



Beliefs about and attitudes towards stuttering among high school students in Norway

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Preface

I remember back when I was enrolled in my master's program a long-term family friend shared with me that he was in fact himself a person who stutters, something which I had never taken notice of. He shared with me how his childhood and adolescence had been, how his dream of becoming a teacher was met with disbelief and ridicule. He told me of years of struggle and hard work, hopelessness, determination, fear. He told me of how he overcame the limiting expectations of others, how he became a teacher despite their disbeliefs. He told me of tough years as a young teacher, and that learning the gift of sharing was his ultimate redress. He had learnt that being open with his students, explaining to them the different aspects and manifestations of stuttering, helped him both psychologically and physiologically.

He inspired me, and he opened up my eyes to how important societal beliefs and attitudes can be in shaping a person's disabilities or personal struggles. He reminded me the extent to which people can place limitations on each other, how harshly we can judge one another's abilities and capabilities. Why can we not see beyond the framework of normal and abnormal? Why do we set limits for one another? I may not stutter myself, but in so many ways this feels personal. I feel I have met my calling, and I would like to thank my family friend for sharing his life experiences with me.

Sampling high school students' attitudes and beliefs was an exciting task. To me, it seemed like the students were eager to learn how to be and how to act around people who stutter. They talked about confusion and concern regarding interactions, thus making them somewhat uncomfortable and strained in such situations. At large, they did not necessarily seem to have particularly "bad" or "good" attitudes but were rather quite bewildered about how to interact "the right way". A large majority of the students asked questions about causes and so forth; they seemed anxious to learn and to understand the disorder. Some asked follow-up questions to the POSHA-S, for example regarding how one should respond when

interacting with a person who stutters. One student shared that they sometimes would complete the person's sentences when interacting with a stutterer, but that they were unsure as to whether this was a "good" or "bad" thing to do. Other students shared that it was difficult not to pity the person who stuttered when they got really stuck. They imagined how difficult and frustrating it must feel and therefore felt sympathy and compassion towards them.

I wish to commend the students that took part in the survey as well as the discussions that followed. I would like to thank them for their time and their willingness to share their thoughts and concerns. In the bigger picture these students showed a desire to understand and attempt their best, but they were somewhat perplexed and insecure. They did not strike me as showing less-positive attitudes due to ignorance, but rather due to concern and doubt. It is my belief that the education system needs to address such issues and help students gain an understanding of disorders and how it can be to live with a disability. The education system has a responsibility to help students grow and advance in their ability to reflect, and for this reason there should be a devoted focus on gaining insight into living with a disability. I believe this to be important not just in fields of health, but as a part of a general education. One encounters all sorts of people in many different settings in the course of one's life, and it is in such situations, normal moments of everyday life, that critical thinking skills and the ability to reflect are so important – not just in professional fields. It should be on the agenda of general education to help students gain insight into disability culture with the goal of improving their cultural competence, improving communication with an array of diversity, and, ultimately, to help make society a better place to live.

I also want to take time to thank my advisers, Karsten Specht and Siv Andresen. Thank you for your patience in dealing with my constant indecisiveness. Thank you for your guidance and help. I appreciate and feel fortunate to have had you as partners for bouncing ideas and ultimately completing the thesis. I would also like to thank Professor Kenneth St. Louis. Thank you for letting us use the POSHA-S, thank you for your time and consideration

in the project, for helping me improve the Norwegian translation and for taking time to answer all my questions. Had it not been for you, there would not have been a project. I would also like to thank Hilda Sønsterud for letting me use the Norwegian translation of the POSHA-S. Thank you so much to the schools and teachers who welcomed me into their classrooms. Your positive influence shaped these young adults to be open minded, curious, and receptive to my research. And lastly, I wish to thank my friends and family for putting up with me, always being there showing support and listening to my many questions, thoughts and doubts regarding just about every aspect of the project. I owe you guys, big time.

The survey was developed by Professor Kenneth St. Louis, and translated to Norwegian by Hilda Sønsterud, Ragnhild R. Heitmann & Helene Kvenseth. With permission and in collaboration with Professor Kenneth St. Louis, adjustments and changes to the Norwegian version have been made by Camilla Agnes Andersen.

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Abstract

The purpose of this study is to investigate the attitudes and beliefs toward stuttering and people who stutter held by high school students in Norway using the *Public Opinion Survey of Human Attributes–Stuttering (POSHA-S)*. Specifically, changes in attitudes and beliefs from first-year to last-year students are analyzed. Lastly, the combined research data is compared to the international database of POSHA-S research. First, an overview of pertinent research results and the literature relating to the consequences of stuttering is explored, with topics like workplace- and job discrimination, stigmatization, the stuttering stereotype, and the importance of the beliefs and reactions of others. Next, findings on the epidemiology of stuttering attitudes are discussed. Last, measures taken to answer the research questions are explained, focusing on research design, sampling scheme, data analysis, and potential limitations.

Keywords: stuttering, POSHA-S, high school students, Norway, attitudes, beliefs, stereotype, discrimination.

Abstrakt

Hensikten med denne studien er å undersøke holdninger og oppfatninger om stamming og mennesker som stammer blant videregående elever i Norge ved bruk av *Public Opinion Survey of Human Attributes–Stuttering (POSHA-S)*. Forandringer i holdninger mellom første klasse og tredje klasse blir gjenstand for analyse, deretter vil det kombinerte datasettet sammenlignet med den internasjonale databasen av POSHA-S forskning. Først utforskes relevante forskningsresultater og litteratur knytter til konsekvensene av stamming, med

spesielt fokus på tema som diskriminering, stigmatisering, stereotypier, og viktigheten av omgivelsenes holdninger og tanker om stamming. Deretter drøftes utviklingen av stammerelaterte holdninger ut i fra relevante forskningsfunn. Sist gis en gjennomgang av tiltak tatt for å besvare forskningsspørsmålene, med spesielt fokus på metodiske valg, dataanalyse, og potensielle begrensninger.

Beliefs about and attitudes toward stuttering among high school students in Norway**Research topic****What is stuttering?**

Ward (2017) clarifies that, in his view, stuttering encompasses far more than getting stuck on words. He explains that there is no one brief and to-the-point answer as to what stuttering is, but that it should be viewed as a condition that involves several interacting factors. Shapiro (2011) expresses that “stuttering is whatever people who stutter feel their own stuttering to be” (p.8). In like manner, Ward (2017) goes on to say that “it’s important to emphasize that stuttering is many different things to many different people” (p.31). So, in the words of Ward (2017), it’s a simple enough question – but actually not one that is simple to answer.

In its surface form, stuttering is a speech disorder where one experiences breakdowns in speech fluency which subsequently causes a disfluent speech (Shapiro, 2011). Everyone – young and old, male and female – occasionally experiences disturbances in their flow of speech (Guitar, 2014b; Manning, 2009). No one’s speech is completely fluent (Ward, 2017). What distinguishes a stuttering disorder from normal disfluencies are a) number of breaks or frequency of disfluency; b) features of the speech breaks; c) severity and duration of disfluency (Guitar, 2014a; Ward, 2017). These involuntary disruptions of speech flow characterize what is known as core behaviors, primary stuttering or overt stuttering, which is what the listener can directly observe and/or hear (Guitar, 2014a; Ward, 2017). The speech breaks can be in the form of repetitions (one-syllable words, syllables, past-word, sounds), prolongations (sounds) or blocks (airflow or voicing, e.g. silent blocks) (Guitar, 2014a). Additionally, as blocks become more tense and longer, the person may experience tremors, particularly in the lips and jaw (Guitar, 2014a). The frequency and duration of stuttering varies from person to person, in different situations, and through the course of a life time (Blomgren, 2013; Guitar, 2014a; Ward, 2017). Moreover, an extensive amount of research

has shown that the fluent speech of PWS differs from that of people who do not stutter in acoustic, myographic and kinematic measures, i.e. sound quality, muscular movement, and body movement (see Jackson, Quesal, and Yaruss (2012) for a brief overview).

Secondary behaviors, also referred to as secondary- or covert stuttering, are learnt behaviors and patterns of behaviors used as an attempt to avoid or escape overt stuttering (Guitar, 2014a). Such patterns can be accompanying body movements, e.g. abrupt and quick eye blinking, sudden loss of eye contact, foot or hand tapping, nostril flaring, and fist clenching (Jackson et al., 2012; Ward, 2017). These patterns can be used to help the “run up” to problematic words, help to initiate speech and/or to avoid overt stuttering all together (Ward, 2017). Secondary behaviors also refer to attempts at masking or concealing ones’ stutter to others, thus giving the impression of a fluent speech. This is often referred to as avoidance behaviors, and can include word omission, word substitution, hesitation, pausing, circumlocution, altering word order, using fillers or starter-words, or perhaps not speak at all, even if one wishes to – all to avoid or mask stuttering (Guitar, 2014a). Jackson et al. (2012) stress that, in their view, when one makes use of such techniques, stuttering actually is occurring already, although below the surface.

A third, equally important, aspect of stuttering, is the presence of awareness. The presence of awareness, evident in most cases of stuttering, will considerably shape the way a person stutters (Jackson et al., 2012). This refers to learnt attitudes and self-stigma, concerning the individuals experience of stuttering, the potentially negative affective, behavioral, and cognitive reactions from themselves and/or the environment (Guitar, 2014a; Yaruss & Quesal, 2004). This aspect of stuttering lies beneath the surface and makes up what the observer cannot see or hear. In the 1970s, Sheehan made the statement that “Stuttering is like an iceberg, with only a small part above the waterline and a much bigger part below” (Sheehan (1970), pp. 184-185). Although not too shocking by today’s standards, this statement offered a different understanding of stuttering which at the time altered perspectives

on stuttering treatment. Sheehan (1970) proposed that what one observes as a listener only amounts to about 10 % of what composes stuttering, and that the remaining 90 % lies beneath the surface and outside of the listener's scope. The allotment that lies beneath the surface constitutes feelings of fear, shame, guilt, anxiety, hopelessness, isolation, embarrassment, and denial (Guitar, 2014a; Jackson et al., 2012; Sheehan, 1970). This could afford the possibility of significant limitations in the person's ability to participate in society and in daily activities, and potentially impact their overall quality of life negatively. (Yaruss & Quesal, 2004). The iceberg-analogy pays respect to the important role emotions play.

The epidemiology of stuttering.

Stuttering is divided into two subtypes – developmental stuttering and acquired stuttering (Yairi & Ambrose, 2013). Developmental stuttering is the most common, with onset typically between the ages of two and four (Blomgren, 2013). In cases of developmental stuttering, the complications are comprised of an individual combination of both primary and secondary traits. Acquired stuttering is rare and can emerge as a result of damage to the central nervous system, potential causes being e.g. strokes, head trauma, tumors, anoxia and dementia. In such cases, the individual will usually only show primary complications (Shapiro, 2011). Stuttering occurs everywhere in the world, regardless of culture, ethnicity, gender, age, occupation, socioeconomic background and intelligence (Guitar, 2014a). Over a decade of research has been devoted to locating the cause of stuttering (St. Louis & Tellis, 2015). The multitude of research has not uncovered one singular cause, but rather discovered that stuttering onset has several potential causes. However, there is quite a broad consensus among researchers that stuttering is strongly genetically predetermined (Yairi & Ambrose, 2013). Research findings point to 50-70% of cases of developmental stuttering having evidence of genetic influence, in addition to a moderate environmental impact (Fagnani, Fibiger, Skyttthe, & Hjelmberg, 2011; Rautakoski, Hannus, Simberg, Sandnabba, & Santtila, 2012; St. Louis, 2016). Additionally, there is also a strong consensus among researchers that

one is neurologically predisposed to develop stuttering (Chang, Garnett, Etchell, & Chow, 2018).

The prevalence of stuttering, i.e. the number of people in a chosen population who actively stutter at the time a survey is conducted, will vary dependent on the range of age that is surveyed. The reason for this is that a large portion of children who stutter will naturally stop as they get older, although, one cannot know for sure, who will stop stuttering naturally and who will continue to stutter (Blomgren, 2013). Thus, research focusing on- or including young children will often have a higher prevalence (Yairi & Ambrose, 2013). In an extensive literature review, Yairi and Ambrose (2013) deduced that a lifetime incidence of stuttering may be 8 % or higher.

Definitions of stuttering and theoretical frameworks.

Various definitions of stuttering have been suggested by, among others, Johnson (1959), Wingate (1964), Brutton and Shoemaker (1967), Van Riper (1982), Cooper (1987, 1993), Perkins (1990), Peters and Guitar (1991), Smith and Kelly (1997), and Shapiro (1999). The abundance of different words used to describe stuttering reflects the ongoing conflict in the field regarding the actual definition of stuttering and what components it is built of, thus revealing the challenges of defining a complex condition. At the present time, there is still no universally and unanimously acknowledged definition (Jackson et al., 2012). When one speaks of e.g. primary- and secondary stuttering, core- and secondary behaviors, or overt- and covert stuttering, these words reflect different definitions and, in part, different views of stuttering. Further, this then influences the development of certain therapies, e.g., stuttering management therapy vs fluency shaping therapy; the first has the goal of a speech free of unnecessary effort, although disfluent, while the latter has the goal of a stutter-free speech (Prins & Ingham, 2009). These views seem to vary depending on the context and model of health and disability that researchers adhere to, e.g. medical, social, or cultural.

