Educational Interpreters and the Dunning-Kruger Effect

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ABSTRACT

Kruger and Dunning (1999) found the least skilled individuals significantly overestimate their performance. However, as individuals increase their awareness their skills their predictions also become more accurate – the Dunning-Kruger Effect. This study examined the ability of educational interpreters working in public schools to predict their scores on the Educational Interpreter Performance Assessment (EIPA) a measure of interpreting skills. Findings indicate interpreters experience a Dunning-Kruger Effect in that the least skilled interpreters overestimate their interpreting skills, whereas better interpreters underestimate their interpreting skills. These findings raise important questions about whether lesser skilled educational interpreters are able to adhere to ethical requirements of only accepting assignments they are qualified for, if they are prone to overestimate their skills.

INTRODUCTION

Since the implementation of Public Law 94–142, the Education for All Handicapped Children Act, of 1975 (renamed Individuals with Disabilities Education Improvement Act of 2004) mandated that children with disabilities ought to be educated with non-disabled students whenever possible. For children who are Deaf, this often entails placement in a public-school setting (Winston, 2015) and as a result, more than 91% of Deaf children attend regular public schools for all, or part, of the school day (Shaver, Marschark, Newman, & Marder, 2014; U.S. Department of Education, Office of Special Education Programs, 2016). Many Deaf children depend on educational interpreters for access to communication, curriculum, and social interactions in the school system (Brown & Schick, 2011; Schick, 2001). At a most fundamental level, educational interpreters provide access to the discourse features of the school environment (Antia & Kreimeyer, 2001; Humphrey & Alcorn, 2007; Pöchhacker, 2004; Seal, 2004; Stuckless, Avery, & Hurwitz, 1989; Schick, Williams & Kupermintz, 2006; Winston, 2015, 2004, 1990).

Classrooms are complex learning environments (Schick, 2008; Winston; 1990, 2001; Smith, 2013; Registry of Interpreters for the Deaf, 2010) with a constellation of factors impacting a students' ability to learn. In addition, simultaneous interpreting is a demanding cognitive task (Cokely, 1986; Gile, 1997; Ivars & Calatayud, 2013; Köpke & Nespoulous, 2006; Macnamara, Moore, Kegl & Conway, 2011). An interpreter must concurrently perceive the source message, process meaning, formulate appropriate grammar, and immediately produce the message in the target language. The speed of simultaneous interpreting leaves little time to consider the best way in which to reconstruct the target message in a second language (International Association of Conference Interpreters [AIIC]). And, while these processes are underway, interpreters must

constantly monitor their work to guard against errors (Cokely, 1986; Macnamara, Moore, Kegl, & Conway, 2011; Stone, 2014) and self-assess the efficacy of the interpretation just rendered.

Educational interpreting, therefore, can be conceptualized as a series of cognitive, and linguistic challenges occurring in a complex communication environment, all while adhering to some form of ethical standard. For example, the Educational Interpreter Performance Assessment (EIPA) Guidelines of Professional Conduct for Educational Interpreters, Schick (2007) notes for educational interpreters,

> there are many factors that impact the accuracy of an interpretation, such as visual distractions, the interpreter's skills and knowledge, as well as the teacher's style of instruction. Ultimately, it is the interpreter's responsibility to inform the teacher and/or student when concerned about the completeness of an interpreted message. The interpreter should inform the student and the teacher if he or she feels that the teacher's message was not communicated accurately (p. 6).

As such, educational interpreters should consider the following information about an assignment to determine if his or her skills are adequate for the assignment:

- the age level of the student,
- the content of the various classes,
- situations calling for special interpreting skills (i.e. films, assembly programs),
- the student's language skills,
- the interpreter's language skills, and
- the student's sign language preference (Schick, 2007, p. 8).

Specifically addressing educational interpreters, the Registry of Interpreters for the Deaf (2010) indicates educational interpreters must adhere to a professional code of conduct and "provide an interpretation that meets the linguistic needs of the student" (p. 2). And, educational interpreters must be highly qualified, or they are unable to "provide students with access to a free, appropriate public education" (Registry of Interpreters for the Deaf, 2010, p.1) as guaranteed by federal statute.

