teamwork skills, something I need every day I walk into the hospital" (Pronovost & Vohr, 2010, p. 46). Simulation training appears to be an effective alternative method to assess professional dispositions and competencies. Simulation training also supports student practice, provides clinical practice challenges (Bell & Kozlowski, 2007), and improves knowledge, skills, self-confidence, and other technical and non-technical skills of students from different health disciplines (Alanazi, Nicholson, & Thomas, in press).

Simulation in healthcare consists of simulation types designed specifically for educational purposes, such as manikins and standardized patients/parents (SPs). These simulation types can be used separately or together in the same simulation experience. When the simulation event includes a combination of two or more simulation types it is known as hybrid simulation (Girzadas et al., 2009). Manikins (i.e., simulators) are simple or complex models of the human body, which have been successfully used in both teaching and assessing clinical skills (Blackstock & Jull, 2007). SPs are individuals trained to present scenarios and act as real patients/parents to teach and evaluate professional competency in a safe environment. The use of SPs is one of the most common forms of physical examination and communication skill assessment in medical education (Epstein & Hundert, 2002). The accuracy of the simulation types depends on how those types imitate reality (Wu & Shea, 2009), and the combined use of different types of simulation leads to better learning outcomes than use of either type alone (Kneebone et al., 2003). The effective use of combined manikins and SPs as a teaching and evaluation tool has been demonstrated in the literature (Alanazi, Nicholson, Atcherson, et al., 2016; Bearnson & Wiker, 2005; Isenberg, Roy, Veloski, Berg, & Yeo, 2015; Siebeck et al., 2011). Alanazi, Nicholson, Atcherson et al. (2016) used hybrid simulation that combined a realistic simulator (i.e., Baby Isao) and simulation scenarios performed by SPs to test doctor of audiology (AuD) students' knowledge and skills with hearing screening and parental counseling. As a result, students perceived and responded to the scenarios as if they were real and their confidence levels in knowledge and skills improved.

Following the simulation educational experience, an exercise called debriefing begins. There are two types of debriefing, *formal debriefing* and *informal debriefing* (Pearson & Smith, 1985). The formal debriefing is led and structured by the debriefer to encourage learners' reflective thinking and exploration of their feelings. The informal debriefing may occur after the formal debriefing either individually or with others. Group discussions and watching video recordings can be used to obtain learner feedback (Grant, Moss, Epps, & Watts, 2010;

Kolbe et al., 2013). Debriefing is considered the main simulation component that motivates and allows learners to self-reflect and self-analyze (Bradley, 2006). As Mann, Gordon, & Macleod (2007) pointed out, reflective learning in the debriefing sessions can improve professionalism and clinical reasoning. Although there is no standard structure for debriefing, popular models were developed to provide a framework for debriefing sessions, such as Guidelines, Recommendations, Events, Analysis, and Transfer (GREAT; Owen & Follows, 2006), Defusing, Discovering, and Deepening (3D; Zigmont, Kappus, & Sudikoff, 2011), and Promoting Excellence and Reflective Learning in Simulation (PEARLS; Eppich & Cheng, 2015). Aronson (2011) published 12 tips, which can be used by the debriefer in debriefing sessions as well as to structure, teach, and implement reflective exercises and feedback at all levels of medical education. This guideline starts from the basic tip explaining the definition of reflection to the more advanced tip addressing faculty reflection on the process of teaching reflection.

Planning the simulation event and debriefing sessions is very important. Seven main attributes of the debriefing sessions have been identified by Lederman (1992). The attributes for consideration include: (a) the debriefer, (b) the participants, (c) the simulation event/experience, (d) time (i.e., time of the debriefing session and time between the simulation experience and the debriefing session), (e) the impact of experience (i.e., its effect on the participants' emotional status and how it relates to their everyday lives to make an impact), (f) recollection (i.e., recall the activity; e.g., use video-recording), and (g) report (i.e., reporting the event verbally or in a written way; e.g., questionnaires and surveys). The level of facilitation for the debriefing (i.e., low, intermediate, or high facilitation) determines whether the needed debriefer is faculty, a trained person, or a student (Fanning & Gaba, 2007). Moreover, the role of the debriefer may include creating a safe atmosphere, focusing on the learning objectives, and managing time effectively (Fanning & Gaba, 2007; Rall, Manser, & Howard, 2000). The debriefer can propose, change, and enhance learning during the debriefing process. Although participation in the simulation scenarios does not guarantee that all learners receive the benefits of these scenarios, all learners should participate in the debriefing sessions (Szyld & Rudolph, 2013).

To achieve maximum benefit from the debriefing sessions, guided reflection on simulation experiences is vital. The correct modality of debriefing sessions should be chosen based on learning objectives. The debriefing environment should be well organized, confidential, comfortable, and separate from the simulation experience so participants feel comfortable in sharing their thoughts and ideas (Anderson, 2008). Time of the debriefing is also critical, and debriefing should occur within five minutes after simulation experience (Arafeh, Hansen, & Nichols, 2010). The length of time for debriefing is estimated at twice the time of the simulation activity (Palaganas, Fey, & Simon, 2016).

Two methods of reflection can be included in any simulation training: *reflection-in-action* and *reflection-on-action* (Schon, 1987, p. 54). Reflection-in-action means the reflection occurs during the learning experience, and reflection-on-action refers to the discussion that occurs after the learning experience and during the debriefing session. Numerous authors have used both types of reflective practices to enhance student learning outcomes; however, reflection-on-action is mostly used in medical education (Aronson, 2011; Aronson, Niehaus, Hill-Sakurai, Lai, & O'Sullivan, 2012; Geller & Foley, 2009; Lewis, 2013; Mann et al., 2007; Ng, Bartlett, & Lucy, 2013). Reflection on both positive and negative practices and behaviors are obtained from participants (e.g., active and observer students) and provided to them by the debriefers during the formal debriefing. Feedback aims for deeper learning and can address the relevant learning objectives and develop reflective skills (Aronson, 2011). Feedback can be oral or written with no advantage of either approach over the other (Baernstein & Fryer-Edwards, 2003). Requesting participants' feedback on the simulation event in which they participated helps them evaluate their learning experiences, supports them as adult learners, and achieves deeper learning outcomes (Knowles, Holton, & Swanston, 2005). Debriefing should not focus exclusively on participants' mistakes because such a session may lead to unbeneficial self-feedback and reduce the participants' satisfaction with the learning experience (Rudolph et al., 2013). When learner feedback is absent, the simulation experience becomes ineffective and mistakes that have occurred during the experience will remain and be repeated in the future (Cumin, Merry, & Weller, 2008).