From a medical viewpoint, a condition or disability is viewed as a problem that one must treat, cure or “correct” by seeking the help of professionals and experts (Hofmann, 2005; Thornquist, 2003). The disability is considered to be a feature of the person, an “impairment”, something within the individual (World Health Organization, 2002). The disability is caused by a specific health condition, disease or trauma that calls for individual treatment (Hofmann, 2005; Thornquist, 2003). In a medical perspective, stuttering can be seen as the physiological outcome it causes, the “impairment”, in form of reduced cooperation between nerve signals and muscles. In a social view, a condition or disability is a social construct (Leder, 1992; World Health Organization, 2002). A disability is not seen as something inherent in the person, but rather as something that is socially created by features of the social environment and a person’s experience of it (Gallagher, 1995; Toombs, 1988). In a social perspective, what we see, how we experience stuttering, and how we feel about stuttering, will depend on who we are. In a cultural view, a condition or disability takes shape and is given meaning in the cultural and social context it exists in, i.e. by how society views the «differentness», and is therefore something which is culturally created (Lupton, 2012). This way, an illness or condition is the sum of social disadvantages that are attached to the person who possesses these attributes, and illness or health problems are seen as a “disability”, a cultural product (Lupton, 2012). In a cultural perspective, stuttering implies the disadvantages society imposes on it, where the severity is determined by society's perception of how “different” it is.

So, in a social and cultural point of view, stuttering can be seen as something socially created by environmentally generated problems and limitations caused by public attitudes and features of the social environment. The opinions of others affect a person’s feelings about their own stuttering, and the person becomes aware of the limitations and vulnerabilities that stuttering may entail. Guitar’s (2014a) definition incorporates all three perspectives in his approach and understanding of stuttering. His model of the developmental levels of disfluency include core behaviors, secondary behaviors, attitudes and feeling, in addition to

underlying processes. With five levels, the model describes how stuttering may progress, while taking into account the different aspects of stuttering, and, further, stresses the need for different treatment approaches (Guitar, 2014a).

In 2001, The World Health Organization developed the *International Classification of Functioning, Disability, and Health (ICF)* (World Health Organization, 2002). As a part of a paradigm shift from a framework essentially built up by the medical model, they presented a model based on the biopsychosocial model that provided a framework for viewing such matters multidimensionally. The model consists of an integration of biological, individual and social perspectives of health and disability and further takes into consideration contextual factors, environmental and personal, along with the social and attitudinal environment in which people live (World Health Organization, 2002). This way, a disability is seen as a complex phenomenon. Yaruss and Quesal (2004) investigated how the ICF framework can be adapted to describe the different aspects of stuttering. With the ICF including functioning *and* disability, they explain that it can describe the positive and negative features of an individual's experience of fluent *and* disfluent speech. This way, the framework stresses that stuttering entails more than just observable behaviors, which is helpful for understanding stuttering's complex nature and for evaluating treatment outcomes in treatments where one tries to modify and/or improve the negative consequences of stuttering (Yaruss, 2001; Yaruss & Quesal, 2004).

Acquiring an overview of the landscape of definitions stuttering and models of stuttering onset can leave one feeling baffled and perplexed, and selecting one for research purposes can be a daunting task. The respective definitions overlap in several areas and all seem to point to important aspects of stuttering. Shapiro (2011) argued that all definitions of stuttering put together perhaps form a part of a true image. For the purpose of this research project, the main focus is on the understanding of stuttering as multidimensional, in accordance to Guitar (2014a), in addition to the ICF's model, which calls attention to the

significance of the attitudinal environment. This will build the theoretical framework on which the project is based.

Theoretical and empirical background

Stigma, stereotypes, and discrimination.

Attitudes and beliefs society holds about people who stutter (PWS) contribute to creating social stigma. Further, stigmatization involves discrimination and stereotypes (Boyle, Blood, & Blood, 2009). Boyle et al. (2009) discuss how having a stigmatized condition, such as stuttering, may carry with it a number of negative consequences. Among these are lower self-esteem, lower self-confidence, social isolation, increased stress, reduced psychological well-being, as well as an increase in physiological problems. Stigmatized individuals can experience discrimination in academic, workplace and social situations, and research findings suggest that they are less likely to seek help and participate in treatment (Jensen, Dybvig, & Johannessen, 2009). With time, they may begin to believe in the stereotypical image they have been given and eventually incorporate the oversimplified and uniform image into their own identity, something which is referred to as self-stigma (Jensen et al., 2009; St. Louis, 2016). As a consequence, it may lead to a diminished ability to demand equality and justice (Jensen et al., 2009).

When someone is *stigmatized* by society, others impose *stigma*, meaning a label associated with a set of traits. Stigmatization involves people making sweeping assumptions about others, leading to ascribing a certain label to someone that does not necessarily have any basis in reality. In the view of Goffman (2009), a person who is victim to stigmatization is someone who is ineligible for full social acceptance. He explains that through social encounters we assemble a social identity – and further through our social identity we communicate our anticipations to others. If stigma is discerned it can lead to lowered expectation among others and is subsequently discrediting for the stigmatized person (Goffman, 2009). For example, PWS are often assumed to be overly shy, nervous, or anxious.

The stigmatized person, as a consequence, constantly strives to adjust their social identities, uses strategies to deal with the rejection of others and further projects their complex self-image to others, thus reinforcing stigma (Goffman, 2009). Goffman's notion finds support in McCroskey, Richmond, Daly, and Falcione (1977). They found that individuals tend to modify their self-concept over time so that it matches the perceptions that others have of them (McCroskey et al., 1977).

By applying a model of self-stigma to developmental stuttering, Boyle (2015) explained the experiences of psychological harm, poorer quality of life, lower psychological health and reduced social participation PWS may encounter. In this view, PWS become aware of the fact that others stigmatize them; next they begin to agree with the negative attitudes and apply the stigma to themselves. The model proposes a view where the attitudes and beliefs of others play an important role in the rise of self-stigma. In this way, they may be partly responsible for the negative consequences of stuttering.

Stigma, in turn, is related to stereotypes. A person's stereotypical image can derive from their own experiences. White and Collins (1984), Doody, Kalinowski, Armson, and Stuart (1993) and MacKinnon, Hall, and MacIntyre (2007) all suggest that stuttering stereotypes may arise from the experiences and feeling of a normally-fluent speaker when facing moments of temporary disfluency. These situations are often stressful, tense or uneasy for the speaker, and the normally-fluent individual may be seen as nervous, shy, anxious or self-conscious – and so, these feelings emerging during moments of temporary disfluencies are generalized to permanent personality traits of those who stutter (Doody et al., 1993; White & Collins, 1984). Although similar, MacKinnon et al. (2007) suggest a more complex view. The authors researched the origins of the stuttering stereotype formation through an anchoring-adjustment hypothesis. First, they found that a normally-fluent person uses their understanding of former experiences of momentary disfluency as an *anchor* to generalize their perception of people who stutter. Second, realizing that momentary disfluency is not the

same as a stuttering disorder, the normally-fluent speaker readjusts their judgments. Third, this result in a less negative and less extreme stereotyping of stutterers compared with those experiencing temporary disfluency (MacKinnon et al., 2007). Although MacKinnon et al. (2007) demonstrate a modification in the idea of social stigma or stereotyping, the overall negative impact on the stutterer still persist and may cause social consequences that need to be addressed.

Attitudes and beliefs of the nonstuttering majority.

Craig, Tran, and Craig (2003) found that for those who have never had direct contact with PWS, a large number believed PWS to be shy, self-conscious, anxious and lacking in self-confidence. Further Panico, Healey, Brouwer, and Susca (2005) found partial support for the idea that as frequency of stuttering increases, the listener tends to make increasingly more negative assumptions about the speaker. In like manner, McCroskey et al. (1977) found that people who do not stutter possess relatively negative views of people who do stutter. On the other hand, several participants in Craig, Tran, and Craig's study (2003) did not think they would be embarrassed when talking to PWS, believed that they have average to above intelligence, and are capable of positions of responsibility at work.

Attitudes and beliefs of the stuttering minority.

There is evidence that some PWS experience self-stigma and have negative stereotypes of themselves (Boyle, 2013; Craig, Tran, et al., 2003; Irani, 2013; MacKinnon et al., 2007). Starkweather and Givens-Ackerman (1997) found that, in individuals who stutter, stuttering exerted an impact on their self-esteem, self-image and self-identity, along with evoking strong emotions such as anger and frustration. Klompas and Ross (2004) found that the majority of their participants perceived their stuttering to have affected their academic performance in school, and their relationships with teachers and fellow classmates. Moreover, they perceived stuttering to have influenced their work performance and hindered chances of promotion in their working life. They also reported negative reactions to their stutter and a

lack of understanding from others. Hayhow, Cray, and Enderby (2002) explored the impact stuttering had in the lives of 332 individuals. They found that the participants had avoided jobs involving telephone work and/or verbal presentations and did not choose the careers they wanted. Several believed they would not be promoted because they stutter, and some had been actively discouraged from seeking promotions because of it.

Quality of life and stuttering.

Quality of life research in the area of stuttering points to individuals who stutter having elevated risks of fatigue, lower social function, and greater chance of emotional instability, in addition to having poorer mental health overall (Craig, Blumgart, & Tran, 2009; Franic & Bothe, 2008; Klompas & Ross, 2004; Yaruss & Quesal, 2006). Moreover, numerous studies have found that children, adolescents, and adults who stutter have a higher incidence, and increased risk, of developing psychological difficulties, including a) general anxiety; b) social anxiety; c) higher levels of trait anxiety; d) personality-related propensity for developing anxiety, and; e) depression (Beilby, Byrnes, Meagher, & Yaruss, 2013; Boyle et al., 2009; Craig, Hancock, Tran, & Craig, 2003; Craig & Tran, 2006, 2014; Iverach & Rapee, 2014; McAllister, Kelman, & Millard, 2015; K. A. Smith, Iverach, O'Brian, Kefalianos, & Reilly, 2014).

Klompas and Ross (2004) explored the life experiences and the impact of stuttering on the quality of life in 16 South-African adults ranging in age from 20 to 59. They looked at a total of 9 life domains, including education, employment, social life, identity and emotional issues. The majority felt that their stutter did not negatively affect their ability to gain friends, although people generally reacted negatively to, and had a lack of understanding about, stuttering. Fourteen out of 16 participants indicated that stuttering had influenced their sense of self-esteem, self-image and self-identity, in addition to all 16 participants sharing that their stutter had induced strong emotions from within, especially states of frustration and anger.

Using the Medical Outcomes Study Short Form-36, Craig et al. (2009) assessed the quality of

life in 200 adults who stuttered, comparing to 200 fluent controls with similar demographics. They found that stuttering had an impact on the quality of life in several life domains, including vitality, mental health, social and emotional functioning.

In a mixed-method approach, Beilby et al. (2013) explored the repercussions of living with stuttering on quality of life, stressing PWSs relationship with their partner or spouse. Exploring both PWS and their fluent partners, the authors found that both anxiety and social anxiety were emerging themes identified in the majority of the respondents, suggesting that fluent partners share the life experiences of their stuttering partner or spouse. Further, this demonstrates how stuttering can be seen as holistically impacting family members and lends support to the idea that family members should be included in stuttering treatment. Craig and Tran (2014) conducted a systematic literature review and two meta-analyses, examining levels of trait- and social anxiety in 1300 PWS. They found that PWS have moderately elevated trait anxiety, and considerably elevated social anxiety. Likewise, Iverach and Rapee (2014) conclude that the growing body of research addressing stuttering and social anxiety demonstrates precariously high levels of social anxiety among PWS.

The nonstuttering majority on work and employability.

Logan and O'Connor (2012) looked at factors that influence perceptions of occupational suitability between PWS and people who do not stutter. The findings support that PWS may face occupational stereotyping and/or role entrapment in work settings. Gabel, Blood, Tellis, and Althouse (2004) support these findings. They explored whether PWS experience role entrapment through vocational stereotyping. Using the *Vocational Advice Scale (VAS)* with comparisons of the main speaker status, i.e. person who stutters vs person who does not, 385 university students reported their perceptions of PWS. The authors found that the students rated stuttering as having an overall negative effect on career opportunities, in addition to viewing careers requiring frequent oral communication as inappropriate choices. The results provide evidence that stuttering negatively affects the perceptions of

appropriate career choices for PWS. It supports the hypothesis that stuttering may lead to role entrapment in regard to finite occupation choices, and that stuttering leads to a negative vocational stereotype.

In 2008, Gabel, Hughes and Daniels decided to conduct a new study among university students using the VAS scale. This time, they added two variables: a) severity of stuttering and b) level of therapy involvement, in addition to including a definition of stuttering. Unlike Gabel et al. (2004), the findings did not support the hypothesis that PWS suffer from role entrapment in the form of occupational stereotyping. Further, the added variables, did not correlate with improved attitudes towards PWS. Overall, the variables did not alter the students' perceptions for 42 out of 43 careers. In the study, 74 % of the respondents' answers suggested that they were unsure or had no opinion as to whether stuttering affects career opportunities, leaving 26 % believing it had no impact on employability. The 16 career opportunities judged appropriate were all related to science and technology – in addition to being careers that require less communication, less communication skills and/or less public presentations. The remaining 27 careers required a moderate to significant amount of communication ability. The response in Gabel et al. (2004) paints a similar picture. In contrast to Gabel et al. (2004), the 2008 study did not include the control stimuli of a person who does not stutter. Further, neither study gave respondents the opportunity to explain their judgements. Summarizing, a major drawback for Gabel, Hughes, and Daniels (2008) is how the approach gives ambiguous results, leaving one to consider the absence of supporting evidence in their study.