Furthermore educational interpreters should be familiar with the NAD-RID Code of Professional Conduct (Registry of Interpreters for the Deaf, 2005) which is "to be viewed holistically and as a guide to professional behavior" (p. 1) and addresses overarching concepts of "confidentiality, linguistic and professional competence, impartiality, professional growth and development, ethical business practices, and the rights of participants in interpreted situations to informed choice" (Registry of Interpreters for the Deaf, 2005, p. 1). Interpreters therefore are to respect these concepts by exercising judgment and critical thinking while drawing on experience. The Code of Professional Conduct (Registry of Interpreters for the Deaf, 2005, p. 2) outlines seven tenets.

1. Interpreters adhere to standards of confidential communication.
2. Interpreters possess the professional skills and knowledge required for the specific interpreting situation.

3. Interpreters conduct themselves in a manner appropriate to the specific interpreting situation.
4. Interpreters demonstrate respect for consumers.
5. Interpreters demonstrate respect for colleagues, interns, and students of the profession.
6. Interpreters maintain ethical business practices.
7. Interpreters engage in professional development

The second tenet states interpreters should possess the skills and knowledge to interpret in the given situation and interpreters are to "accept assignments using discretion with regard to skill, communication mode, setting, and consumer needs" (Registry of Interpreters for the Deaf, 2005, p. 3) by assessing consumer needs and the situation. The third tenet, states interpreters should "decline assignments or withdraw from the interpreting profession when not competent due to physical, mental or emotional factors" (Registry of Interpreters for the Deaf, 2005, p. 3). Related to tenet seven, professional development, interpreters should pursue higher education, attend workshops, use mentors and generally participate in community events.

These notions are not unique to the United States or ASL-English interpreting. For example, the International Association of Conference Interpreters (2018) Code of Professional Ethics states members shall not accept any assignment for which they are not qualified. Accepting an assignment implies a moral undertaking on the member's part to work with all due professionalism.

All three codes of professional behavior clearly indicate interpreters should not accept interpreting work for which they are not qualified. However, Kruger and Dunning (1999) found across a variety of tasks, the least skilled individuals significantly overestimate their performance. Are under skilled interpreters really able to judge their own qualifications? If educational interpreters experience a Dunning-Kruger Effect, it would be difficult for less skilled educational interpreters to determine for which assignments they are unqualified. The next section will review the current literature related to the Dunning-Kruger Effect, performance predication across several fields, educational interpreting and the Educational Interpreter Performance Assessment (EIPA).

<div align="center">LITERATURE REVIEW</div>

This literature review is divided into two sections. The first section examines research related to performance prediction across several fields. The second section provides information specific to interpreting in public schools and the EIPA assessment instrument.

PERFORMANCE PREDICTION

Kruger and Dunning (1999) argued the "skills that engender competences in a particular domain are often the very same skills necessary to evaluate competences in that domain" (p. 1121). Through a series of four studies assessing participants self-assessments of humor, logical reasoning and English grammar, Kruger and Dunning (1999) noted individuals with low abilities often had the illusion of superiority. Kruger and Dunning attributed this tendency to a person's own ineptitude and lack of metacognitive self-awareness impaired the ability to objectively evaluate their actual competence or incompetence. They found "incompetent individuals have more difficulty recognizing their true level of ability than do more competent individuals and that a lack of metacognitive skills may underlie this deficiency" (Kruger & Dunning, 1999, p. 1122). These

findings are the underpinning of the Dunning-Kruger Effect which broadly stated individuals with lower skills do not possess the metacognitive skills needed to recognize their own incompetence.

Ehrlinger and Dunning (2003) argued inaccurate self-assessments are founded on a lack of unbiased feedback about performance. In other words, without any feedback about what constituted an effective performance, individuals overestimated their own performance abilities. Dunning, Heath and Suls (2004) observed self-assessment is an intrinsically difficult task and people's prediction of their performance when compared with actual performance is flawed. Similarly, Oksam, Kingma and Klasen (2000) investigated several instances of health care trainees overestimation of their diagnostic skills, estimation of reading comprehension, awareness of medical terminology, abilities on interviewing skills, and even hunters' knowledge of firearms. In all, the estimation of skills was flawed with broad support of Kruger and Dunning's (1999) claim that "novices are less likely than experts to successfully gauge whether specific play attempts were successful" (p. 1122). Dunning, Johnson, Ehrlinger and Kruger (2003) pointed out most of the overestimation of an incompetent person's skill was the result of the person not knowing the general standards of effective performance of the skill itself. Novices were less "calibrated than experts" (Kruger & Dunning, 1999, p. 1122).