In summary, the transition from theoretical learning to real life clinical work is necessary to obtain effective professional dispositions and competencies, such as communication skills. This transition cannot be achieved with limited practice. Simulation provides a great opportunity to practice informational counseling in a safe environment (ASHA, 2008). Simulation training including debriefing or reflection sessions provides direct information and achieves deeper learning (Kluger & DeNisi, 1996). Audiology simulation experiences can use both types of reflections, that is, *in* and *on* action. However, the use of simulation in audiology education remains in its infancy, with limited research about debriefing attributes and practices available in the literature. Therefore, both quantitative and qualitative research on this topic is needed. This qualitative study was designed to improve our understanding of the role of reflection and feedback on audiology students' learning during debriefing sessions.

The Qualitative Approach of the Study

To analyze and interpret the qualitative data generated from the debriefing sessions, two fundamental approaches can be used: (a) grounded theory and (b) qualitative content analysis. Grounded theory is "a general methodology, a way of thinking about and conceptualizing data" (Strauss & Corbin, 1994, p. 275). It aims to develop a theory through the use of the open-ended process including data

collection, coding (or data analysis), and building a theory (Groat & Wang, 2002). The content analysis method is “a research method for subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns” (Hsieh & Shannon, 2005, p. 1278). It is designed to identify categories that involve written or oral materials (Moretti et al., 2011) and describe the meaning of data (Heikkilä & Ekman, 2003).

Both grounded theory and content analysis approaches use either inductive or deductive analysis of data (Elo & Kyngäs, 2008). The inductive approach means little or no prior knowledge about the phenomenon of interest; codes and/or themes are obtained from the data (Burnard, Gill, Stewart, Treasure, & Chadwick, 2008). The codes and/or themes in the deductive approach are already known from prior research or literature (Burnard et al., 2008). In the present study, the inductive qualitative content analysis was used to explore, recognize, and understand the components and characteristics generated from the debriefing sessions. After the analysis, qualitative data can be reported in two methods: (a) present the findings in two separate sections, findings and discussion, or (b) connect the findings with the literature (i.e., one section combines findings and discussion; Burnard, 2004). This study followed the first approach (or the traditional method) of reporting the findings.

Aim of the Study

The purpose of this study was to provide insight into the debriefing process through a qualitative evaluation of audiology students’ reflection during three debriefing sessions after participating in hearing screening and parental counseling simulated scenarios with a hybrid simulation approach (i.e., manikin and SPs).

Method

This study received approval from the University of Arkansas for Medical Sciences (UAMS) Institutional Review Board (204279). A detailed description of the simulation experiences in this study has been previously reported by Alanazi, Nicholson, Atcherson et al. (2016). All student participants were asked to sign a photo/video release form.

Participants

Seventeen full-time AuD students (mean age = 24.59 years; *SD* = 1.50; age range = 22–29 years) volunteered (with no compensation) as participants in this study. All student participants were females. Table 1 shows the 17 participants by cohort and role in the simulation case scenario. All student participants (a) watched the interactive web-based newborn hearing screening on the National Center for Hearing Assessment and Management (NCHAM; 2015) website, (b) independently learned how to do the screening on a baby simulator, and (c) participated in neonatal intensive care unit hearing screening before the actual simulation experiences with no specific details about the upcoming event.

Table 1
Participant Demographics

Attribute	N
AuD cohort	
2 nd year	9
3 rd year	8
Role in the simulation case scenario	
Active participants	6
Observer participants	11

Note. AuD= Doctor of Audiology

The Simulation Experience

Data for this study were collected at the UAMS Simulation Center which has five debriefing rooms equipped with widescreen televisions and fully networked video playback systems to allow for a full breakdown of the simulation sessions. All the videos (i.e., the simulation experiences and the debriefing sessions videos) were available for later viewing and analysis using LearningSpace, an audiovisual recording platform developed by Canadian Aviation Electronics (CAE) Healthcare (Sarasota, FL; 2016). The seven attributes of debriefing sessions identified by Lederman (1992) and the associated characteristics of this study are shown in Table 2.

Types of simulation/scenarios. Two types of simulation were used in this study: (a) one manikin, Baby Isao, manufactured by Intelligent Hearing Systems (Miami, FL; 2016) and (b) five trained SPs, portraying the parents of Baby Isao. Baby Isao allows for two auditory function assessments typically used in newborn hearing screening (NHS): otoacoustic emissions (OAEs) and auditory brainstem response (ABR). OAEs are sounds produced by the outer hair cells of the cochlea either spontaneously or evoked by an auditory stimulus. ABRs are auditory evoked potentials generated by the auditory nerve and brainstem in response to an auditory stimulus. For the purpose of the scenarios in this study, the OAE module was used. The general theme of the scenarios presented to students was parents bringing their infant to the clinic for a rescreen of hearing following a referral from the hospital NHS. Five trained SPs presented three standardized parent scenarios which included diverse cultural and socioeconomic backgrounds and depicted different emotional responses to the presentation of the results of a newborn hearing rescreening. The parents in the scenarios were (1) an angry parent, (2) parents from Deaf culture experiencing grief, and (3) an African American parent displaying acceptance. The scenarios are described in Table 3 including the case number, case scenario, participants, type of simulation, and brief description of each case. Two students (active participants, [AP]) also participated in each scenario.

Table 2
Attributes of The Debriefing Sessions (Adapted from Lederman, 1992)

Attributes	Characteristics of this study
The debriefer	An experienced simulation facilitator who created a friendly learning atmosphere, focused on the learning objectives, and managed time.
The participants	17 AuD students participated in the debriefing sessions as active or observer participants.
The simulation experience	Three simulated scenarios with a hybrid simulation (i.e., manikin and SPs) approach followed by reflection-on-action during three debriefing sessions.
The impact of experience	Several aspects of professional dispositions and competencies were learned and demonstrated.
Recollection	Debriefing occurred immediately following each case scenario to avoid forgetting and the use of videotaping helped to remember the highlights of the simulation experiences (no retention or carry-over effect of the learned professional dispositions and competencies was tested).
Report	Students reported their experience with the simulation activity verbally.
Time	Each simulation experience was conducted for about 20 minutes and followed immediately by a debriefing session lasting about 35 minutes.

Table 3
Case Scenarios

Case Scenario Number	Case Scenario	Participants	Simulation Types	Description of Parent(s) Reaction to Hearing Results of Rescreening
1	An angry parent	Two active student participants (AP#1, AP#2) Two standardized parents (SP#1, SP#2)	Manikin (Baby Isao) SPs	The father was angry and blamed his wife for the infant's assumed hearing loss. The mother is a musician and exposed the child to loud music in utero.
2	Parents from Deaf culture	Two active student participants (AP#3, AP#4) Two standardized parents (who are deaf in real life and in the scenario) (SP#3, SP#4)	Manikin (Baby Isao) SPs	Student participants convey the hearing screening results (the baby passed the hearing screening) and counsel the parents regarding the results through an interpreter. The parents were unhappy to have a <i>hearing</i> baby.
3	An African American parent	Two active student participants (AP#5, AP#6) One standardized parent (SP#5)	Manikin (Baby Isao) SPs	The mother accepted the results of the hearing screening (the baby failed the hearing screening) and rejected the follow-up referral for a diagnostic evaluation. The mother mentioned religious and cultural beliefs as the reason for not accepting the recommendation. Other reasons, such as transportation issues and no health insurance could be behind her decision.