A. Hurst and Cooper (1983) explored the knowledge of, and attitudes towards, stuttering among 152 rehabilitation counselors. Overall, the counselors viewed stuttering as a significant vocational handicap (78 %), with 70 % indicating that employers seem to discriminate based on speech problems, and 50 % agreeing that those who stutter have psychological problems. I. Hurst and Cooper (1983) looked at the stuttering attitudes of 644

employers. Similar to the previous article, employers in this study also viewed stuttering as a significant vocational handicap, with 85 % agreeing that it decreased employability to some extent, 44 % concurring that those who stutter should pursue employment requiring limited speaking, and 40 % believing stuttering interferes with possibilities for promotion. However, 30 % agreed that it did not interfere with job performance and that PWS can do an equally satisfactory job.

In a large population study, McAllister, Collier, and Shepstone (2012) strived after impartial evidence of educational and occupational disadvantage among PWS, further comparing it to people who do not stutter. Using a British birth cohort dataset consisting of a total of 217 cohort members who reportedly stuttered and 15 694 cohort members with no known history of any speech problems, the authors considered several variables. All-in-all, the findings did not support the notion that stuttering negatively impacts education and employment. The results indicated no significant effect on educational outcomes, however, for employment outcomes, they found a significant association between stuttering and the socioeconomic status of the occupation, finding that PWS more often had lower-status jobs. The authors consider that PWS might avoid jobs that require higher levels of spoken communication skills as a possible explanation.

The stuttering minority on work and employability.

Research shows that adults who stutter can experience difficulties with employment and work due to their stuttering (Bloodstein & Bernstein Ratner, 2008; Craig & Calver, 1991; Crichton-Smith, 2002; Klein & Hood, 2004; Rice & Kroll, 1994). Similar to Hayhow et al. (2002), in a qualitative study, Crichton-Smith (2002) found that 12 of 14 participants felt that stuttering affected their working lives in some way. A number of participants believed that stuttering influenced their choice of work, leaving them dissatisfied with their careers. Rice and Kroll (1994) and Klein and Hood (2004) both found that participants had experienced being turned down for a job because of their stutter. In total, 323 adults who stutter

participated in Klein and Hood's (2004) study. The purpose of their research was to investigate the impact stuttering had on job performance and employability. The findings indicated that more than 70 % of PWS concurred stuttering decreases one's chances of being hired or promoted, 20 % turned down a job or promotion because of their stutter, and 33 % believed it interferes with job performance, suggesting, therefore, that PWS view stuttering as being a vocational handicap and a disadvantage in the workplace. Rice and Kroll (1994) surveyed 282 PWS. Their results demonstrated that 50 % believed their capabilities had been misjudged by supervisors because of their stutter, and over 1/3 stated that their stutter led to negative performance appraisals at work.

Summary.

The studies presented in this section highlight the various ways in which stuttering may impact the lives of those who stutter, providing a summary overview of pertinent research results and the literature relating to the consequences of stuttering. It has been shown that stuttering: a) can lead to challenges, stereotyping and discrimination in the workplace; b) may cause PWS to internalize inaccurate beliefs, limiting reactions and negative stereotypes of themselves; c) can take its toll on the quality of life in several life domains; d) can increase the likelihood of developing anxiety, social anxiety and trait anxiety; e) may lead to a loss of life opportunities and/or lack of advancement. Further, the nonstuttering majority have been shown to have a lack of understanding and knowledge, inaccurate and false beliefs, as well as negative reactions to stuttering. The evidence reviewed implies that the beliefs, opinions, and reactions of others play a pertinent role.

Researching attitudes toward stuttering: *The Public Opinions Survey of Human*

Attributes – Stuttering

The short literature review illustrated the various ways in which stuttering may impact the lives of those who stutter. St. Louis (2016) calls attention to the attitudinal environment, highlighting how the beliefs and reactions of others can lead to negative consequences and

tangible effects for PWS. The idea is that by changing the attitudes of others the lives of those who stutter improve. Therefore, detecting and attempting to change attitudes is an important feature of stuttering treatment (St. Louis, 2016).

Establishing, implementing, and evaluating interventions or public awareness campaigns aimed at reducing social stigma depends on identification and measurement of the presence of negative stereotypes and possible discrimination. One can perhaps obtain an understanding of the situation by analyzing the various components that together constitute social stigma (Boyle et al., 2009). *The Public Opinions Survey of Human Attributes–Stuttering (POSHA-S)* is a well-established questionnaire designed to measure public attitudes toward stuttering, created in order to offer a worldwide standardized measure (St. Louis, 2012c). It consists of a written questionnaire that addresses beliefs, attitudes, and reactions toward stuttering (St. Louis, 2011, 2012c). Results from POSHA-S research are added to the continually growing international database archive, permitting broad-based international comparisons.

Recent research across the world has found that Scandinavia and North America have some of the highest scores on the POSHA-S, while Western Europe and Southeastern Europe, with the exception of Turkey, produce moderately high scores. Central Europe demonstrate average scores that are similar to the database median, whereas the Middle East, Southern and Eastern Asia, Africa, and Southern Europe, with the exception of Portugal, show some of the lowest scores, see e.g. Abdalla and St. Louis (2012); Al-Khaledi, Lincoln, McCabe, Packman, and Alshatti (2009); Ip, St. Louis, Myers, and Xue (2012); Przepiorka, Blachnio, St. Louis, and Wozniak (2013); Kenneth O. St. Louis, Aneta M. Przepiorka, et al. (2014); St. Louis and Roberts (2010); St. Louis, Sønsterud, Carlo, Heitmann, and Kvenseth (2014); St. Louis, Sønsterud, et al. (2016); Valente, St. Louis, Leahy, Hall, and Jesus (2017); Özdemir, St. Louis, and Topbaş (2011a, 2011b). Although this reflects a tendency, it is important to note that differing results have been found. For example, a cluster sample of 469 primary school

teachers in South Africa showed scores that were slightly higher than the median in the database archive (Abrahams, Harty, St. Louis, Thabane, & Kathard, 2016).

POSHA-S research has found that geographical or cultural proximity likely is a key factor in influencing stuttering attitudes and beliefs, see e.g. Kenneth O. St. Louis, Aneta M. Przepiorka, et al. (2014); St. Louis and Roberts (2010); St. Louis, Sønsterud, et al. (2016); Özdemir et al. (2011b). Moreover, the age of the respondent and their level of education have proven to associate with attitudes and beliefs (Flynn & St. Louis, 2011; Glover, St. Louis, & Weidner, 2019; Przepiorka et al., 2013; Kenneth O. St. Louis, Aneta M. Przepiorka, et al., 2014; St. Louis & Rogers, 2011; St. Louis, Weidner, & Mancini, 2016; Weidner, St. Louis, Burgess, & LeMasters, 2015). To the contrary, practically no difference has been observed between male and female respondents, while parental status, knowing more than one language, and religious views have shown no clear effect on attitude outcomes, along with income and life priorities found to be marginally influential, at best (St. Louis, 2012a; St. Louis & Tellis, 2015; St. Louis, Weidner, et al., 2016).

Verbally administering the *Public Opinion Survey of Human Attributes–Stuttering/Child (POSHA–S/Child)*, researchers in the United States found that preschoolers' had much more negative attitudes toward stuttering than kindergartners' had (Weidner et al., 2015). Glover et al. (2019) explored the stuttering attitudes of preschool through 5th grade children, while comparing them to their parents' stuttering attitudes. In total, 300 took part, 150 parent/child pairs, responding to the POSHA-S and the POSHA-S/Child. The authors found that the attitudes held by parents were quite uniform, while younger children's attitudes were much less-positive than their parents' attitudes. Between the ages of 4 and 11 years, the children's attitudes gradually improved, approximating those held by their parents and society at large. In Turkey, Özdemir et al. (2011b) found that 6th graders' attitudes were almost the same as those of their parents, grandparents, and neighbors.

Flynn and St. Louis (2011) found that high schoolers' stuttering attitudes were close to, although somewhat more negative than, stuttering attitudes held by adults in the USA. In Poland, Węsierska and St. Louis (1990) found that high school students had somewhat less positive/accurate stuttering attitudes than university students, while St. Louis and Rogers (2011) found the same situation between college students and high schoolers' in the USA. St. Louis, Przepiorka and colleagues (2014) discovered that graduate students had more positive and accurate beliefs about, and attitudes toward, stuttering than undergraduate students. This was the case for SLP majors and students with a different major. They also found that SLP students had more accurate/positive stuttering attitudes than students with a different major. Comparing the stuttering attitudes held by university students in the fields of linguistics and education to those of practicing teachers, St. Louis, Węsierska, and Polewczyk (2018) found that the students had somewhat less-positive attitudes than practicing teachers. However, in Kuwait, female education students had similar stuttering attitudes as practicing male teachers (Abdalla & St. Louis, 2012).

Research aims and hypotheses

Research aims

The reviewed literature highlights the various consequences stuttering may have in the lives of those who stutter, including pervasive issues like workplace- and job discrimination, stigmatization, and the stuttering stereotype. It has also been shown how others may partly be responsible for the negative repercussions of stuttering. High school students are future colleagues and employers, the attitudes, reactions, and beliefs they hold toward those who stutter are therefore of particular importance. If we can help shape their views and beliefs, perhaps we can make society better and more inclusive, and, essentially, improve the quality of life of those who stutter. In Norway, there have been no previous studies about adolescent attitudes toward stuttering, prior Norwegian research has been limited to the stuttering attitudes of adults. The first aim of this study is to gain an understanding of the beliefs about,

and attitudes toward, stuttering and PWS held by high school students in Norway. The second aim is to determine whether or not attitudes and beliefs improve the older the students are, in addition to whether or not they approximate those held by adults in Norway. The third, and final, aim is to compare the results from this study to those in the international database archive.

Hypotheses

(a) Lend support to- or fail to support previous research findings on the gradual development of more favorable stuttering related attitudes, approximating those held by adults in the same society/culture; (b) lend support to- or fail to support the current notion that Scandinavians produce some of the highest scores on the POSHA-S.

Method

Research design and methodology

To answer the research questions a quantitative approach utilizing a cross-sectional study design is selected. Survey method is applied by using a self-report questionnaire, the POSHA-S.

Quantitative approach.

When choosing which research approach to opt for, the choice should depend on which of them are most fruitful in connection to the specific research questions (Grønmo, 1996). In other words, the choice will be contingent on the issues that the researcher wishes to examine. It is selected on the basis of the study, i.e. of strategic nature rather than principle (Grønmo, 1996). Quantitative research carries with it a set of distinguishing traits; a) it sets out to describe the frequency or scope of a phenomenon; b) it has vast samples with many units; c) it has samples that represent their population through selecting by means of probability methods; d) it has a desire to generalize the results back to the population; e) it defines questions and potential answers in advance through research questions and

hypotheses; f) it requires prerequisite knowledge of the topic one is about to investigate (Dalland, 2014; Grønmo, 1996; Johannessen, Christoffersen, & Tufte, 2010; Ringdal, 2013).

A quantitative research method presents several benefits. It provides a wide-ranging insight and understanding, something which is likely to be appropriate with regard to the research questions. A broad perspective invoking a fairly large sample is anticipated to best describe the population's attitudes and beliefs toward stuttering.

Cross-sectional study design.

A cross-sectional study design is selected to answer the research questions. A cross-sectional study is an observational study which examines the relationship between a specific case or condition and other variables of interest as they exist in a defined population at a single point in time or over a short period of time, giving an instantaneous image, or “snapshot”, of a fixed population (Buring, 1987; Setia, 2016). Although data is collected on each respondent at one point in time, it may not be the exact same point in time for each subject. The essential objective is that each respondent fills out the survey only once and at one point in time. Such a study design can be utilized, for example, to capture specific attitudes, beliefs or knowledge at a given point in time, and allow one to compare different groups (Johannessen et al., 2010). It can facilitate an instantaneous image of the frequency of specific attitudes or beliefs about stuttering and exposure to variables, for instance having a close family member or friend who stutters.

In the present project, elements from both analytical and descriptive types of cross-sectional design are made use of. Firstly, it is analytical because statistical procedures will be conducted on the dataset so that stuttering attitudes and beliefs of students in each grade can be compared to each other (11th grade, 12th grade, 13th grade). Secondly, it is descriptive because the sample will be compared to the international database archive of POSHA-S research, using percentile ranks and quartiles.

The study design contains several strengths that could be beneficial for the research project. It can be useful in informing the planning of potential efforts in school education and/or attitude-altering campaigns; it is advantageous for descriptive analyses and good for generating hypotheses, it provides a considerable amount of data which opens up a myriad of statistical possibilities, and it is quick and straightforward to administrate (Buring, 1987). Unfortunately, it also involves some inevitable weaknesses that come with most design choices. Among these is the association predicament; identified correlations might be ambiguous or difficult to interpret and the direction of the correlation/association remains unknown.

Data collection

Survey method.

Survey method can be used when one wishes to reach an overview with statistically significant findings (Grenness, 2001). The method is characterized by collecting a small amount of data in standardized form from a relatively large number of individuals through selection of representative samples gathered from identified and well-known populations. The actual survey process is to collect information for statistical analysis with the goal of drawing conclusions based on this information (Johannessen et al., 2010).