Camerer and Lovallo (1999) also observed entrepreneurs risk too much in new ventures because of overconfidence and flawed self-assessments. And, Hacker, Bol, Horgan and Rakow (2000) reported lower performing students in an educational psychology course showed overconfidence in their predictions and self-assessment of their knowledge and skills. They believed students' confidence became more pronounced the lower the students scored. As part of a six-year study, Sharma (2002) demonstrated students enrolled in a genetics course were not able to predict their examination scores in that top students under-estimated their performance whereas poor students over-estimated their performance. Throughout several studies with business students, Merkle and Weber (2011) wrote "people hold beliefs about their abilities in different domains and tasks which are inconsistent with rational information processing" (p. 262). Roy, Liersch, and Broomell (2013) claimed that participants across five studies had a skewed sense of ability which impacted their self-assessment because they saw themselves as better than the prototypes. In other words, people believed they performed better than a prototype or above average. Pennycook, Ross, Koehler and Fugelsang (2017) explored several high-level reasoning tasks with over 400 participants and discovered those who made the highest number of errors also overestimated their performance, whereas those who scored a lower number of errors also underestimated their performance. Aqueveque (2017) even showed that wine consumers demonstrated cognitive biases and overestimated their knowledge of wine. And Gibbs, Moore, Steel and McKinnon (2017) recognized similar instances among employees' knowledge of workplace computer skills.

The abundance of this research provided additional empirical support for the Dunning-Kruger Effect of estimated performance and self-evaluation of such performance. Dunning (2005) suggested the estimation of abilities was tied to competence in that the cognitive abilities a person needed to recognize they are unskilled was the same ability as the skill itself. Erhlinger and Dunning (2003) summarized the Dunning-Kruger Effect succinctly in that the poorest performers held the least accurate assessments of their skill and performances, and grossly overestimated how well their performances stacked up against those of their peers. If this is true of educational

interpreters, it poses significant issues if under skilled educational interpreters are also responsible for accepting or declining assignments for which they are not qualified (Registry of Interpreters for the Deaf, 2005; International Association of Conference Interpreters, 2018; Schick, 2007). Next, literature related to ASL-English educational interpreting and related metrics is presented.

ASL-ENGLISH EDUCATIONAL INTERPRETING

Specific to educational interpreting, Schick, Williams, and Kupermintz (2005) characterized interpreting for a Deaf child in a public-school setting to be challenging for educational interpreters given the discourse style. For example, classroom communication is often complex (Schick, 2008; Winston; 1990, 2001; Smith, 2013) and distributed among multiple speakers, which Schick et al. (2005) argued is difficult to represent. In fact, Kurz, Schick, & Hauser (2015) explored whether Deaf middle school students could learn as much content material from a highly qualified educational interpreter as opposed to direct instruction from a teacher using ASL. Kurz, Schick, & Hauser (2015) found Deaf students who received direct instruction in ASL from a teacher in science, technology, engineering or mathematics (STEM) topics scored higher on content knowledge than those who used a highly qualified educational interpreter. These findings highlighted direct instruction is a better option (Kurz, et al., 2015) than even highly qualified educational interpreters representing difficult classroom content (Schick, et al, 2005).

With these issues in mind, the Educational Interpreter Performance Assessment (EIPA) was developed to assesses sign language interpreters working in an educational setting. As a psychometrically valid and reliable instrument (Schick, Williams, & Kupermintz, 2005), the EIPA was designed to evaluate the two-way aspects of interpreting necessary to support the language and cognitive development of Deaf students in elementary and secondary classroom settings (Schick & Williams, 1999). These competencies were publicly available (https://www.classroominterpreting.org) and included the broad competencies in Table 1.