Note. AP = active participant; SP = standardized parent(s)

Procedures

Learning objectives were prepared and discussed with the Simulation Center personnel, and the cases were reviewed with the potential SP actors, who practiced with the audiology faculty and the Simulation Center staff a few weeks before the scheduled event. On the date of the simulation activity, two student volunteers (one from each year in program) were selected before each case as active participants (AP) in the scenarios. They were given the opportunity to decide on who would perform the hearing screening, so one student performed the hearing screening and both students counseled the standardized parents. The remaining students were observer participants (OP) who observed the simulation scenarios and actively participated in the debriefing sessions.

Following each simulation experience, an experienced debriefer guided the debriefing session. Each simulation scenario was conducted for about 20 minutes and each debriefing session was held for about 35 minutes. All three simulation cases and debriefing sessions were performed on the same day. The PEARLS debriefing model (Eppich & Cheng, 2015) was used by the Simulation Center personnel to identify participants' positive behaviors and the behaviors they would change if they had a second opportunity. During the debriefing session, the debriefer helped students to take their experience and response to the situation and reframe it in such a way that they could formulate a better strategy for future encounters. For example, the debriefer commented on students' discussion about the first case scenario, "I am hearing a couple of things. I am hearing that you wish you had the right words and then that you wish that you could have put them at ease a little more. So any thought about how you do that with real patients?"

The videotaped simulation case scenarios were replayed as needed during the debriefing session. All students participated in the briefing (i.e., before the case scenarios) and debriefing (i.e., after the case scenarios) to maximize their learning experience regardless of active or observer status. Also, six audiology faculty members participated in the briefing and debriefing as content experts to detect and assist the students in closing performance gaps. SPs also participated in the debriefing session after their scenario.

Data Analysis

The unit of analysis. Access to the videotaped simulation and debriefing sessions on LearningSpace were provided to Alternative Communication Services (2016) for transcription. Transcribed data documents were provided to the first and second authors. The transcribed data were used for the data analysis. Video recordings were also reviewed as needed during data analysis to glean additional visual cues about the context of the debriefing sessions not readily apparent in the transcribed documents.

Analysis process. After selecting the unit of analysis (i.e., transcripts), the process of data analysis included open coding, creating codes, and establishing themes. NVivo qualitative data analysis software was used by the first

author to organize and analyze the data (QSR International Pty Ltd., 2015). An open coding procedure was performed by reading each transcript word by word and line by line, which means that the researcher reads each transcript and makes notes next to key words or sentences of the transcript (Burnard et al., 2008). Codes were formulated after completion of the open coding and these codes were placed into sub-themes. Two main themes were created that included all the sub-themes, and the main themes were included under one core category. To make the analysis process more precise and decrease any subjective bias, the second author analyzed the data independently and then together with the first author (Figure 1).

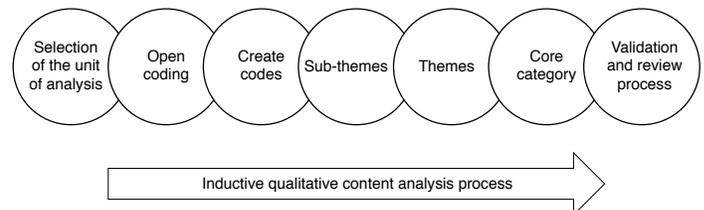


Figure 1. Procedure of inductive qualitative content analysis.

Findings

Analysis of the data illustrating one overall category (core category), two themes, eight sub-themes, and the number of components for each sub-theme is presented in Figure 2. The findings revealed that students recognized, verbalized, and demonstrated both positive and negative indicators of professional dispositions and competencies during their reflection in the debriefing sessions. These themes and the related subthemes are discussed in more detail in the next section. The core category, professional dispositions and competencies, was the main message from the participants and the central phenomenon around which all other themes and sub-themes revolved. Throughout the next section, verbatim quotations from the debriefing sessions that were conducted after each case scenario were used to represent the themes. The brackets within quotations are used to clarify meaning and provide a brief explanation.

Qualification

The first major theme that emerged from the participants' discussion in the three debriefing sessions was professional qualification. Participants in this study demonstrated several promising aspects (sub-themes) of professional dispositions and efficiency including (a) support, (b) compassion, (c) respect, and (d) teamwork.

Support. Parents may struggle to understand the results, the implications of their child's hearing loss, and what their baby can or cannot hear (Mitchell & Karchmer, 2004; Pynnonen et al., 2016). They may feel anger, confusion, disappointment, and stress and think that their child's hearing loss is their fault (Meadow-Orlans, Koester, Spencer, & MacTurk, 2004). As a result, they become worried about the child's future and how their child will function in society. Therefore, patient- and family-centered