Data collection technique.

In order to collect the desired data, the chosen research strategy is a self-report questionnaire. This approach offers several advantages: first, data collection may happen rapidly; second, it is both cost-effective and cost-efficient; third, one does not have to worry about the interviewer variance/error, i.e. variability associated with the interviewer, e.g. influencing respondents, differing tone of voice with different respondents (Lavrakas, 2008); fourth, it is suitable for large samples that may also be geographically dispersed; fifth, it is quick to administer and complete; last, it grants a high level of privacy and data protection.

Instrument: The Public Opinions Survey of Human Attributes – Stuttering.

In order to answer the questions as adequately as possible, a well-established questionnaire is used – the *Public Opinions Survey of Human Attributes–Stuttering (POSHA-S)*. The POSHA-S is an empirically based survey designed to accurately measure public attitudes toward stuttering in a standardized manner (St. Louis, 2012c). In 1999, a task force was assembled who spent over a decade developing the tool (St. Louis, 2012c; St. Louis, Lubker, Yaruss, Pill, & Diggs, 1999). The POSHA-S is not intended to measure attitudes on an individual level, but that of a defined population (St. Louis, 2012c). Therefore, respondents should reflect the population’s variety so that the results may be generalized back to the population they are meant to represent.

The POSHA-S is divided into three sections. The first is a demographics section (asking the respondent to rate e.g. life priorities), the second is a general section where stuttering attitudes are compared to other human attributes – stigmatized traits (obesity, mental illness), a neutral trait (left-handedness), and a positive trait (intelligence), and, lastly, a section that specifically addresses stuttering (St. Louis, 2011). The survey consists of questions, so called *items*; clusters of related items are organized into 11 *components*, and clusters of components are organized into three subscores: 1) *Beliefs about persons who stutter*; 2) *Self reactions to people who stutter*, and; 3) attitudes about *Obesity/Mental illness* (St. Louis, 2011). The first two subscores are stuttering related, and the mean of these two scores make up the *Overall Stuttering Score (OSS)*, while the third subscore makes comparisons of stuttering to other potentially stigmatized conditions possible. Items are scaled and then converted to a standard attitude scale from -100 to +100, with 0 displaying a neutral response, +100 displaying an accurate or positive response, and -100 displaying an inaccurate or negative response (St. Louis, 2012c). Items in the general section (section 2) use a 1-5 Likert scale (“1” = -100, “2” = -50, “3” = 0, “4” = +50, “5” = +100), and nominal scale (i.e. 1 or blank). Items in the stuttering specific section (section 3) uses a 1-3 scale (“yes” = 3 (+100), “not sure” = 2 (0), “no” = 1 (-100)). Items in the demographics section (section 1)

uses a combination of these rating scales (Valente et al., 2017). Certain items in the POSHA-S, e.g. “People who stutter have themselves to blame for their stuttering”, are reversed so they consistently follow the same attitude scale. See St. Louis (2011) for a detailed review of POSHA-S rating scales and for information on the items, components, subscores and OSS.

Means of administration.

St. Louis (2012b) deduced that the means of administration did not seem to influence the outcomes of POSHA-S results in systematic ways. St. Louis concluded that the POSHA-S largely appeared to be robust in terms of administration strategy, meaning that one can freely choose to use a paper-and-pencil or an electronic version of the POSHA-S (St. Louis, 2012b). For this study it was decided to make an online version in addition to offering a paper-and-pencil version, thus giving the students the choice between the two. This will be convenient in several ways. First, it is resource-friendly and cost-effective. Second, it is efficient in terms of saving time – when using the online version, one does not have to spend time plotting the results. Third, the students may feel less pressured to participate: by being able to use their phone, computer or tablet they can conceal themselves and not be so exposed, and in this way, they can choose not to participate without being discovered.

Creating the online survey.

The online version was created using the web-based software *SurveyXact* (<https://www.surveymxact.com>). This is Privacy Enhancing Technology that ensures data protection. The online version was created with the intention of making it user friendly and as similar as possible to the paper version, e.g. using Likert scale (1-5, 1-3). For certain items in the demographics section, e.g. which county one lives in and one’s age, respondents can choose a response from a list of choices presented in a dropdown menu. There is also a graphic bar which shows progression, so that the students have an overview of how far they have come, and how much they have left. This was added to encourage completion. The online version can be accessed in three ways: 1) through a link the classroom teacher posts on

Its Learning; 2) scanning a QR.-code in the information handout, or; 3) accessing a webpage and filling out a key code provided by the research author. They can use any technical tools they want, that be computers, cellphones, or tablets.

Changes and adjustments made to the Norwegian translation of the POSHA-S

Before designing the electronic version, the Norwegian translation was systematically inspected while comparing it to the original English version. I am a native speaker in both Norwegian and English, so it felt natural to do this. The use of language in the original Norwegian version, often using the passive voice, was, in my opinion, at times a bit too exhaustive. As a consequence, it somewhat lacked flow and became a bit confusing. Some parts were translated in such a way that one lost some of the cultural context, resulting in a potentially erroneous translation. I made contact with Professor Kenneth St. Louis, primary leader for the development of the POSHA-S. With permission and in collaboration with Professor St. Louis, I made adjustments and changes to the Norwegian version of the POSHA-S. My rewrite attempted to make the language sound more natural, using the active voice and following a typical Norwegian syntax pattern. The focus of this rewrite was to make the survey more accessible and user-friendly with less formal language while still preserving the intended meaning. Professor St. Louis was consulted throughout the process, and specific features of changes were discussed in detail. In the original Norwegian translation, short sections of information were added, e.g. definitions of the various human attributes and characteristics, this was not in the original POSHA-S and therefore removed in my rewrite.

As a “quality control” of the altered Norwegian version, a small selection of friends and acquaintances completed a test run while privately (individually) commenting on the content. Upon completion, the group discussed their understanding and interpretation and compared all three versions of the POSHA-S (the original English version, the original

Norwegian translation and my altered version), providing a second opinion about the changes I made. Some of the changes are discussed below.

“The amount I know about people who ...”

The Norwegian translation asks, “number of people I know who ...” (in Norwegian “*antall mennesker jeg kjenner som ...*”), as in how *many* people one knows who, e.g., stutters or is left-handed, and this did not seem right to me. Conferring with Professor St. Louis, he clarified that the question was intended to ask respondents how much he/she thinks they know about people with the characteristic in general, as opposed to identifying how many people the respondent knew. Professor St. Louis compared it with asking a person how much he/she thinks they know about building houses in general, rather than how many finished houses they know of (K. St. Louis, personal communication, September 23, 2017). Therefore, I rewrote the question to “*hvor mye vet du om mennesker som ...*”.

**“For me, the importance (or priority) of each of these aspects in my life is ...”
and “I would rate the following aspects of my life now as ...”**

The original translation worded this “min prioriteringen for hvert av disse aspektene i livet:” and “min gradering av følgende aspekter i livet mitt nå:”. This use of language strikes me as too exhaustive and lacking natural flow. I rephrased it using the active voice and a simpler syntactic composition to make it more accessible and legible to the reader.

“*Helping the less fortunate*”

In the Norwegian translation, this is translated to “*hjelp andre som trenger det*”. The translation is more ambiguous, and directly translated states “helping others who need it”, which seem to point more to being an empathetic person in general. In Norwegian, this could encompass volunteering, but more so things like helping a younger sibling with homework, doing the washing up after dinner, being emotional support for a friend, and so on. In English, “*helping the less fortunate*” is more specific and rather refers to, e.g., volunteering at a soup kitchen or donating money to help people who have fled their country because of war. I

consulted Professor St. Louis who confirmed my interpretation of the intended meaning. I therefore reworded it accordingly to the more specific “*bedrive frivillighetsarbeid og/eller donere til veldedige formål*”.

The Norwegian school system.

The Norwegian school system is a 13-year-long basic education program, consisting of 10-years primary- and 3-years secondary education (Opplæringslova, 1998). Norwegian high school comprises grades 11, 12 and 13 ranging from ages 15 till 20+ (Forskrift til opplæringslova, 2006; Utdanningsdirektoratet, 2018). Upon admission one can choose between preparatory subjects (preparing students for college- and/or university) or a vocational education. The former takes three years of high school, while the latter takes two years followed by a two-year apprenticeship. Vocational students are additionally offered a one-year add-on to qualify themselves to study at college- and university level – they may opt for this regardless of whether they do an apprenticeship or not (Utdanningsdirektoratet, 2018).

Population.

The project is limited by focusing on public opinions among students in Norwegian high schools. In accordance with statistics reported by Statistics Norway, the central institution responsible for collecting, processing, and disseminating official statistics in Norway, the age distribution in Norwegian high schools is approximately: 0.14 % are 15 years, 88.96 % ages 16-18 and 10.90 % ages 19-24+, with gender distribution roughly 50-50 (Statistikkloven, 1989; Statistisk sentralbyrå, 2017c). To date, there are a total of 198 944 students attending high school in Norway, with a total of 62.85 % taking preparatory subjects while 37.15 % undertake vocational educations (Statistisk sentralbyrå, 2017b, 2017c). A total of 7.79 % attend private school, while 92.21 % attend public school (Statistisk sentralbyrå, 2017a). The aim was that the sample would exhibit the same variation as the population. Inclusion criteria encompassed high school students in their 11th year, 12th year or 13th year,

either taking preparatory subjects (as a one-year extension or as a three-year program) or vocational subjects, thus excluding any students doing a two-year apprenticeship.

Respondents.

In total, 276 high school students completed the POSHA-S, comprised of 101 11th grade students (mean age 15.94), 40 12th grade students (mean age 16.90), and 134 13th grade students (mean age 18.00). The male to female ratio was 0.93:1. The respondents came from two different schools representing 14 different classes, with 204 students taking preparatory subjects and 67 completing a vocational education program (5 did not respond to this question). All respondents were full time students. A total of 190 respondents attended a public school in a rural region in southeastern Norway, while the remaining 86 respondents attended a private school in an urban region in central Norway.

Sampling scheme.

Two main issues in the design of cross-sectional studies are choosing a representative sample and ensuring that the sample is sufficiently large (Buring, 1987). This is important if generalizations from the findings are to have any validity and if one is to be able to make estimates with adequate precision (Buring, 1987). It is therefore important to choose a representative sample, where random samples are preferred.

Recruitment of students followed a uniform procedure. An adjusted version of the school-based three-stage cluster probability scheme presented in Özdemir et al. (2011a) was used. This sampling scheme involves randomly selecting a district and school(s) from a list of all public-school districts in a given region (Özdemir et al. (2011a), p.263). For the purpose of this study, both private schools and public school were included. Regional statistics were publicly accessible and used to aid the selection process. The first stage involved listing all counties in Norway, which, at the time, was 19. Three counties were selected at random, the first located in the southeastern part of Norway, the second located in the central part of Norway, and the third located in the western part of Norway. The second stage involved

listing all the high schools in each county into three separate lists. An overview of the public schools was found on each county's official webpage. An overview of private schools in each county was found on *vilbli*, which is a part of *Vigo* – an online information service for applicants applying to high school in Norway (<https://www.vilbli.no/nb/nb/no/fylkes-skole-og-laerebedriftsoversikt/f>, retrieved 2017). Subsequently, six random schools, two in each county, were contacted individually by sending e-mails to school officials. Only one e-mail was sent to each school official, no reminders were sent. The e-mail included information about the projects purpose, information regarding the POSHA-S and what kind of questions it asks, in addition to an explanation as to how the data would be used and who it would be shared with. Next, for those who wanted their school to take part, the school officials informed their teachers during a faculty meeting, and the teachers that were interested were given the research authors contact information. The third stage involved organizing the time for when administration of the questionnaire could take place. Once this was agreed upon, the research author traveled to each school and administrated the survey in a total of 14 classes. The site and setting of the data collection were the respondents' respective schools and further their main classroom/homeroom.

Every school official responded quickly to the e-mail. A total of three schools, one from each region, were willing to take part in the project. A final selection included two of these schools, mainly due to time constraints. After consulting with the teachers individually, it was agreed that the best approach was that the research author administered and conducted the survey in person and be present while the students filled out the questionnaire. This way it could be made certain that the administration was conducted in a valid manner, both with respect to the type and quantity of information given to students. Teachers were explicitly informed not to say too much about the survey to their students, bearing in mind that this might influence the results. Before survey administration, I met with the teachers in order to conduct a quick run-through and exchange questions and concerns that might arise. We also

discussed how students with special need could be assisted. Students with special needs that wished to participate, were offered the assistance of their teachers. Including special needs students is an important ethical principal in and of itself, but it also gives a more realistic and representative sample of a typical class. Collaboration and cooperation with teachers were valued aspects throughout the planning and process of gathering data.

Process of data collection.