Profiles of performance expectations indicated an educational interpreter with a skill profile between 3.0-3.5 is not providing complete access to the information being conveyed. An EIPA 3.5 was often used as an informal benchmark to determine if an educational interpreter is qualified. Schick and Williams (2004) reported that

> such interpreters are making numerous errors, omissions and distortions in his or her interpretation. Typically, these errors occur throughout the interpretation; the interpreter does not simply represent the most important information, omitting only what is less important. Basically, a child who has an interpreter functioning at this level is not receiving the same information as his or her hearing peers (p. 192).

Table 1. EIPA Domains

Domain		Competencies Description
I.	Sign to English:	Interpreting a series of classroom lectures
II.	English to Sign:	Interpreting an interview with a student who is Deaf or Hard-of-Hearing
III.	Vocabulary:	Assessment of the vocabulary, accuracy, production of, and appropriate use of, fingerspelling, and number production and reception
IV.	Overall Factors:	Assessment of the overall factors within the interpreted product

As an assessment with scaled levels of performance the EIPA allows for separating participants by discrete performance levels. Coupled with educational interpreters' predictions of their own performance level, a sense of whether educational interpreters experienced a Dunning-Kruger Effect could be determined. This study examined the ability of educational interpreters working in public school settings abilities to predict their scores on a measure of interpreting skills and posed the following questions: (1) How accurately could K-12 educational interpreters predict their interpreting performance on the EIPA? (2) Do educational interpreters experience a Dunning-Kruger Effect?

METHOD

Ninety-nine participants were recruited in the southeastern United States in a state with no minimum standards for educational interpreters. Participants were working educational interpreters who volunteered to take a free EIPA assessment offered by the state Department of Education and willingly participated in this research in exchange for a free assessment. No participant had previously taken the EIPA and each selected either the elementary or secondary stimulus materials. Participants completed appropriate testing and informed consent paperwork and predicted what score they anticipated achieving on the EIPA examination prior to taking the test using the Likert-like scale used in the examination: 0 (no skills demonstrated) to 5 (advanced native-like skills).

Participants then selected either the elementary or secondary version, and two video samples of interpretation were video recorded. The first sample showcased interpreting work from English to signed language and the second sample featured interpreting work from signed language to English. A team of three specially trained raters, fluent in the language being assessed evaluated each video sample at the national EIPA Diagnostic Center. At least one member of the team was Deaf, and all raters had taken assessment training and rater monitoring (Schick, Williams, & Kupermintz, 2005). Each sample was rated using a standard Likert scale from zero (no skills) to five (advanced skills). The set of two interpreting samples were scored against 38 specific competencies across the four major domain areas (Schick & Williams, 2004) referenced earlier.

Participant's predicted scores were contrasted with the actual scores rated by the EIPA examination and crossed examined with demographic information. Ninety-seven percent of participants were Caucasian female candidates which is reflective of the educational interpreter population across the United States (Schick, et al., 2005; Schick & Williams, 1999; Jones, et al., 1997). The participants were not compensated for their participation in the study. Table 2 provides general demographic information.

Table 2. Participant Demographic Information

Demographic Information		
Gender	Female	97 participants
	Male	2 participants
Mean Age	(Range 19-70 yrs)	Mean: 41 y/o
Mean Years of Professional Interpreting Experience	(Range 1-32 yrs)	Medan: 10 yrs.
Highest Degree Completed	High School	47
	Associates Degree	28
	Bachelors Degree	24
Completed Interpreter Education Program		35
Hold Certification from RID		13

Using SPSS, an analytics software program, several one-way ANOVA were calculated to compare the effect between predictions of scores and actual achieved score.

RESULTS

There was a main effect of actual skills of educational interpreters and the accuracy of their performance prediction, $F(3,96)=9.06379$, p=.000024 in that educational interpreters who earned lower scores on the EIPA examination tended to over predict their performance abilities. Educational interpreters with higher scores tended to under predict their performance abilities. Table 3 provides a Summary of ANOVA.