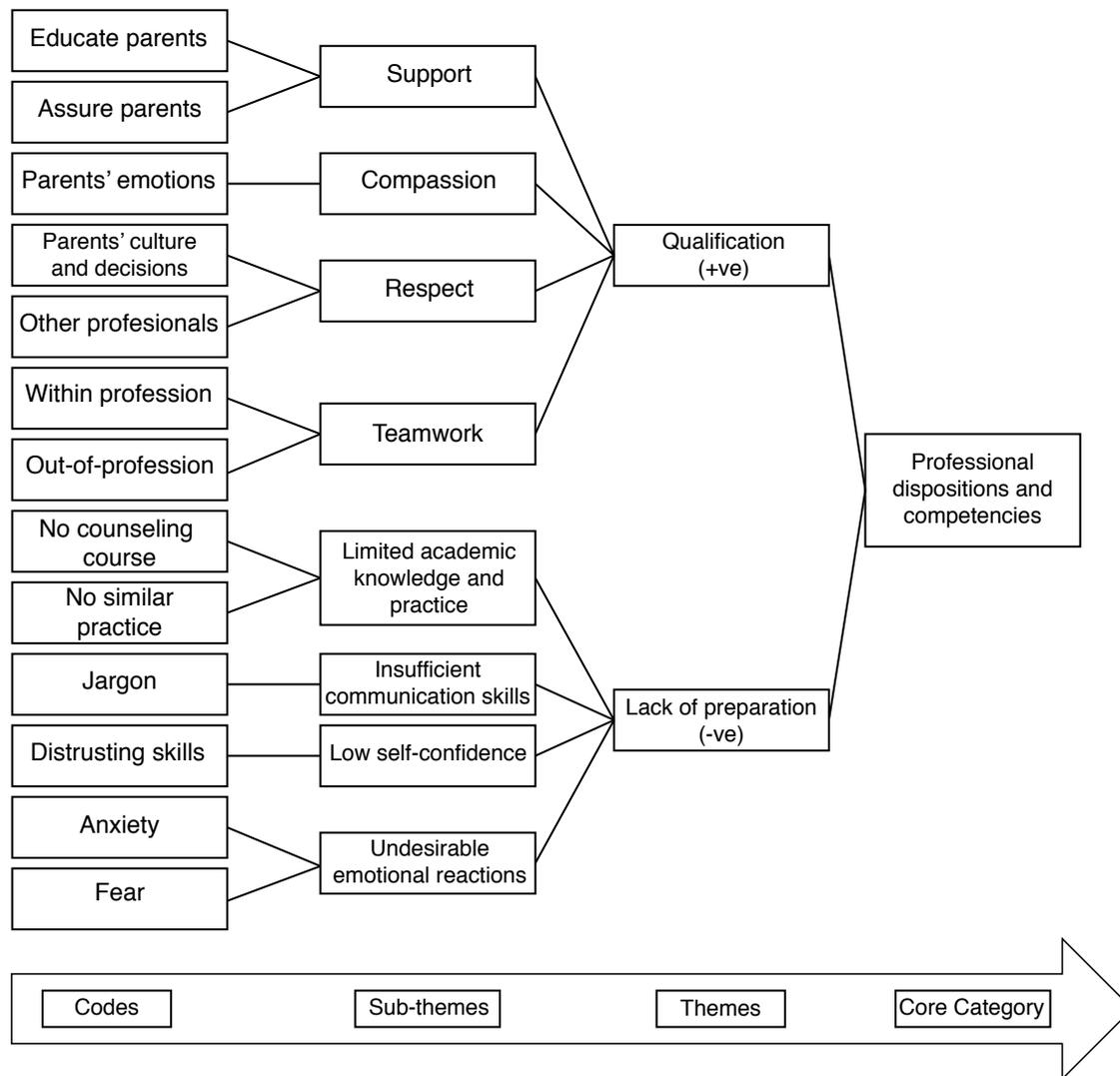


Figure 2. Analysis findings: Thirteen components, eight sub-themes, two main themes, and one core category. Qualification indicates positive (+ve) components and lack of preparation is composed of negative (-ve) attributes depicting student dispositions regarding professional competencies.

care should be implemented to ensure that patients receive the best possible care and recognize the vital role that families play in ensuring the health of their infants and children (Hanft, Shepherd, & Read, 2012; Kuhlthau et al., 2011). Since the patient is an infant, the parents/guardians are the family members who are involved in all aspects of clinical care, so they need complete and accurate information to effectively participate in their infant's care plan and decision making.

During the three scenarios, participants provided necessary information to help parents understand hearing loss and educate them about the services that are available to them. Participants also attempted to include parents as child-care team members. One active student said,

"I wanted her [the mother] to know all the implications before making a decision that could affect the baby's life the way that it could.... I wanted to give like, you know, the 1-3-6 rule, like this is what we can do, like this is the plan. Like they [parents] wanted something definite." (Scenario #1, AP #1)

An active participant stated that support for parents could be achieved through the use of written information:

"I would make sure something [is] written definitely— goes home written, if you do not have an interpreter, make sure words go home on paper at least." (Scenario #2, AP #4)

An observer participant commented on how the active participants educated parents effectively:

"I thought they [active participants] handled it [educating the parent] great saying we will give you more information because we want you to know." (Scenario #3, OP #10)

Some participants wanted to assure parents that they are not the reason behind their child's hearing loss and tried to ease parents' anxiety. An observer participant mentioned:

"They [active participant] did a wonderful job of saying, oh, no, there is no way that could even be a possibility. It [baby's hearing loss] is not your fault." (Scenario #1, OP #7)

An active participant reflected on how she wanted to support parents:

"Like what can I do to make her [the mother], I mean both of them [parents], feel better." (Scenario #1, AP #2)

Other active participants in the 2nd and 3rd case scenarios offered parents continued assistance:

"We [active participants] are here for you." (Scenario #3, AP #1)

Compassion. Having a child identified with hearing loss (or a child with normal hearing as in the second case scenario) can be overwhelming and may lead parents to show different feelings and focus exclusively on the hearing loss (or normal hearing) at the expense of seeing their child as a whole person (Meadow-Orlans et al., 2004). Audiologists can provide compassion as well as support, which is essential to quality of care and better health outcomes (Luterman, 2006). Students participating in this study recognized and/or demonstrated a compassionate disposition with parents as evidenced by the following statements:

"I thought the poor mother was going to pass out." (Scenario #1, AP #1)

"I feel like even some of the things you said, we did not [make parents relaxed]. I feel it [what active students said] kind of added to the anxiety and frustration for them." (Scenario #1, AP #2)

"When mama started crying, I almost lost it." (Scenario #2, AP #3)

An observer participant exhibiting empathy toward the mother in the first case scenario said:

"It is the tendency for the mother to blame herself like for anything, even for hearing loss." (Scenario #1, OP #8)

Respect. Healthcare professionals, including audiologists, should listen to and respect parents' perspectives and choices. The parents' beliefs, knowledge, and cultural backgrounds are integrated into the delivery of healthcare (Wiener, Mcconnell, Latella, & Ludi, 2013). Respect was one of the positive aspects of professional dispositions and competencies that participants showed particularly with the parent who rejected the follow up and parents from Deaf culture. Participants expressed respect for the parent's autonomy (Scenario #3) and acknowledged she had the right to make decisions regarding her child, even when that

decision contradicted their recommendations. An active participant in the third case scenario stated the following:

"I think we [active participants] did a good job. That is her [the mother's] child so ultimately it is her decision. I am not there to persuade, even to be like, you need to go this route.... Like being sure she had all the information I felt she needed without saying, no, you are wrong." (Scenario #3, AP #6)

An observer participant commented on how active participants informed and encouraged parents in the first case scenario:

"It was really good how they [active participants] told the parents that they were doing the right thing and like they were doing a good job at being on top of bringing that baby in and just being proactive about figuring out what really was going on with him. So I thought that was really good." (Scenario #1, OP #9)

Another observer participant commented on how active participants treated parents from Deaf culture with respect:

"They [active participants] did a really good job of treating them [parents from Deaf culture] the same way that they would treat hearing parents who found out that they had a deaf child." (Scenario #2, OP #10)

Indeed, respect was not limited to parents and their decisions but also extended to include the personnel who performed the first hearing screening. One observer participant commented on the first case scenario:

"They [parents] had an issue with the person that had done the hearing test before and I like that you [active participants] acknowledged it and respected it without like trying. . . kind of throwing any other professional under the bus." (Scenario #1, OP #15)

Teamwork. The final sub-theme addressed during the debriefing session was teamwork. The ability of healthcare personnel to work together and with patients (or parents) in a cohesive manner is vital to best support and meet their patients' (or parents') needs (Interprofessional Education Collaborative Expert Panel, 2011). The significance of effective teamwork for the provision of safe and high-quality care has been increasingly recognized. The quality of interprofessional collaboration between audiologists or interprofessional collaboration between audiologists and other healthcare professionals, such as speech-language pathologists (SLPs) or sign-language interpreters, is considered a foundational component of team-building and integrally related to effective communication. Student participants demonstrated their ability to work together professionally with each other and with the interpreter.