Data collection was carried out during the autumn term of 2017. Before responding to the survey, each student in every class was given a copy of an information handout, containing a formal request to participate in the project. The handout contained an explanation of what participation constitutes and that it was voluntary, and what information they would be asked to share about themselves. In addition, information on confidentiality was specified as were how results will be used and who they will be shared with. Further, instructions as to how to respond to the survey were given (electronically or written) and procedures for accessing and navigating the online survey were explained. A consent form and information on how to gain access to the actual survey was reserved for page two of the handout. This was done for one main reason – to make sure that students did not fill out POSHA-S several times or share it with others later on. See Appendix 1 for information handout with informed consent. All the information in the handout was talked over: Voluntary participation was particularly emphasized, and since the students could use whatever technical tools they wanted to, I let them know that they could just as easily be doing something else on their computer, phone or tablet without me, or anyone else, having to know. I emphasized this fact so that they felt as little pressure as possible in regard to participating. I also emphasized the fact that no answer is incorrect, that they had as much time as they needed at their disposal, while simultaneously encouraging them to answer quickly and without too much thought and reflection.

By being there in person I could assist if students were confused or if some of the questions were unclear. I could also prevent any external influences that might have occurred during completion. In addition to this, my personal presence created a unique opportunity to spread information and awareness. Once the students had completed the survey, the class was offered a talk, or, rather, an open discussion, about stuttering, speech-language pathology, conducting a research project and so forth. This was completed in every class. How much time I had with each class varied, but this part of the visit felt at least as important as the actual survey and was generally appreciated by both students and teachers. My personal presence could perhaps have made the experience more interesting and engaging for the students, and I learnt a lot as well.

Data analysis

One-way Analysis of Variance and post-hoc Tukey-Kramer test.

The first main question is whether the beliefs about, and attitudes toward, stuttering held by high school students increase the older the students are. To answer this question, once the data is plotted into the POSHA-S Excel workbook, grades are grouped into 11th, 12th, and 13th grade, so that there is a total of four workbooks (11th graders, 12th graders, 13th graders, high school students in Norway total). To investigate whether significant differences between the grades exist, the first step is to run one-way analysis of variance (ANOVA) on items, components, subscores, and OSS.

The null hypothesis for the ANOVA is that there is no significant difference between the grades, while the alternative hypothesis states that there exists at least one significant difference between the grades, see equation 1 (Ali & Bhaskar, 2016).

$$\begin{aligned} H_0: \mu_1 = \mu_2 = \mu_3 \\ H_1: \mu_1 \neq \mu_2 \neq \mu_3 \end{aligned} \tag{1}$$

To determine whether or not a significant difference exists, the F-ratio is calculated with an associated alpha (0.05). The F-ratio is the ratio between the mean sum of square

between the groups (MSS_B) and the mean sum of squares within the groups (MSS_W), see equation 2. MSS_W is the squared sum of the values within the group (X), minus the mean of the group (\bar{X}_G). The sum is divided by the degrees of freedom between the groups ($k-1$). MSS_B is the sum of the number of respondents (n_g) who answered the question, multiplied by the squared sum of the mean of the group (\bar{X}_g), e.g. the 11th grade mean, minus the overall grand mean (\bar{X}_G), i.e. mean of all grades. The sum of this is divided by the degrees of freedom within the group ($n-k$). For components, subscores, and OSS, the mean is found by combining each item within the category (subscore, component or OSS), $(n_1*\bar{X}_1+ n_2*\bar{X}_2+ ..+ n_n*\bar{X}_n) / (n_1+n_2+...+n_n)$.

$$F = \frac{MSS_B}{MSS_W}, \text{ where}$$

$$MSS_B = \frac{\sum_{g \in G} n_g \times (\bar{X}_g - \bar{X}_G)^2}{k-1} \quad (2)$$

$$MSS_W = \frac{\sum_{g \in G} (X - \bar{X}_g)^2}{n- k}$$

where MSS_B : mean sum of squares between the group

MSS_W : mean sum of squares within the group

n_g = the number of respondents of the group

\bar{X}_g : mean of the group

\bar{X}_G : overall mean (mean of all grades)

k : number of groups

X : value within a group

n : Total number of variables

(ANOVA)

The null hypothesis is rejected if the p-value associated with the F-ratio is lower than 0.05, meaning that the alternative hypothesis is supported (Driscoll, 1996). A statistically significant ANOVA result concludes that the means in the groups are not equal, i.e. a statistically significant difference between the three groups exists (Ali & Bhaskar, 2016). To

confirm where the differences may occur, the second step is to run post-hoc tests on statistically significant items, components, subscores, and/or OSS. There are many different methods for analyzing data after an ANOVA analysis, e.g. t-test with a Bonferroni correction, however, the Bonferroni is quite conservative concerning type I error, and therefore, this method will not be used. Instead, the Tukey-Kramer test for unequal sample size is used. The Tukey-Kramer is less conservative in regard to type I error, meaning that it is less likely to produce false-positive results (Driscoll, 1996). The null hypothesis for Tukey-Kramer is that there is no significant difference between the means, i.e. 11th and 12th, 11th and 13th, and 12th and 13th, see equation 3.

$$\begin{aligned} H_0: \mu_i &= \mu_j \\ H_1: \mu_i &\neq \mu_j \end{aligned} \quad (3)$$

To find out if a significant difference exists, a q-value is calculated (see equation 4) and compared with a critical q-value. The critical value depends on the degrees of freedom, the number of groups, and the associated p-value. A q-value that is greater than the critical q-value, means that the null hypothesis is rejected, i.e. there exists a significant difference between the two means (groups) (Driscoll, 1996).

$$q = \frac{|\bar{x}_i - \bar{x}_j|}{SE}, \text{ where} \quad SE = \sqrt{\frac{1}{2} MSS_w \times \left(\frac{1}{n_i} + \frac{1}{n_j}\right)} \quad (4)$$

where q:

\bar{x}_i : is the mean of grade_i

\bar{x}_j : is the mean of grade_j

SE: is the standard error

MSS_w : is the mean sum of squares within the group?

n_i : is the number of respondents in grade_i

n_j : is the number of respondents in grade_j

(Tukey-Kramer)

Comparisons with the international database archive.

The second main question is whether or not the findings from this study support the current notion that Scandinavians produce some of the highest scores on the POSHA-S. To answer this question, percentile ranks are compared to those in the POSHA-S database archive. Specifically, a total of 60 standard comparisons are made, in addition to items in the demographics section, and percentiles in the 1st and 4th quartile are discussed. To date, the database is comprised of a total of 14063 respondents from 180 independent samples from around the world.

Limitations and validity

Limitations.

The study's design, i.e. attitudes and beliefs are only collected at one point in time, makes it problematic to govern the direction of causality between variables (Buring, 1987). The representativeness may be weakened by the fact that respondents only came from two schools in two regions of Norway. However, the data were obtained from a three-stage probability sampling scheme, and the number of respondents exceeded the recommended minimum number of respondents in POSHA-S research (St. Louis, 2012c). Moreover, considering that previous research has found that POSHA-S ratings are quite similar within a country or area of geographical proximity (see e.g. St. Louis, Sønsterud, et al. (2016) St. Louis and Roberts (2010)), there is no reason to believe that this should be different for high school students. Although there were more male than female respondents in the 11th and 12th grade, while there were more female than male respondents in the 13th grade, it is unlikely that this should effect the results, seeing as previous findings have found minimal to no difference in male and female responses (see e.g. St. Louis (2012a)). Nevertheless, it cannot be ruled out that this may have reduced the representativeness of the results.

An important limitation to mention is the possibility of false-positive and false-negative results. The first is called *type I errors*. In statistics, this describes the possibility of rejecting the null hypothesis when it actually is true (Driscoll, 1996). The latter is called *type II errors*, this describes the possibility of not rejecting the null hypothesis when it is indeed false (Yamane, 1973). Such limitations are inherent in statistics, however, the risk of making such errors can be reduced by running appropriate statistical test and by having a large enough sample.

To reduce the risk of making type I errors, and to reduce the risk of making multiple comparison errors, one-way ANOVA is run on the dataset, next, provided statistically significant ANOVA results, a post-hoc Tukey-Kramer test is run only on statistically significant values determined by the one-way ANOVA. The Tukey-Kramer test is chosen because it is specifically designed for unequal sample sizes (Driscoll, 1996). It was a goal that the number of respondents in each grade level met the minimum requirement of 30-40 respondents recommended in POSHA-S research, see St. Louis (2012c), in order to reduce the risk of type II errors. That being said, no direct measures were made, rather, if the desired number was not obtained, no between grade comparison could be made.

Potential bias.

Particular complications in cross-sectional studies are that of non-response and the risk of low response-rate, which in turn may lead to biased outcome measures (Buring, 1987). Participants that respond to the survey may be bearers of response propensity, or participation bias, i.e. that the group has an inclination or tendency to partake. In this way, non-response may not be at random – the characteristics of non-responders may differ from those of responders (Brick & Tourangeau, 2017).

One cannot simply ascribe more data to substitute for the potential non-responses, considering the fact that responders may differ from non-responders, thus meaning that there may be a reason for the nonresponse. Replacing more responding participants for those who

do not respond will not remove the potential bias, but perhaps even worsen it as a consequence of oversampling a specific network (Bowling, 1997). Consequently, no attempt is made to collect more data to compensate for potential non-responders. For similar reasons, methods like chain-referral-/snowball-sampling are also ruled out, considering that this sort of method provides low control, diminishes the likelihood of representativeness, likely results in an uncertain sampling error, and makes statistical inferences all the more difficult (Biernacki & Waldorf, 1981). Also, considering that the population is neither rare nor should be difficult to recruit, snowballing is deemed unnecessary.

Because attitudes and beliefs are collected altogether and at one point in time, students may be prone to recall bias due to misclassifications. The students may make errors because of a lack of memory, due to assessments and assumptions following prior events and altered opinions (Coughlin, 1990). Attrition bias is also a threat, and although the drop-out rates do not necessarily alter the overall results, one cannot rule out the possibility. In addition to this, several responses may be incomplete. Response bias is also likely to occur, meaning that respondents may tend to give inaccurate or untruthful answers for various reasons, e.g. what they believe to be socially acceptable (Furnham, 1986). This is something which the responder may be unaware of themselves. The POSHA-S uses closed-ended questions, i.e. respondents are provided with response options and most questions are phrased as yes/no statements, which should reduce the likelihood response bias.

Aforementioned bias is a threat to the validity of the study; however, numerous studies have looked into such matters ensuring the POSHA-S to be a valid measure, also with respect to recall bias.

Discussion of validity and reliability.

A rule of thumb in research using questionnaires is to use an existing survey tool, if such a tool exists, instead of developing one. Using a pre-existing survey can help avoid several pitfalls that follow the development of a new questionnaire, in addition to saving

valuable time (Safdar, Abbo, Knobloch, & Seo, 2016).

Several considerations were made when choosing an approach to best answer the research questions. The goal was to use a well-developed, practical, reliable, validated and cost- and time efficient instrument. The POSHA-S is the only widely used standard measure of stuttering attitudes to date (St. Louis & Tellis, 2015). It has been subject to a vast amount of research and is well validated through numerous processes.

Extensive epidemiological research has explored: (a) the use of different questionnaire rating-scales (quasi-continuous scale (POSHA-E1), 1-9 scale (POSHA-E2), 1-5 and 1-3 scale (POSHA-S)); (b) item analysis and final item selection; (c) test-retest reliability for both paper-and-pencil- as well as online versions of POSHA-E2 and POSHA-S; (d) construct and concurrent validity, i.e. investigating whether or not the POSHA-S measures what it is intended to measure; (e) internal consistency; (f) order effect of items; (g) how well POSHA-S items can be translated; (h) considerations of sample size; (i) manner of administration; (j) different types of sampling procedures, see e.g. (Abdalla & St. Louis, 2012; Al-Khaledi et al., 2009; Flynn & St. Louis, 2011; Klassen et al., 2004; Knudsen, Kathard, St. Louis, & Shrestha, 2004; Lubker et al., 2004; St. Louis, 2005, 2008, 2011; St. Louis & George, 2008; St. Louis, Hancock, & Remley, 2010; St. Louis, Lubker, Yaruss, Adkins, & Pill, 2008; St. Louis, Lubker, Yaruss, & Aliveto, 2009; St. Louis, Reichel, Yaruss, & Lubker, 2009; St. Louis, Remley, & Hancock, 2010; St. Louis & Roberts, 2010; St. Louis, Tellis, Taunquin, Wolfenden, & Nicholson, 2004; St. Louis, Williams, Ware, Guendouzi, & Reichel, 2014; St. Louis, Yaruss, Lubker, Pill, & Diggs, 2000; Özdemir et al., 2011a). Further, the POSHA-S is found to be user-friendly, readable, clear and comprehensible, along with producing results that can be generalized back to the populations respondents represent (St. Louis, Lubker, et al., 2009; St. Louis & Tellis, 2015).

A number of circumstances can affect the validity and reliability of the project. Choosing to use a well-established tool is an immense asset; yet, there are many areas of

accountability. For example, information and help to the respondents before and during participation must be considered meticulously. If caution is not taken, it can spoil the reliability of the results. Teachers were made aware of this at an early stage of the study and were fully informed as to what information could be told to students.

Problems in terms of validity may arise from the respondents' ability and willingness to answer matter-of-factly, while the reliability is vulnerable to whether or not the students took the survey seriously or if they may have intentionally responded incorrectly (Hellevik, 2002). This relies somewhat on their capability to recall events, but also on their motivation and interest in the topic (Ringdal, 2013). A low level of motivation likely yields a low response rate. I believe that having been there in person and having an ongoing dialog with students was beneficial. Students could feel like they were a part of something important, and the session could act as a break in school routines. It also gave the opportunity to provide help if students were unsure about a question without compromising the validity of the results. It is not possible to assess the level of honesty in responses or instances when students purposely gave incorrect or invalid answers. This is an inevitable uncertainty that follows using a self-report questionnaire. Although this is a threat to reliability, it is unlikely that this applies to all respondents. Supposedly, such instances only make up random errors and are therefore errors that statistical procedures take into consideration.