Table 3. Summary of ANOVA Data

Treatments

EIPA Bin	1.0-2.0	2.1-2.9	3.0-3.5	3.6-4.0
N	14	48	24	14
$\sum X$	10.8	3.2	-5.8	-6.9
Mean	0.7714	0.0667	-0.2417	-0.4929
$\sum X^2$	17.88	24.36	7.86	10.31
Std.Dev.	0.857	0.7168	0.5299	0.729

Source	Sum of Squares	df	Mean Square	
Between-treatments	13.3302	3	4.4434	$F = 9.06379$
Within-treatments	47.0629	96	0.4902	
Total	60.3931	99		

**p<.001

Two tailed *t*-tests indicated there was a significant effect for interpreters who earned between 1.0-2.0 (n=14) on the EIPA examination, (*M*=0.77, *SD*=0.86); *t*= 4.24066, *p*=.000051. Educational interpreters with low scores on the EIPA tended to significantly over-estimate their performance. There was no significant effect for educational interpreters who earned between 2.1-2.9 9 (n=48) on the EIPA examination, (*M*=0.07, *SD*= 0.70926); *t*=0.65827, *p* =0.511911, nor was there any significant difference between the predication and actual performance of educational interpreters who earned between EIPA 3.0-3.5 (n= 24), (*M*=0.09, *SD*=0.5299); *t* = -1.85474, *p* =0.066641. These educational interpreters tended to have more accurate predications when contrasted to actual performance. However, there was a significant effect for interpreters who earned an EIPA 3.6 or above (n=14) on the examination, (*M*=-0.049, *SD*= 0.72903); *t* = 2.69452, *p*=0.008295. Educational interpreters at this level tended to underestimate their actual performance. Figure 1 illustrates the EIPA predicted performance versus actual performance within each EIPA performance group.
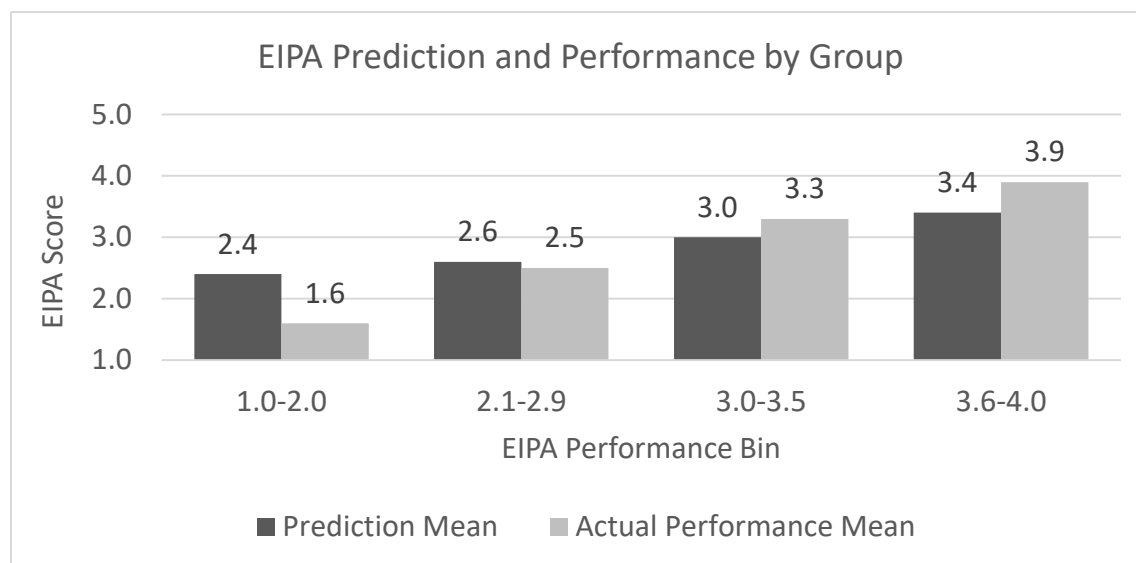
Figure 1. EIPA Predication and performance by group