The following quotes are the participants' responses about teamwork within the profession (i.e., between audiology students).

"I felt like we worked really well as a team." (Scenario #2, AP #3)

"We [active participants] have not ever been clinic partners, and so I thought it was really cool how we just automatically went through the routine. We were kind of working off of each other." (Scenario #2, AP #4)

Participants' comments during the debriefing sessions when reflecting about their actions during the simulation case scenarios showed their awareness of working effectively with other professionals to best meet parents' needs. They were able to work effectively with the interpreter in one case, recognizing the interpreter's role as a member of the care team, and they addressed the need for referrals to other professionals, such as an SLP. Observer participants commented on teamwork on several occasions during all three debriefing sessions, such as:

"You [active participants] all stayed very calm and kind of at a good pace for the interpreter." (Scenario #2, OP #8)

"They [active participants] had a good knowledge of where to refer them [parents] to, who to send them to. When we have hit our limits, who can help you next." (Scenario #1, OP #13)

"It was great how quick you put the SLP on the table.... a resource for communication." (Scenario #3, OP #17)

Lack of Preparation

Professional disposition and competencies involve a wide range of clinical skills and abilities that audiologists use in everyday clinical practice. At this point of the audiology program (i.e., the 2nd and 3rd year cohorts), there is an expected level of clinical performance and professional skills that enable audiology students to practice more competently. However, the findings indicated that some of the participants in this study lacked a few important disposition attributes and clinical skills. The second major theme that emerged from the participants' discussion was the lack of preparation, which included the following sub-themes: (a) limited academic knowledge and practice, (b) insufficient communication skills, (c) low self-confidence, and (d) undesirable emotional reactions.

Limited academic knowledge and practice. Participants consisted of students from two AuD cohorts with different educational experiences. The formal course in counseling occurs during the third year of education for these students. Therefore, participants had yet to receive any structured, formal instruction in counseling. Any and all knowledge in counseling was gleaned from practicum experience with their preceptors and a few counseling lectures embedded in other courses. Although active students showed high technical skills in performing hearing screening and high enthusiasm to support parents, some active students were unsure about how to deliver the results and counsel parents about their baby's hearing. An active participant

mentioned that they "heard" about the challenge of dealing with cases similar to the case scenario:

"We hear about it [a challenge in the case scenario] in class but I have never thought what I would do in that situation until I was right there in it." (Scenario #3, AP #5)

An observer participant stated how active participants delivered incomplete information about ABR to parents:

"When they [parents] said, 'So will the ABR be definitive?', you [active participants] said yes. I would be afraid that they [parents] would go then and get the ABR and find out that that might not be definitive and then be more frustrated. You know?" (Scenario #1, OP #14)

This study included hybrid simulation and case scenarios that students rarely see in their real clinical practice. Thus, students admitted limited practice and exposure to such cases. An active participant indicated the following:

"I was not expecting that. That was a surprise!" (Scenario #2, AP #4)

Likewise, an observer participant echoed these sentiments and commented:

"We [all participants] have learned about, you know, different cultures who do not believe in pursuing amplification or other options or anything but it never even crossed my mind. So it was kind of something that we thought about on the fly. I will definitely add it now." (Scenario #3, OP #11)

When the debriefer asked about things that could improve their knowledge and clinical skills, both active and observer participants wanted more practice to master these clinical skills rather than increasing knowledge through a formal counseling course. An active participant suggested,

"Kind of go in there [the simulation scenario and/or real clinic] with a bigger plan, a better plan. I guess just practicing more." (Scenario #1, AP #2)

Similarly another active participant mentioned her lack of education and experience:

"We [audiology students] should be prepared for stuff like that." (Scenario #3, AP #6)

Insufficient communication skills. The ability to communicate effectively with parents and counsel them about their child's hearing status (i.e., normal hearing or hearing loss) is critical (Watermeyer, Kanji, & Cohen, 2012). Active students indicated that they faced a difficult time when they were in the room with parents. One active student in the first case scenario mentioned that it is

sometimes hard to find words because you do not know what the parents' emotional reaction is going to be.

"I do not know. Better to tell them [parents] in lay terms and like put them at ease a little bit more. I just need to find the words.... The most trouble I had was finding the words to say out loud and not giving it to them in layman's terms." (Scenario #1, AP #1)

Another active participant commented on her communication performance with the parent:

"Word searching, I am completely sitting here thinking okay quickly what is the easiest way for me to explain this to her [the mother] without using those terms that are going to be confusing. So definitely I need to work on my wording for sure." (Scenario #3, AP #5)

One active participant pointed out that one of her difficulties was how to deliver the message (i.e., the need for a diagnosis evaluation for a baby who failed two hearing screenings) to the parent who mentioned religious and cultural beliefs as the reason for not accepting the recommendation.

"You know, honestly that had not crossed my mind. I do not know why it had not. That someone [the parent] would not want to listen to what I am saying and do what I am suggesting." (Scenario #3, AP #6)

In the same case scenario, an observer participant mentioned active participants offered support but did not communicate this help to parents sufficiently:

"You [active participants] can still ask us questions without saying, just call us if you [the parent] change your mind or when you change your mind. Saying you can still call us either way, if you have questions." (Scenario #3, OP #9)

An observer participant pointed to the challenge of using simple words with parents, while students, who use medical terminology, were watching you:

"When you would be talking to parents and trying to keep terms on their level, you are also knowing that you have people in here who you are wanting to throw words out that you know that we are looking for and that is just a challenge." (Scenario #1, OP #11)

An active participant recommended more practice counseling families to master communication skills.

"I just think it [communicating with families] will get better over time and doing it more and getting more experience in it, that is what will help a lot of those triangles [delta or behaviors that students would change] turn into positives." (Scenario #1, AP #2)

Low self-confidence. Self-confidence is someone's internal belief that he/she can succeed or perform a variety of tasks competently (Perry, 2011). The debriefing sessions revealed that some active and observer students shared low self-confidence as a common issue. The active participants explained their performance had been more or less affected by poor self-confidence. One active participant said:

"I should be more confident in myself and the things that I have been learning in school." (Scenario #2, AP #3)

Another active participant mentioned that she could have portrayed a better sense of confidence when working with the parents:

"I could have been more confident in what I was doing." (Scenario #3, AP #5)

The presence of parents in the same test room appeared to have an effect on students' confidence, making them distrust their skills.