Research ethics

Norwegian Center for Research Data (NSD) obligates you to not collect any personal data directly, indirectly, via an IP-address or via an e-mail address (Norsk samfunnsvitenskapelig datatjeneste, 2016b). Further, NSD states that, in order for the consent to participate in a research project to be valid, it must be voluntary, explicit and informed (Norsk samfunnsvitenskapelig datatjeneste, 2016a). The research project did not obtain or retain any personal data, although some sensitive information was initially gathered, something which may violate privacy and/or data protection. In order to be able to carry out

the project, it must therefore be assessed according to the criteria set by NSD. If the obligation to notify applies, a Data Protection Official will be contacted.

Contact was made with an NSD official during the fall of 2017. They were made familiar with the scope of the project both in regard to the sort of questions that would be asked, what it was going to be used for, and how it would be conducted. I was informed that if I followed a set of guidelines, I need not apply for approval. The guidelines were provided there and then in great detail. The NSD official also made it clear that it was unnecessary to contact Regional Committees for Medical and Health Research Ethics.

SurveyXact, an online survey software used in this study, offers a high level of data security and complete anonymity, and does not store IP addresses from respondents (<https://www.surveymxact.com/>). Further, no personal data or personally identifiable information has been collected or will be collected in the future. The students could access the survey through: a) a link that their teachers post online; b) by scanning a QR-code; c) by accessing a website and filling out a password key; and they could use their computers, phones or tablets to respond. The students also had the option of paper-and-pencil response. The reason for providing all these options was to relieve any pressures the students perhaps felt in terms of participation. This way, they could easily be doing something else without anyone taking notice. Lastly, NSD informed that specific items in the demographics section had to be removed. This was the case with questions regarding; a) their native language; b) other languages they speak; c) religious views; d) race/ethnicity; e) place of birth; f) date of birth (modified to age in years), and; g) which city/town/village they live in (modified to county; however, only region is stated – a obligation from NSD).

An assessment of potential risk and potential benefit is an important ethical consideration in all research. An example is questionnaires that inquire on sensitive topics, e.g. questions about physical or mental health. It is important to consider whether or not the inquiry can lead to adverse effects, and whether the potential benefits outweigh possible risk

or discomfort. That being said, there are few questions of such a nature in this study and the wording in POSHA-S has been modified to reduce the risk of adverse effect (St. Louis & Tellis, 2015). Moreover, respondents are given the option to answer “unsure” and may also skip questions if they wish to do so.

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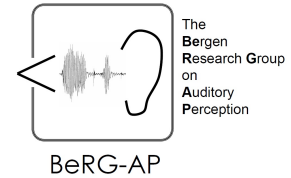
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FORESPØRSEL OM DELTAKELSE I FORSKNINGSPROSJEKTET

HVILKE HOLDNINGER OG OPPFATNINGER OM STAMMING EKSISTERER BLANT ELEVER I VIDEREGÅENDE OPPLÆRING?

Dette er en forespørsel om å delta i et forskningsprosjekt for å undersøke hvilke holdninger og kunnskap elever i videregående opplæring har om stamming. Holdninger til stamming blant elever i det norske utdanningssystemet har ikke blitt undersøkt tidligere, og elever i videregående opplæring er en underrepresentert gruppe i forskning generelt. Derfor er nettopp ditt bidrag verdifullt. Resultatene skal brukes i en mastergradsavhandling ved Universitetet i Bergen. Datainnsamling skjer fullstendig anonymt og spørreskjemaet er tilpasset i samarbeid med NSD.

HVA INNEBÆRER PROSJEKTET?

Public Opinion Survey of Human Attributes-Stuttering (POSHA-S) ble utviklet av Professor Kenneth St. Louis (West Virginia University, USA) og er et spørreskjema som måler befolkningens holdninger, oppfatninger og kunnskap om stamming. Du blir spurt om tanker og reaksjoner relatert til stamming, i tillegg til andre menneskelige egenskaper og tilstander (overvekt, psykisk sykdom, intelligens, venstrehendt). Spørreundersøkelsen gjennomføres elektronisk, og det tar omtrent 10 til 12 minutter å fullføre – men husk at du bruker akkurat så lang tid som du trenger.

SurveyXact, en nettbasert løsning, benyttes for å beskytte deg og opprettholde full konfidensialitet. Hvis du ønsker å besvare for hånd, kan spørreskjemaet utleveres i papirformat eller ettersendes ved nærmere avtale.

Prosjektet innhenter og registrerer opplysninger om deg. Du bes å svare på ulike demografiske kjennetegn i form av (a) kjønn, (b) alder, (c) bosted (fylke), (d) mors utdanningsnivå, (e) fars utdanningsnivå, (f) foreldres inntektsnivå, (g) antall søsken, (h) fysisk- og psykisk helse, (i) læringsevne, og (j) taleevne. På alle spørsmål får du muligheten til å svare "vet ikke" hvis du er usikker, og du kan droppe spørsmål hvis du ikke ønsker å svare.

FRIVILLIG DELTAKELSE

Det er frivillig å delta i prosjektet. Dersom du ønsker å delta, undertegner du samtykkeerklæringen på siste side eller gir et muntlig samtykke. Ønsker du ikke å delta, går det helt fint!

Har du har spørsmål til prosjektet eller er det noe annet du lurer på, kontakt: Camilla Andersen, tlf. +47 98053263, e-post Camilla.Andersen@student.uib.no, Siv Andresen, tlf. +47 55 58 62 05, e-post Siv.Andresen@uib.no, eller prosjektleder Prof. Karsten Specht, tlf. +47 55 58 62 79, e-post Karsten.Specht@uib.no

HVA SKJER MED INFORMASJONEN OM DEG?

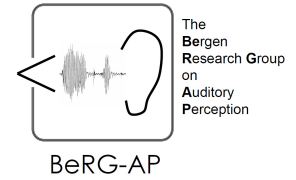
Informasjonen som registreres om deg skal kun brukes slik som beskrevet. Alle opplysninger blir behandlet uten navn og fødselsnummer eller andre direkte gjenkjenne opplysninger, og du samt din skole forblir fullstendig anonymisert. Prosjektleder har ansvar for den daglige driften av prosjektet og ansvar for at opplysninger om deg blir behandlet på en sikker måte. Informasjonen blir slettet senest fem år etter prosjektslutt.



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UTLEVERING AV OPPLYSNINGER TIL ANDRE

Ved å delta i prosjektet samtykker du til at de fullstendig anonymiserte forskningsdata kan utleveres til USA, til Professor Kenneth St. Louis, som har utviklet POSHA-S skjemaet. Forskningsdataene legges til den voksende POSHA-S databasen, som i dag består av over 100 prosjekt fra hele verden.

SAMTYKKE TIL DELTAKELSE I PROSJEKTET

Sted og dato

Deltakers signatur

HVORDAN BESVARE?

Du kan besvare på fire forskjellige måter: (1) faglærer sender ut lenke via læringsplattform, (2) ved å skanne den oppgitte QR-kode nedenfor, (3) ved å trykke deg inn på <https://www.survey-xact.no/collect> og oppgi følgende kodenøkkel: 4ZL1-KS5G-923P, (4) papirformat.



I undersøkelsen blir du bedt om å svare på ulike spørsmål angående fem forskjellige menneskelige egenskaper og tilstander, i tillegg til å fortelle litt om deg selv. Spørreskjemaet består av tre korte deler, og det tar ca. 10-12 minutter å fullføre. Svar ærlig, her finnes det ingen rette eller gale svar. Helst svar det første som faller deg inn og unngå å endre svar i etterkant (med visse unntak, f.eks. misforståelser, eller lignende). Velg det svaret som passer best, og svar kort på skriftlige spørsmål. Du oppfordres til å svare så fullstendig som mulig, men du kan utelate spørsmål eller avslutte hvis ønskelig, uten konsekvenser.

NB! Ikke oppgi navn, adresse eller telefonnummer. Dette er viktig for å opprettholde fullstendig konfidensialitet.

Tusen takk for hjelpen!

En kort teknisk instruksjon: Du kommer deg i gang ved å trykke på "neste" nederst i høyre hjørne, du klikker deg også videre ved å trykke på "neste" etterhvert som du har besvart hver del. Du kan trykke "forrige" hvis du vil tilbake til et tidligere spørsmål - uten at svarene dine forsvinner. Når du er ferdig med å svare, klikker du på "avslutt" på siste side.

DEL 1

Fortell om deg selv i denne delen

Jeg er:

- Jente
 Gutt

Jeg er:

- 15 år
 16 år
 17 år
 18 år
 19 år
 20 år +

Jeg har søsken:

- 0
 1
 2
 3

4
 5+

Jeg er/har vært gift:

Ja

Nei

Jeg er/har vært forelder:

Jeg bor i følgende fylke:

- Akershus
- Aust-Agder
- Buskerud
- Finnmark
- Hedmark
- Hordaland
- Møre og Romsdal
- Nord-Trøndelag
- Nordland
- Oppland
- Oslo
- Rogaland
- Sogn og Fjordane
- Sør-Trøndelag
- Telemark
- Troms
- Vest-Agder
- Vestfold
- Østfold

Jeg går på:

- 1. trinn
- 2. trinn
- 3. trinn

... på følgende linje:

(velg den generelle kategorien som passer best)

- Idrettsfag
- Kunst, design og arkitektur
- Medier og kommunikasjon
- Musikk, dans og drama
- Studiespesialisering

- Bygg- og anleggsteknikk
- Design og håndverk/medieproduksjon
- Elektrofag
- Helse- og oppvekstfag
- Naturbruk
- Restaurant- og matfag
- Service og samferdsel
- Teknikk og industriell produksjon
- Påbygging til generell studiekompetanse

Min jobbsituasjon ved siden av skolen, er ...

- Arbeider ved siden av skolen og/eller i ferier
- Arbeider ikke ved siden av skolen, men ønsker jobb
- Arbeider ikke ved siden av skolen, ønsker ikke jobb

Jeg jobber på:

(NB! Ikke noter arbeidsplass, men type jobb, f.eks. matvarebutikk, telefonsalg, gamlehjem, osv.)

Jeg vurderer følgende aspekter i livet mitt nå, som ...

	Veldig dårlig	Dårlig	Gjennom-snittlig	God	Veldig god	Vet ikke
min fysiske helse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
min psykiske helse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
min evne til å lære nye ting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
min evne til å snakke	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Jeg prioriterer følgende aspekter i livet mitt, som ...

	ikke viktig	lite viktig	nøytral	noe viktig	viktig	Vet ikke
å være trygg og sikker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
å være fri til å gjøre det jeg har lyst til	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
å ha alenetid i fred og ro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
delta på fest og/eller andre sosiale begivenheter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tenke/forestille meg nye ting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
bedrive frivillighetsarbeid og/eller donere til veldedige formål	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
å ha spennende, men potensielt "farlige", opplevelser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
praktisere min tro	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tjene penger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

å ta ansvar for forpliktelsene mine
 å få gjort ferdig ting
 finne ut hvordan jeg kan løse viktige problemer

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Fars utdannelsesnivå:

(opp til flere valg mulig)

- Grunnskole, barneskole
- Grunnskole, ungdomsskole
- Videregående skole
- Fagbrev
- Militæret/fagskole/andre skoler
- 3-4-årig grad (bachelorgrad)
- 5-6-årig grad (mastergrad, profesjonsstudium)
- Doktorgrad
- Annet
- Vet ikke/usikker

Mors utdannelsesnivå:

(opp til flere valg mulig)

- Grunnskole, barneskole
- Grunnskole, ungdomsskole
- Videregående skole
- Fagbrev
- Militæret/fagskole/andre skoler
- 3-4-årig grad (bachelorgrad)
- 5-6-årig grad (mastergrad, profesjonsstudium)
- Doktorgrad
- Annet
- Vet ikke/usikker

Familien min sin inntekt er [...] sammenlignet med den årlige inntekten til

...

Lavere Litt lavere Gjennomsnittlig Litt høyere Høyere Vet ikke

familievenner, slektninger, venners familie
 antatt gjennomsnittsinntekt i Norge

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

DEL 2

Vennligst oppgi dine meninger om personer med følgende egenskaper og tilstander

Mitt helhetsinntrykk av mennesker som ...

	Veldig negativ	Noe negativ	Nøytral	Noe positiv	Veldig positiv	Vet ikke
er meget overvektige	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
er venstrehendte	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
stammer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
er mentalt syke	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
er intelligente	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Jeg kunne tenkt meg å være en person som ...

	Sterkt uenig	Noe uenig	Nøytral	Noe enig	Sterkt enig	Vet ikke
er meget overvektig	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
er venstrehendt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
stammer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
er mentalt syk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
er intelligent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Hvor mye vet du om mennesker som ...

	Ingenting	Litt	Noe	En del	En god del	Vet ikke
er meget overvektige	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
er venstrehendte	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
stammer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
er mentalt syke	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
er intelligente	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Jeg kjenner/kjente noen som ...