     As Figure 1 revealed, the least skilled educational interpreters (EIPA 1.0-2.0) were more likely to significantly overestimate how well they would do on the EIPA examination. Educational interpreters scoring between 2.1-2.9 overestimated their skills slightly less than educational interpreters scoring above 2.5-2.9. The more skilled educational interpreters (EIPA 3.6+) did not overestimate their skills at all, in fact, they typically underestimated how they would perform on the EIPA. Figure 2 illustrates this tendency.
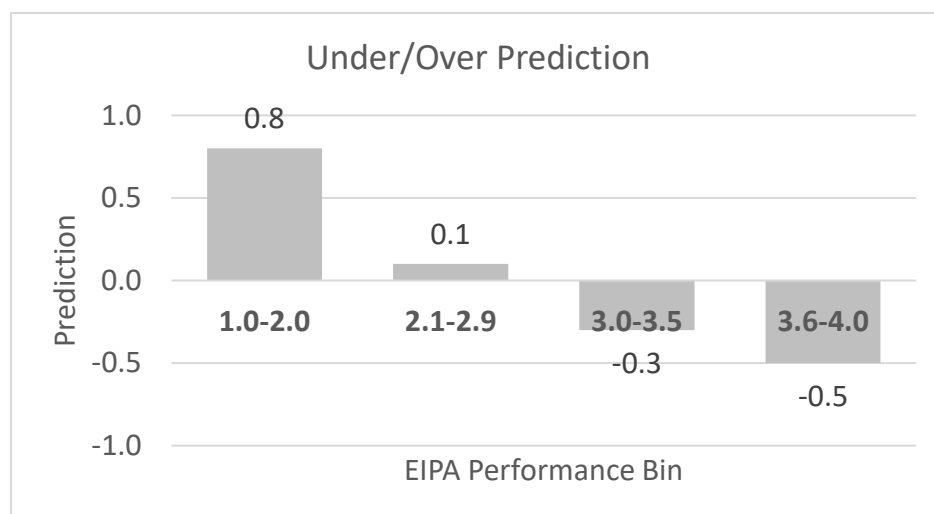

Figure 2. Mean error in predictions of EIPA Scores as a function of actual performance level

In other words, lower skilled educational interpreters overestimated their interpreting skills, whereas higher skilled educational interpreters underestimated their skills. These results are at the heart of the Dunning-Kruger Effect.

DISCUSSION

In an effort to determine how accurately educational interpreters predict their interpreting performance on the EIPA examination, the accuracy of predicted performance was analyzed in contrast to actual interpreting performance, as determined by EIPA scores. These data suggest educational interpreters who scored lower on the EIPA rating overpredicted their performance on the examination. However, interpreters who scored higher on the EIPA examination underestimated their examination performance. As scores increased the trend of underpredicting actual performance increased as well.

These findings note, like other populations, educational interpreters experience a Dunning-Kruger Effect in so much as educational interpreters with lower skills "have more difficulty recognizing their true level of ability than do more competent individuals" (Kruger & Dunning, 1999, p. 1122). While educational interpreters with higher level skills may not predict their performance accurately, they tend to underpredict their performance or believe they are less able to manage the complex learning environment (Schick, 2008; Winston, 2001, 1990; Smith 2013; Registry of Interpreters for the Deaf, 2010). It can be argued an educational interpreters' underpredicting their skills is less troublesome than educational interpreters who grossly overpredict their skills.

Specific to educational interpreters, "it is the interpreter's responsibility to inform the teacher and/or student when concerned about the completeness of an interpreted message. The interpreter should inform the student and the teacher if he or she feels that the teacher's message was not communicated accurately" (Schick, 2007, p. 6). If a lesser skilled educational interpreter experiences the Dunning-Kruger Effect, they are unable to determine if their interpreting is not accurate. Coupled with poor quality interpreting, a lesser skilled educational interpreter cannot recognize they are not providing access to the classroom (Brown & Schick, 2011; Schick, 2001) and likely preventing a free appropriate public education for Deaf students (Registry of Interpreters for the Deaf, 2010) as guaranteed by federal statue. And, not even realizing it.