"We [audiology students] do not get the aspect of having the parents watching us." (Scenario #1, AP #1)

The presence of observers watching their colleagues communicating with parents in the simulation scenario might reduce their level of confidence.

"That was probably harder today than it would be with the real parent. . . 30 sets of eyes on you all opened up to an audiology textbook." (Scenario #1, OP #8)

Low self-confidence could affect the student participants' communication skills, for example, when noting the lack of instructions provided to the parents about the test procedures:

"We [active participants] did not tell her to stay still. We did not tell her we are going to sit still and quiet for a few minutes or anything like that. My gosh!" (Scenario #3, AP #5)

Another student noted her lack of self-awareness regarding her facial expressions during the test procedures:

"I need to work on my facial expressions." (Scenario #3, AP #6)

Other participants echoed similar observations about confidence and reminded themselves and their colleagues to be confident:

"I think confident, just being confident in everything." (Scenario #2, AP #3)
"So for better or worse, you have to kind of find your way and develop a little confidence level." (Scenario #2, OP #14)

Undesirable emotional reaction. Some participants expressed negative emotions (or feelings) related to the simulation experiences; for instance, anxiety and fear. Undesirable emotions have been associated with a range of adverse effects on general physical and mental health, performance, and productivity (Woo & Postolache, 2008). Two active participants commented:

“It [the simulation scenario] was nerve-racking!”
(Scenario #3, AP #5)

“I am so glad that it was a simulation and not real because I would have panicked!” (Scenario #3, AP #6)

Another active participant described her initial reaction and feelings noting the paralyzing impact the situation elicited:

“Definitely shock!” (Scenario #2, AP #4)

An active participant in the second case scenario expressed the intensity of her reaction, which may be emphatically stating the stress reaction she experienced:

“My heart is still racing right now I cannot really breathe!” (Scenario #2, AP #3)

Students mentioned no suggestions about how to control such reactions. One of the SPs advised student participants to avoid undesirable emotional reactions:

“Just ground yourself a little more because I could tell when we [parents] were making you [active participants] all a little nervous because your gestures were becoming a little quicker, more frantic. But I think if you ground yourself a little bit more, that will make you feel more confident because you will be exuding more confidence.” (Scenario #2, SP #3)

Discussion

This study assessed and explored students' reflection-on-action (i.e., impressions) regarding their participation in simulation experiences during three debriefing sessions. This interpretation of reflection exercise has been used among health professionals and health professional students (Kumagai & Lyson, 2009). The aim of this study is consistent with tip number 10 of Aronson's guideline (2011), assess the reflection, with the exception that the current study has not measured the actual change in students' professional dispositions and competencies. A surprising outcome of this study is the extent to which the qualitative analysis of the simulation debriefing revealed the underlying dispositions of students through their communication behaviors. These dispositions and their relationships to clinical knowledge, skills, and ultimately self-confidence revealed the importance of simulation training in healthcare education and practice. Although a number of studies have suggested a strong relationship between disposition, knowledge, and skills (Aronson et

al., 2012; Geller & Foley, 2009; Lewis, 2013; Mann et al., 2009; Ng et al., 2013), no qualitative studies to our knowledge provide evidence supporting the importance of simulation learning experiences, including debriefing, to the development of student disposition and self-confidence (i.e., knowledge and skills).

Debriefing sessions include a reflective exercise that improves learning and performance in essential competencies by active and observer participants and standardized patients/parents reflecting on learned competencies, positive behaviors, and what to change. Professional organizations, accrediting agencies, and many researchers have questioned the relationship between various dispositions and competencies. For example, the National Association of School Psychologists (NASP) used the term professional work characteristics to describe disposition, which involves, “Respect for human diversity and social justice, communication skills, effective interpersonal relations, ethical responsibility, adaptability, initiative, dependability, and technology skills” (NASP, 2015, p. 1-5). Finn (2011) posed the question: “How are thinking dispositions related to critical thinking?” (p. 70).

The Council for Academic Accreditation (CAA) is the organization under ASHA responsible for accreditation of graduate programs in audiology and speech-language pathology. The CAA (2016) recognizes the importance of using educational practices and procedures to support the development of attributes and abilities they refer to as professional practice competencies, stating, “The program must provide content and opportunities for students to learn so that each student can demonstrate the following attributes and abilities and demonstrate those attributes and abilities in the manners identified” (p. 9). These professional practice competencies include diverse dispositions and attributes dispersed across topics, such as (a) accountability, (b) integrity, (c) effective communication skills, (d) clinical reasoning, (e) evidence based practice, (f) concern for individuals served, (g) cultural competence, and (h) collaborative practice. For example, in the category of “Accountability,” one of the competencies that students are responsible for demonstrating is “Use self-reflection to understand the effects of his or her actions and make changes accordingly” (CAA, 2016; p. 10 for audiology; p. 19 for speech-language pathology).

Simulation training can occur almost anywhere and anytime to help healthcare students achieve these professional competencies in a non-threatening environment (Pratt & Sachs, 2006). Analysis of these debriefing sessions of hybrid simulation indicated some audiology students revealed promising professional dispositions and competencies, such as concern for individuals served, cultural competence, and collaborative practice. On the other hand, some needed more practice in certain professional areas, such as communication skills and clinical reasoning to achieve an advanced level of professional dispositions and competency. Audiology student participants generally agreed that the use of

hybrid simulation with different case scenarios was useful (Alanazi, Nicholson, Atcherson et al., 2016). The curriculum developed and used in this study for infant hearing screening and counseling simulation training can be a model for simulation training experiences outside of the academic setting, with hearing screening programs. To our knowledge, this is the first study in the field of audiology to investigate debriefing sessions of hybrid simulation. This section includes two main themes that emerged from the analysis of the debriefing sessions: (a) qualification and (b) lack of preparation.