(velg alt som passer)

	Ingen	Bekjente	Nære venner	Slektning(er)	Meg	Andre
er meget overvektige	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
er venstrehendte	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
stammer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
er mentalt syke	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
er intelligente	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

DEL 3

Vennligst fortell mer om synspunktene dine

Mennesker som stammer ...

	Ja	Nei	Vet ikke
bør prøve å skjule stammingen sin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

bør ha jobber der de må forstå ting korrekt og ta viktige avgjørelser
 er nervøse eller emosjonelle
 er sjenerte eller engstelige
 har seg selv å takke for at de stammer
 kan få venner
 kan leve som normalt
 kan ha et hvilket som helst yrke

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Jeg hadde vært bekymret hvis følgende personer stammet/stammer ...

	Ja	Nei	Vet ikke
legen min	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
naboen min	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
broren eller søsteren min	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
meg selv	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Hvis jeg snakker med en person som stammer, ville jeg ...

	Ja	Nei	Vet ikke
forsøke å late som om personen snakket normalt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
spøke om stamming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
fullføre vedkommende sine ord eller setninger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
følt meg utålmodig	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
være komfortabel og avslappet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
synes synd på personen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
be personen om å "roe ned" eller "slappe av"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Jeg tror stamming skyldes ...

	Ja	Nei	Vet ikke
genetisk arv	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
spøkelser, demoner eller ånder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
en svært skremmende opplevelse eller traume	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Guds vilje eller Guds handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tillærte vaner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
et virus eller en sykdom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Jeg tror mennesker som stammer bør få hjelp av ...

	Ja	Nei	Vet ikke
andre personer som stammer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
en logoped	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
folk som meg	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
en lege	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Min kunnskap om stamming kommer fra ...

	Ja	Nei	Vet ikke
personlig erfaring (egen, familie, venner)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TV, radio, filmer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ukeblader, aviser, bøker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
internett	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
skolen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
leger, helsepersonell eller andre spesialister	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Jeg stammer eller har stammet tidligere

Ja

Nei

Tusen takk for hjelpen!

Ha en fin dag!

HUSK: trykk "avslutt" for å lagre besvarelsen din

Beliefs about and attitudes toward stuttering among high school students in Norway

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Research article

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Spring of 2019

Abstract

The aim of this study is to investigate the attitudes and beliefs toward stuttering and people who stutter held by high school students in Norway using the *Public Opinion Survey of Human Attributes–Stuttering (POSHA-S)*. Changes in attitudes and beliefs from first-year to last-year students are analyzed. Lastly, the combined research data is compared to the international database of POSHA-S research. With a cross-sectional design, 276 high school students from two regions of Norway responded to the POSHA-S. Findings are analyzed using one-way ANOVA followed by post-hoc Tukey-Kramer; lastly, by operating with percentiles and quartile range, results are compared to the international database. Compared to the POSHA-S database, high school students in Norway held more accurate beliefs about people who stutter, especially in terms of traits and personality, and would be less worried or concerned if they themselves stuttered or if someone close to them stuttered. Yet, they did not view themselves as sources of help for people who stutter. The older the students, the higher the overall stuttering score was, i.e. the more accurate beliefs they held and the more positive attitudes they had. High school students in Norway score higher than the international mean, consistent with, although somewhat lower than, previous research results of Scandinavian adults. The older the students the more positive stuttering attitudes they had, while approximating Scandinavian adults from prior research.

Keywords: stuttering, POSHA-S, high school students, Norway, attitudes, beliefs, stereotype, discrimination.

Beliefs about and attitudes toward stuttering among high school students in Norway

Stuttering is a communication disorder characterized by involuntary disruptions of speech flow (Shapiro, 2011). This is known as *core behaviors*, which is what the listener can observe or hear (Guitar, 2014; Ward, 2017). Core behaviors may vary in the number of speech breaks and the frequency of disfluency, in the features of these speech breaks (repetitions, prolongations, blocks), and also the severity and duration of disfluency (Guitar, 2014; Ward, 2017). *Secondary behaviors* may accompany core behaviors. This refers to learnt behaviors or patterns of behaviors used as an attempt to avoid or escape core stuttering (Guitar, 2014a). Such patterns can be accompanying body movement, e.g. abrupt eye blinking (Jackson et al., 2012; Ward, 2017). Secondary behaviors also refer to attempts at masking or concealing ones' stutter to others, thus giving the impression of a fluent speech (Guitar, 2014a). This is often referred to as avoidance behaviors. Further, the awareness of stuttering may shape the way someone stutters (Jackson, Quesal, & Yaruss, 2012). This refers to learnt attitudes and self-stigma, concerning the individual's experience of stuttering, the potentially negative affective, behavioral, and cognitive reactions from themselves and/or the environment (Guitar, 2014; Yaruss & Quesal, 2004). This aspect of stuttering lies beneath the surface and makes up what the observer cannot see. It constitutes feelings of fear, shame, guilt, anxiety, hopelessness, isolation, embarrassment, and denial (Guitar, 2014; Jackson et al., 2012; Sheehan, 1970). Depending on the individuals emotions, experiences, and environment, this aspect of stuttering can set significant limitations in their ability to participate in society and in daily activities, and potentially impact their overall quality of life negatively (Yaruss & Quesal, 2004).

Attitudes and beliefs society holds about people who stutter (PWS) contribute to creating social stigma, further enhancing discrimination and stereotypes (Boyle, Blood, & Blood, 2009). With time, the stigmatized individual may begin to believe in the stereotypical image they have been given and eventually incorporate the oversimplified and uniform

depiction into their own identity, something which is referred to as self-stigma (Boyle, 2013; Jensen, Dybvig, & Johannessen, 2009; St. Louis, 2016). This way, they will recognize themselves in the negative characteristics the label is associated with, possibly leading to a diminished ability to demand equality and justice (Jensen et al., 2009). Stigmatization involves people making sweeping assumptions about others, leading to ascribing certain traits to someone that does not necessarily have any basis in reality. Goffman (2009) explains that as a consequence, the stigmatized person will constantly strive to adjust their social identities using strategies to deal with rejection, and further project their complex self-image to others – thus reinforcing stigma. Goffman's notion finds support in McCroskey, Richmond, Daly, and Falcione (1977). They found that individuals tend to modify their self-concept over time so that it matches the perceptions that others have of them (McCroskey et al., 1977). By applying a model of self-stigma to developmental stuttering, Boyle (2015) explained experiences of psychological harm, poorer quality of life, lower psychological health, and reduced social participation PWS may encounter. In this view, PWS become aware of the fact that others stigmatize them; next they begin to agree with the negative attitudes and apply the stigma to themselves. The model proposes a view where the attitudes and beliefs of others play an important role in the rise of self-stigma. This way, the environment may be partly responsible for the negative consequences of stuttering.

White and Collins (1984), Doody, Kalinowski, Armson, and Stuart (1993) and MacKinnon, Hall, and MacIntyre (2007), suggest that stuttering stereotypes may arise from the experiences and feelings of a normally-fluent speaker when facing moments of temporary disfluency. Such situations are often stressful, tense or uneasy for the speaker, and the individual may be seen as nervous, shy, anxious or self-conscious. The feelings emerging during moments of temporary disfluency are then generalized to permanent personality traits of those who stutter (Doody et al., 1993; White & Collins, 1984). MacKinnon et al. (2007), add that the person goes on to realize that momentary disfluency is not the same as a

stuttering disorder, and therefore readjusts their judgments, resulting in a less negative and less extreme stereotyping of PWS. Nevertheless, the negative impact still persists and may cause social consequences that need to be addressed.

A substantial amount of research highlights the various ways in which stuttering may impact the lives of those who stutter. Pertinent research results and the literature relating to the consequences of stuttering have shown that stuttering: a) can lead to challenges, stereotyping and discrimination in the workplace (Gabel, Blood, Tellis, & Althouse, 2004; M. A. Hurst & E. B. Cooper, 1983; M. I. Hurst & E. B. Cooper, 1983; Logan & O'Connor, 2012); b) may cause PWS to internalize inaccurate beliefs, limiting reactions and negative stereotypes of themselves (Boyle, 2013; Craig, Tran, & Craig, 2003; Irani, 2013; MacKinnon et al., 2007); c) can take its toll on the quality of life in several life domains, in addition to exerting an impact on their self-esteem, self-image and self-identity (Craig, Blumgart, & Tran, 2009; Franic & Bothe, 2008; Klompas & Ross, 2004; Starkweather & Givens-Ackerman, 1997; Yaruss & Quesal, 2006); d) can increase the likelihood of developing anxiety, social anxiety, trait anxiety and depression (Beilby, Byrnes, Meagher, & Yaruss, 2013; Boyle et al., 2009; Craig, Hancock, Tran, & Craig, 2003; Craig & Tran, 2006, 2014; Iverach & Rapee, 2014; McAllister, Kelman, & Millard, 2015; Smith, Iverach, O'Brian, Kefalianos, & Reilly, 2014), and; e) may lead to a loss of life opportunities and/or lack of advancement (Bloodstein & Bernstein Ratner, 2008; Craig & Calver, 1991; Crichton-Smith, 2002; Hayhow, Cray, & Enderby, 2002; Klein & Hood, 2004; Klompas & Ross, 2004; Rice & Kroll, 1994). Further, the nonstuttering majority have been shown to have a lack of understanding and lack of knowledge of stuttering, inaccurate and false beliefs, as well as negative reactions (Craig, Tran, et al., 2003; Klompas & Ross, 2004; McCroskey et al., 1977; Panico, Healey, Brouwer, & Susca, 2005).

For many who stutter, the burden of trying to mask one's stutter may require tremendous amounts of energy, and their difficulties with communication may lead to

anxiety, embarrassment, and withdrawal (Jackson et al., 2012; Sheehan, 1970). A number of them may show little or no core behaviors whatsoever and appear to speak normally most of the time, even the most severe stuttering related problems can occur in those who rarely demonstrate core stuttering (Murphy, Quesal, & Gulker, 2007; Van Riper, 1982). Some may experience discrimination and stigmatization, for other it may be affecting their life choices. The impact that stuttering might have on an individual's life is rooted in so much more than what can be observed on the surface (Yaruss & Quesal, 2004). St. Louis (2016) calls attention to the attitudinal environment, highlighting how the beliefs and reactions of others can lead to negative consequences and tangible effects for PWS. The idea is that, by changing the attitudes of others, the lives of those who stutter improve. Therefore, detecting and attempting to change attitudes is an important feature of stuttering treatment (St. Louis, 2016).

Establishing, implementing, and evaluating interventions or public awareness campaigns aimed at reducing social stigma are dependent on identification and measurement of the presence of negative stereotypes and possible discrimination. One can perhaps obtain an understanding of the situation by analyzing the various components that together constitute social stigma (Boyle et al., 2009). *The Public Opinions Survey of Human Attributes–Stuttering (POSHA-S)* is a well-established questionnaire designed to measure public attitudes toward stuttering, created in order to offer a worldwide standardized measure of public attitudes and perceptions (St. Louis, 2012c). It consists of a written questionnaire that addresses beliefs, attitudes, and reactions toward stuttering (St. Louis, 2011, 2012c). Results from POSHA-S research are added to the continually growing international database, permitting broad-based international comparisons. The database is a result of years of research, with 14063 respondents from 44 countries representing 27 languages (K. St. Louis, personal communication, March 06, 2019).

Using the POSHA-S, researchers across the world have found that Northern Europe, in particular Scandinavia, and North America have some of the highest scores, while Western

Europe and Southeastern Europe, with the exception of Turkey, produce moderately high scores. Further, Central Europe demonstrates average scores that are similar to the database median, whereas the Middle East, Southern and Eastern Asia, Africa, and Southern Europe, with the exception of Portugal, show some of the lowest scores, see e.g. Abdalla and St. Louis (2012); Al-Khaledi, Lincoln, McCabe, Packman, and Alshatti (2009); Ip, St. Louis, Myers, and Xue (2012); Przepiorka et al. (2013); Kenneth O. St. Louis, Aneta M. Przepiorka, et al. (2014); St. Louis and Roberts (2010); St. Louis, Sønsterud, Carlo, Heitmann, and Kvenseth (2014); St. Louis, Sønsterud, et al. (2016); Valente, St. Louis, Leahy, Hall, and Jesus (2017); Özdemir, St. Louis, and Topbaş (2011a); Özdemir et al. (2011b). Although this division reflects a tendency, it is important to note that differing results have been found. For example, a cluster sample of 469 primary school teachers in South Africa showed scores that were slightly higher than the median in the database archive (Abrahams, Harty, St. Louis, Thabane, & Kathard, 2016).

In an extensive and ambitious study, St. Louis and colleagues (2016) intended to detect the extent to which public attitudes toward stuttering concurred within three geographically dispersed regions in three European countries (Norway, Bosnia-Herzegovina, Italy), and, further, between five European countries or areas in close proximity (Norway, with additional respondents from Sweden, Bosnia-Herzegovina, Italy, England and Ireland, Germany). Comparing the results to the international database archive of POSHA-S research, they found that Italian attitudes were more negative than average (OSS -3), while Norwegians and Swedes had more positive attitudes than average (OSS 34). Although not as favorable as Scandinavian attitudes, Irish, English, and Bosnian respondents scored somewhat above average (OSS 23), while Germans scored similar to the database median (OSS 15). The authors found that attitudes toward stuttering were very similar within each individual country, and therefore presumed that national identity potentially has a key influence on stuttering attitudes (St. Louis, Sønsterud, et al., 2016).