Since *all* interpreters are to only accept assignments using discretion with regard to skill and decline assignments "when not competent due to physical, mental or emotional factors" (Registry of Interpreters for the Deaf, 2005, p. 3) can we expect less skilled educational interpreters to be able to meet this ethical requirement if they are unable to self-determine their interpreting skills? If lesser skilled educational interpreters are prone to overestimate their skills, they would be unable to adhere to ethical standards of engaging in assignments they were capable of handling. Or, more broadly "imply with any confidence a moral undertaking on the member's part to work with all due professionalism" (International Association of Conference Interpreters, 2018, p. 1) without the ability to predict what type of assignment they are able to manage.

Such instances of a Dunning-Kruger Effect among educational interpreters has significant impact on the interpreting profession in that we expect interpreters to adhere to a code of professional behavior they may be ill-equipped to address. In order to ensure Deaf children are not victimized by lesser skilled educational interpreters impacting their education, minimum standards must be required in each and every state. Deaf children can no longer be asked to tolerate lesser skilled interpreters making decisions on what settings they are qualified.

Beyond Deaf children, the implications for the Deaf community are profoundly disturbing. If the Dunning Kruger Effect is true among educational interpreters, it may also be true among community setting interpreters. This raises concern as to whether lesser skilled community interpreters also experience a Dunning-Kruger Effect. If so, are community interpreters able to effectively determine what interpreting situations for which they are qualified? If not, lesser qualified community interpreters may be over-predicting their skill set, thereby accepting assignments for which they are not qualified. This issue adds a strain on the trust the Deaf community gives to interpreters. If these ethical expectations are impossible hurdles for lesser skilled interpreters, the interpreting and Deaf communities must be cognizant of the Dunning-Kruger Effect and how we work together with lesser skilled interpreters. Certainly, more research is needed to determine if a Dunning-Kruger Effect is evident among community-based interpreters.

To be clear there is no malice on the part of lesser skilled educational interpreters in accepting work for which they are insufficiently equipped to accept, they are just unable to effectively predict their skills. Yet, lesser skilled educational interpreters are at risk of denying a free appropriate public education (Registry of Interpreters for the Deaf, 2010), and because many interpreters work in isolation, educational interpreters have few opportunities to receive unbiased feedback about their performance (Ehrlinger &Dunning, 2003) or to observe prototypical models (Roy, Liersch, and Broomell, 2013) of more effective interpreting to contrast their own performance against. There needs to be a means for educational interpreters to received unbiased feedback and examine prototypical models and develop self-assessment skills to more effectively guide and improve their performance.

However, Winston (2005) reminds us that "interpreting educators have long recognized the need to help students develop competence in self-assessment" (p. 212). There is much evidence that self-assessment helps engage higher education students (Thomas, Martin & Pleasants, 2011) and can be taught (Kruger & Dunning, 1999; Mcdonald & Boud, 2003; Srinivasan, Hauer, Der-Martirosian, et al., 2007; Redwood, Winning, Lekkas & Townsend, 2010) in a variety of academic disciplines including ASL-English interpreter education (Fitzmaurice, 2018; Stauffer, 2011). Teaching self-assessment skills and the development of more accurate predictions skills are a crucial need in interpreter education curricula.

Further, and arguably most importantly, there needs to be in place national, minimum performance requirements to ensure Deaf children are receiving a free appropriate public education and to put a stop to the victimization of Deaf children by educational interpreters experiencing a Dunning-Kruger Effect.

LIMITATIONS

The limitations of this research are that it only addresses educational interpreters who voluntarily took the EIPA examination for the first time. Such interpreters may not know the EIPA assessment system, each of the competencies in great detail or understand the EIPA holistic scoring system. Although generally reflective of the educational interpreting communities, the sample population lacks variance across several factors. Additionally, this research relies solely on the EIPA assessment metric not any other interpreter evaluation.

CONCLUSION

This study explored whether educational interpreters experience a Dunning-Kruger Effect by way of accurately predicting their overall performance abilities when taking the EIPA examination. Indeed, educational interpreters experience a Dunning-Kruger Effect in that the interpreters who score lower on the EIPA overestimate their anticipated score on the test, whereas interpreters who scored higher on the EIPA underestimated their scores. These findings have important ethical implications herein in that less skilled educational interpreters may be unable to only accept assignments for which they are qualified because they are overestimating their skill set.

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