Qualification

The simulation experiences provided opportunities for students to demonstrate several positive aspects of professional dispositions and competencies (sub-themes): parental support, respect, empathy, and working as a team to provide better services. Participants in this study mainly focused on counseling parents, and they showed concern for individuals (or parents) served. Having a newborn identified with a hearing loss is a difficult and challenging experience for most families because more than 90% of children with hearing loss are born to parents with normal hearing who know little or nothing about hearing loss and its consequences (Mitchell & Karchmer, 2004). These parents sometimes remember only the final results and recommendations after pediatric audiologic evaluations and counseling sessions (Watermeyer et al., 2012). Participants in this study presented parents with important information, then verified the parents' knowledge of what was being said and the recommended course of action. One of the participating faculty mentioned what students did was help empower the parents. This was an important part of applying the family-centered care approach, which requires professionals to inform and support families to make adequate decisions for their child (Hanft et al., 2012). In the current study, students demonstrated concern for parents. They exhibited empathy with parents and reassured them that they were not the reason behind their child's hearing loss. Less parental stress and better parental emotional status regarding their child's hearing loss leads to better language learning (Cole & Flexer, 2008). Therefore, it is critically important for audiologists to provide information to patients and support them emotionally (Luterman, 2006). Audiologists are responsible for providing emotional support to parents, particularly during breaking bad news (e.g., a child has a hearing loss), because it is difficult for parents to process and understand counseling and recommendations when their emotions are high (Luterman, 2006). Guilt, anger, confusion, disappointment, and stress may affect those parents once they know their infant is identified with hearing loss (Meadow-Orlans et al., 2004). On the other hand, the identification of a child with hearing loss or deafness may bring happiness to deaf parents because they are prepared for their child to share their communication method (Stein, Barnett, & Padden, 2001). Therefore, the third case scenario was designed to represent the opposite feeling, deaf parents and a hearing child.

Teaching and training students how to manage such situations and provide emotional support to parents is critical. Moeller (2000) reported that the success of children with hearing loss is affected by parents' attitudes (e.g., reactions and acceptance) and encouragement for their child. Although it is within the scope of practice in audiology to introduce emotional support during interactions with families (ASHA, 2004), many audiologists believe that providing emotional support to parents (or patients) is the responsibility of a psychologist or social worker rather than that of audiologists (Luterman, 2008). It is possible that parents who demonstrate severe emotional responses to their child's identification of hearing loss may need counseling or other supports beyond the scope of practice for audiologists. In these cases, audiologists should be prepared to refer families to appropriate healthcare professionals. Participants also demonstrated cultural competence, which is another important professional practice competence. Student participants understood the impact of the cultural and linguistic variables of parents on delivery of effective care. Students respected parents' choices and decisions and gave parents the chance to examine all options.

Along with showing concern of individuals served and cultural competence, students practiced collaboratively. Students in all case scenarios had to work as a team with people inside their discipline as well as outside (e.g., the interpreter). Active participants worked together (i.e., two in each case scenario who never worked together clinically) as a team and seemingly had established an effective method of nonverbal communication with each other. They were affirming each other and building on one another, as well as following up on each other's comments. Few health professionals are taught teamwork skills (McCallin, 2001), yet research indicates that teamwork has resulted in reduced errors and increased performance (Kalisch, Curley, & Stefanov, 2007). Research has also shown ineffective communication causes 65% of medical errors, of which 75% could lead to death (Maxson et al., 2011). Active participants also made the point that parents of a child with hearing loss should see a pediatric audiologist. That is really important because their expertise is needed to do an ABR. Two active students worked effectively with the interpreter in one case scenario. Students acknowledged other healthcare specialists; for example, an SLP as a source of speech-language therapy. Although this study did not include healthcare students (or workers) from other professions learning with, from, and about one another, many accrediting bodies have now included interprofessional education (IPE) as a required part of the curriculum. However, "communication sciences and disorders programs have not addressed students' interprofessional competencies" (DiGiovanni & McCarthy, 2016, p. 30). Audiologists received only 2.2% of IPE at their institutions whereas nurses and physicians received 16% and 10.2 % of IPE, respectively (WHO, 2010).

Lack of preparation

The lack of preparation is the second main theme, which was evident in some of the students' responses and subcategorized into (a) limited academic knowledge and practice, (b) insufficient communication skills, (c) low self-confidence, and (d) undesirable emotional reactions. We hypothesize that limited knowledge and practice and weak communication skills led to students' low self-confidence and consequently these emotional reactions appeared. This hypothesis is supported by research that demonstrates the relationship between knowledge, clinical practice, self-confidence, and/or emotions (Alanazi, Nicholson, Atcherson et al., 2016; Andrighetti, Knestrick, Marowitz, Martin, & Engstrom, 2011; Board & Mercer, 1998; Colliver, Swartz, Robbs, & Cohen, 1999; Finch et al., 2013; Lupu, Stewart, & O'Neil, 2012).

Academic knowledge is the primary base that other professional dispositions and competencies build upon. In this study, some students demonstrated limited academic knowledge about counseling principles and practices. Although students learn counseling skills and other competencies from their clinical preceptors, some of the students had not yet taken the counseling course offered in our curriculum. In addition, opportunities to practice counseling skills are dependent upon individual preceptors and may vary by the clinical rotation site. Additional exposure to similar case scenarios is needed to support application of knowledge and development of student counseling skills. Counseling is not limited to the audiogram and hearing aids. How to deliver the hearing screening or diagnosis results and breaking bad news (e.g., a child has a hearing loss) to parents is part of the counseling process in audiology. Research shows increased inclusion of counseling courses as part of the required curriculum in many audiology programs. This increase in inclusion of counseling is discussed in a survey study by English and Weist (2005). They found that 85% of 56 AuD programs either had a required counseling course (71%) or counseling was embedded within another program course (14%). Even with the increased inclusion of counseling courses in these programs, students do not receive enough practice in clinical practicum while being supervised for two reasons: (a) most programs expect students to learn audiologic skills in clinical practicum (Crandell, 1997), and (b) clinical preceptors may not allow students, who may not have the experience counseling in difficult situations, to take the lead in these situations.

Wilson, Hill, Hughes, Sher, and Laplante-Levesque (2010) used SPs and computer based simulation (CBS) with 25 audiology students to examine which type of these simulations improved their ability to perform basic audiometry assessments and interact with patients. Students reported receiving satisfactory training for their interactions with the CBS but not with the SPs. Therefore, students suggested more training to prepare them for interacting with SPs. Simulation experiences designed with SP encounters and participation in debriefing sessions offer a great chance to transfer theory to daily clinical work

(Halm, Lee, & Franke, 2011), but more evidence is needed (Brigden & Dangerfield, 2008). Students in the present study also reported limited exposure to similar case scenarios in real clinical work and asked for more practice on such scenarios. Simulation offers opportunities for students to engage in deliberate practice of rare but important patient and family encounters. In contrast to clinical apprenticeships, faculty can establish focused learning objectives for competencies related to these encounters and provide immediate feedback to the students about their performance.

The other fundamental characteristic to practice across the allied health professions is communication skills (Chen, 2011). The ability to interact with patients (or parents) enables audiologists to identify the patients' needs, deliver the results correctly, and provide care more effectively. Some students in the current study exhibited difficulties delivering the hearing screening results and breaking bad news to parents. This finding is consistent with previous research. For example, English and Zoladkiewicz (2005) found that students continue to report being uncomfortable and worried about counseling patients, particularly how to tell parents about their child's hearing loss. Moreover, students reported they were not involved in breaking difficult news and counseling experiences in their clinical practicum rotations (English & Zoladkiewicz, 2005). Therefore, audiology curricula may be enhanced using case scenarios with SPs who portray different emotional reactions. The use of SPs offers increased opportunities to practice and improve communication skills, because it is a deliberate practice that increases the acquisition and maintenance of expertise (i.e., the deliberate practice theory; Ericsson, 2004). In addition, this practice provides hands-on practice (experiential learning), which is more effective than non-experiential learning (Ziv, 2009). The repetitive nature of the hands-on experiences (e.g., counseling through the use of SPs) is one of the simulation features that facilitate learning (Bradley, 2006) and this repetition of learning helps to acquire automatic procedural skills and self-confidence (Rodgers, 2007).

Limited academic knowledge and practice, as well as insufficient communication skills may be the reason for low self-confidence and subsequently undesirable emotional reactions. On the other hand, low self-confidence could generate these emotions and then be the cause of poor communication skills among student participants in this study. The current simulation experience was the first simulation training (i.e., a new learning situation) in which these students had participated, so variation in emotions and confidence levels was expected. As previously stated, student participants expressed anxiety and fear when encountering SPs. This strong emotional reaction indicates that student participants took the case scenarios seriously and considered these scenarios as real clinical experiences. Worry of making an error, feeling responsibility, high expectations of oneself, and less preparation could also cause their level of anxiety and fear (Chan, Carter, &

McAllister, 1994). There could be other reasons for these emotional reactions, such as the students might have not enjoyed the simulation and were dissatisfied with their performance (Kaplan & Ura, 2010). The unexpected case scenarios could be another reason for these emotional reactions. A study by Cooper et al. (2010) revealed that students' anxiety level increased and their performance progressively decreased for hypovolemia and septic shock scenarios as the patient's condition deteriorated. However, as we previously reported, the post-simulation experience evaluations of the audiology students who participated in the current study demonstrated a high satisfaction level with the simulation scenarios as well as the post scenario debriefing (Alanazi, Nicholson, Atcherson et al., 2016).

Wilson et al. (2010) assumed that limited practice by audiology students could explain why they stated moderate anxiety with interaction with the SPs but only slight anxiety when interacting with the CBS. O'Connor (2015) mentioned that some students may find the transition from traditional educational environments (i.e., theoretical learning) to real life situations (i.e., clinical practice) exacerbates low self-confidence and fear. Training audiology students through the use of simulation with SPs and debriefing sessions may help to identify their gaps in confidence, give faculty opportunities to close the students' gaps, and subsequently improve their clinical practice. Therefore, the decreased level of confidence demonstrated by some students in this study may be lessened (or alleviated). Howard, Englert, Kameg, and Perozzi (2011) found that students reported decreased nervousness with patients following experiences in a simulation clinic. Students who had preclinical simulation training reported significantly less anxiety than those who had no preclinical training (Gore, Hunt, Parker, & Raines, 2011). Substantial literature supports that participants' level of confidence increases after the simulation experiences (Alanazi, Nicholson, Atcherson et al., 2016; Dearmon et al., 2013; Halm et al., 2013; Isenberg et al., 2015; Kaplan & Ura, 2010; Ohtake, Marchilene, Schillo, & Rosen, 2013; Thomas & Mackey, 2012). This increase in self-confidence helps students have a better chance to achieve success and reach their clinical goals (Clark, Owen, & Tholcken, 2004). Instructors (or debriefers) should know that not all students are able to transfer confidence that is built in the simulation event to real life clinical experiences (Feingold, Calaluce, & Kallen, 2004).

Low self-confidence, increased stress, and other emotional tensions can adversely affect students' performance and impact their ability to meet patients' needs. On the other hand, having these emotions may be advantageous to the learning process, helping the retention or carry-over effect of the learned knowledge and skills to stay for a long time. Research shows that events with high emotional and stressful content are stored in the long-term memory (Sandi & Pinelo-Nava, 2007). "Participants may only remember a portion of what they did in simulation, but they

will always remember how you made them feel" (Ziv, 2013, p. 19). Finally, getting students to express their feelings and reflect on their performance in simulation experiences (i.e., reflective practice) early on may support students' progress from basic competency to proficiency (King et al., 2007).

Limitations and Future Research

Several limitations of this study should be considered. First, although interventions and briefing were performed before the simulation events for all students, this study included students from two AuD cohort levels with different knowledge and clinical skills background. This study also did not control for the participants' race, gender, or age nor include a control group. The current study did not assess how long the learning outcomes had sustained after the simulation experience. Finally, the small number of participants from one audiology program in one university may not broadly apply to groups with different experiences. This qualitative study does not provide statistical generalizability; however, it can provide highly transferrable strategies for audiology educators.

Future research needs to consider the long-term retention of information learned during simulation sessions and the impact on professional practice competencies. Future researchers are encouraged to use one case scenario and follow parents/child through three sequential stages: (a) hearing screening completion by 1 month, (b) motivating the parent to complete the diagnostic evaluation by 3 months, and (c) counseling the parents about seeking intervention services and enrollment by 6 months of age. Other areas in the field of audiology, such as cochlear implant consultation and candidacy examination, can be included as a separate case scenario or as an intervention within the sequential stages. Simulation activities that include IPE among audiology, speech-language pathology, nursing, and medical students are needed. Finally, simulation studies should consider randomized study design with an experimental group and a control group, providing a higher level of evidence than the current study.

Conclusion

Simulation has been used successfully in many health professions; however, the attempts of using simulation to educate and train audiology students are modest. Although simulated patients offer encouraging new possibilities for educating audiology students, teaching with SPs appears to be seldom used in audiology compared to other healthcare disciplines. This study provided researchers and educators a chance to gain experience with the use of hybrid simulation with AuD students and obtain the students' impressions for such a learning experience. We identified students who showed promising professional dispositions and competencies and students who showed limited knowledge and practice, insufficient communication skills, low self-confidence, and undesirable emotional

reactions. Results from this study demonstrated the need for more practice in simulated experiences like this to help students develop skills they do not have and to enhance the skills they may have naturally. The goal of simulation training is to provide students with a safe environment to practice skills, to facilitate skill development, and to gain self-confidence. Simulation provides an opportunity to facilitate development of professional abilities through an open and honest dialogue with students aimed at identifying opportunities for performance improvement. We believe our students benefited from this learning activity and identified dispositions and competencies needed for effective counseling. We encourage audiology programs to implement simulation training including debriefing sessions to emphasize comprehensive professional efficiency. Simulation training can also identify knowledge and skill gaps, integrate learning among students from different AuD cohorts, and plan for future practice.

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