Kenneth O. St. Louis, Aneta M. Przepiorka, et al. (2014) investigated attitudes toward stuttering held by 400 university students in Poland and the United States. The authors found that American students had more positive attitudes toward stuttering than Polish students. Further, they found that the American students, with samples comprised of both Americans and Native Americans, had quite similar attitudes. Although Native American respondents (undergraduates) had a tendency to show more patience towards those who stutter, only 7 % of POSHA-S ratings were significantly different between them and other American undergraduates (Kenneth O. St. Louis, Aneta M. Przepiorka, et al., 2014). While field testing with an earlier experimental prototype of the POSHA-S, the POSHA-E, St. Louis and Roberts (2010) sought to compare country versus language influences. French and English versions of the POSHA-E were completed by 120 respondents in Canada and Cameroon, in addition to English versions by 30 monolingual Americans. The authors found that differences in results were best explained by geographical distance. While English and French speaking Canadians gave quite different responses than English and French speaking respondents from Cameroon, Canadian and monolingual Americans responded more similarly.

Previous POSHA-S research results have found that geographical or cultural proximity likely is a key factor in influencing stuttering attitudes and beliefs, see e.g. Kenneth O. St. Louis, Aneta M. Przepiorka, et al. (2014); St. Louis and Roberts (2010); St. Louis, Sønsterud, et al. (2016); Özdemir, St. Louis, and Topbaş (2011b). Moreover, the age of the respondent and their level of education have proven to associate with attitudes and beliefs (Flynn & St. Louis, 2011; Glover, St. Louis, & Weidner, 2019; Przepiorka, Blachnio, St. Louis, & Wozniak, 2013; Kenneth O. St. Louis, Aneta M. Przepiorka, et al., 2014; St. Louis & Rogers, 2011; St. Louis, Weidner, & Mancini, 2016; Weidner, St. Louis, Burgess, & LeMasters, 2015). On the other hand, practically no difference has been observed between male and female respondents, while parental status, knowing more than one language, and religious views have shown no clear effect on attitude outcomes (St. Louis, 2012a, 2016; St.

Louis & Tellis, 2015; St. Louis, Weidner, et al., 2016). Further, income and life priorities are found to be marginally influential at best to attitude outcomes (St. Louis, 2016; St. Louis & Tellis, 2015).

Using *the Appraisal of the Stuttering Environment*, St. Louis, Weidner, et al. (2016) compared 48 parents of 3-7 year old's, 33 parents of older children, and 63 adults without children to previous reviewed studies of attitudes of young children using the *Public Opinion Survey on Human Attributes–Stuttering/Child (POSHA-S/Child)*. The authors found that parental status had little, if any, effect on stuttering attitudes, and, further, that attitudes held by the adults were consistently more positive than the attitudes of young children (St. Louis, Weidner, et al., 2016). In Turkey, Özdemir et al. (2011b) compared 6th graders attitudes toward stuttering to the attitudes held by their parents, grandparents or relatives, and neighbors. They found that the attitudes of the 12-year-old children were very similar to those held by their family, in addition to being similar to their neighbors. The authors concluded that children's attitudes toward stuttering probably are quite influenced by their family's attitudes.

In the USA, Weidner et al. (2015) verbally administered the POSHA-S/Child among 27 nonstuttering preschool children and 24 nonstuttering children in kindergarten. They found that preschoolers had more negative attitudes toward stuttering than kindergartners had. Glover et al. (2019) explored the stuttering attitudes of preschool through 5th grade children (seven grade levels), while comparing them to their parents' attitudes. A total of 300 took part, 150 parent/child pairs, responding to the POSHA-S and POSHA-S/Child. The authors found that the attitudes held by parents were quite uniform, while younger children's attitudes were considerably less-positive than their parents' attitudes. Between the ages of 4 and 11 years, the children's attitudes gradually improved and came closer to the attitudes held by their parents and society at large (Glover et al., 2019).

In an experimental study using the POSHA-S, Flynn and St. Louis (2011) discovered that the baseline attitudes of 83 high school adolescents (mean age 16.4) showed attitudes and beliefs that indicated a stuttering stereotype. Further, the high school students' attitudes, although more negative overall, were similar to those held by numerous adults in the United States. Moreover, their attitudes toward stuttering were worse and more inaccurate than those held by college undergraduates and college graduates (St. Louis & Rogers, 2011). Kenneth O. St. Louis, Aneta M. Przepiorka, et al. (2014) found that college graduates had more accurate and positive attitudes toward stuttering than college undergraduates in the USA, both for speech-language pathology students and among students with a different major. Moreover, this effect was found to be stronger among speech-language pathology majors. Speech-language pathology students held higher scores than students with a different major, both in Poland and the USA (Kenneth O. St. Louis, Aneta M. Przepiorka, et al., 2014).

The reviewed literature highlights the various consequences stuttering may have in the lives of those who stutter, including pervasive problems like workplace- and job discrimination, stigmatization, and the stuttering stereotype. It has also been shown how others may partly be responsible for the negative repercussions of stuttering. High school students are future colleagues and employers, the attitudes, reactions, and beliefs they hold toward those who stutter are therefore of particular importance. Gaining an understanding of the attitudes they hold, and essentially contributing to change, may perhaps impact the experiences that PWS have in a variety of environments in the future, e.g. workplace and community. In Norway there have been no previous investigations on young people's attitudes and beliefs toward stuttering. The present study aims to: a) give an understanding of the beliefs about, and attitudes toward, stuttering and PWS held by high school students in Norway; b) replicate previous research findings on the gradual development of more favorable stuttering related attitudes, approximating those held by adults in the same society/culture, and; c) support the current notion that Scandinavians produce some of the

highest scores on the POSHA-S.

Method

Instrument to measure attitudes toward stuttering

An adapted and modified electronic version of the Norwegian translation of the *Public Opinion Survey of Human Attributes-Stuttering (POSHA-S)* was used in order to measure beliefs about, attitudes towards, and knowledge about stuttering and PWS in a standardized manner among high school students in Norway. The POSHA-S has been subject to a vast amount of research and is well validated through numerous processes (St. Louis, 2012c). Extensive epidemiological research has explored: (a) the use of different questionnaire rating-scales (quasi-continuous scale (POSHA-E1), 1-9 scale (POSHA-E2), 1-5 and 1-3 scale (POSHA-S)); (b) item analysis and final item selection; (c) test-retest reliability for both paper-and-pencil- as well as online versions of POSHA-E2 and POSHA-S; (d) construct and concurrent validity; (e) internal consistency; (f) order effect of items; (g) how well POSHA-S items can be translated; (h) considerations of sample size; (i) manner of administration; (j) different types of sampling procedures, see e.g. (Abdalla & St. Louis, 2012; Al-Khaledi et al., 2009; Flynn & St. Louis, 2011; Klassen et al., 2004; Knudsen, Kathard, St. Louis, & Shrestha, 2004; Lubker et al., 2004; St. Louis, 2005, 2008, 2011; St. Louis & George, 2008; St. Louis, Hancock, & Remley, 2010; St. Louis, Lubker, Yaruss, Adkins, & Pill, 2008; St. Louis, Lubker, Yaruss, & Aliveto, 2009; St. Louis, Reichel, Yaruss, & Lubker, 2009; St. Louis, Remley, & Hancock, 2010; St. Louis & Roberts, 2010; St. Louis, Tellis, Taunquin, Wolfenden, & Nicholson, 2004; St. Louis, Williams, Ware, Guendouzi, & Reichel, 2014; St. Louis, Yaruss, Lubker, Pill, & Diggs, 2000; Özdemir et al., 2011a).

The POSHA-S is divided into three sections. The first is a demographics section (asking the respondent to rate e.g. life priorities), the second is a general section where stuttering attitudes are compared to other human attributes – stigmatized traits (obesity, mental illness), a neutral trait (left-handedness), and a positive trait (intelligence), and, lastly,

a section that specifically addresses stuttering (St. Louis, 2011). The survey consists of questions, so called *items*; clusters of related items are organized into 11 *components*, and clusters of components are organized into three subscores: 1) *Beliefs about persons who stutter*; 2) *Self reactions to people who stutter*, and; 3) attitudes about *Obesity/Mental illness* (St. Louis, 2011). The first two subscores are stuttering related, and the mean of these two scores make up the *Overall Stuttering Score (OSS)*, while the third subscore makes comparisons of stuttering to other potentially stigmatized conditions possible. Items are scaled and then converted to a standard attitude scale from -100 to +100, with 0 displaying a neutral response, +100 displaying an accurate or positive response, and -100 displaying an inaccurate or negative response (St. Louis, 2012c). Items in the general section (section 2) use a 1-5 Likert scale (“1” = -100, “2” = -50, “3” = 0, “4” = +50, “5” = +100), and nominal scale (i.e. 1 or blank). Items in the stuttering specific section (section 3) uses a 1-3 scale (“yes” = 3 (+100), “not sure” = 2 (0), “no” = 1 (-100)). Items in the demographics section (section 1) uses a combination of these rating scales (Valente et al., 2017). Certain items in the POSHA-S, e.g. “People who stutter have themselves to blame for their stuttering”, are reversed so they consistently follow the same attitude scale. See St. Louis (2011) for a detailed review of POSHA-S rating scales and for information on the items, components, subscores and OSS.

Certain items in the demographics section were not included in the present study; a) native language; b) other spoken languages; c) religious views; d) race/ethnicity; e) place of birth; f) date of birth (modified to age in years), and; g) city/town/village of residence (modified to region) (mandated by the *Norwegian Center for Research Data*).

Population

The Norwegian school system is a 13 year long basic education program, consisting of 10 years primary and 3 years secondary education (Opplæringslova, 1998). Norwegian high school comprises grades 11, 12, and 13, ranging from ages 15 till 20+ (Forskrift til opplæringslova, 2006; Utdanningsdirektoratet, 2018). Upon admission one can choose

between preparatory subjects (preparing students for college and/or university) or a vocational education. The former takes three years of high school, while the latter takes two years followed by a two-year apprenticeship. Vocational students are additionally offered a one year add-on to qualify themselves to study at college and university level – they may opt for this regardless of whether they do an apprenticeship or not (Utdanningsdirektoratet, 2018).

In accordance with statistics reported by Statistics Norway, the central institution responsible for collecting, processing, and disseminating official statistics in Norway, the age distribution in Norwegian high schools is approximately: 0.14 % 15 years, 88.96 % 16-18, and 10.90 % 19-24+, with gender distribution roughly 50-50 (Statistikkloven, 1989; Statistisk sentralbyrå, 2017c). To date, a total of 198 944 students are attending high school in Norway, with a total of 62.85 % taking preparatory subjects while 37.15 % undertake vocational educations (Statistisk sentralbyrå, 2017b, 2017c). A total of 7.79 % attend private school, while 92.21 % attend public school (Statistisk sentralbyrå, 2017a).

Respondents

The students came from two different schools in geographically dispersed regions of Norway. One school is a private school in an urban setting located in central Norway, while the other is a public school located in a rural part of southeastern Norway. Respondents were in their 11th, 12th, or 13th year, although most respondents were 11th or 13th grade students.

Recruitment and means of administration

Recruitment of students followed a uniform procedure. An adjusted version of the school-based three-stage cluster probability scheme presented in Özdemiş et al. (2011a) was used. This sampling scheme involves randomly selecting a district and school(s) from a list of all public school districts in a given region (Özdemiş et al. (2011a), p.263). For the purpose of this study, both private schools and public school were included. Regional statistics were publicly accessible and used to aid the selection process. The first stage involved listing all counties in Norway, which at the time was 19. Three counties were selected at random, the

first located in the southeastern part of Norway, the second located in the central part of Norway, and the third located in the western part of Norway. The second stage involved listing all the high schools in each county into three separate lists. An overview of the public schools was found on each county's official webpage. An overview of private schools in each county was added to the three separate lists. This was found on *vilbli*, which is a part of *Vigo* – an online information service for applicants applying to high school in Norway

(<https://www.vilbli.no/nb/nb/no/fylkes-skole-og-laerebedriftsoversikt/f>, retrieved 2017).

Subsequently, six random schools, two in each county, were contacted individually by sending e-mails to school officials. Only one e-mail was sent to each school official and no reminders were sent. The e-mail included information about the project's purpose, information regarding the POSHA-S and what kind of questions it asks, in addition to an explanation as to how the data would be used and who it would be shared with. Next, for those who wanted their school to take part, the school officials informed their teachers during a faculty meeting, and the teachers that were interested were given the research author's contact information. The third stage involved organizing the time for when administration of the questionnaire could take place. Once this was agreed upon, the research author traveled to each school and administered the survey in a total of 14 classes. The site and setting of the research project/the data collection was the respondents' respective schools and further their main classroom (homeroom).

Every school official responded quickly to the e-mail. A total of three schools, one from each region, were willing to take part in the project. A final selection included two of these schools, mainly due to time constraints. After consulting with the teachers individually, it was agreed that the best approach was that the research author administered and conducted the survey in person and be present while the students filled out the questionnaire. This way it could be made certain that the administration of the questionnaire was conducted in a valid manner, both with respect to the type and quantity of information given to students.

Data collection was carried out during the autumn term of 2017. Before responding to the survey, each student in every class was given a copy of an information handout, containing a formal request to participate in the project. All the information in the handout was talked over, voluntary participation was particularly emphasized. St. Louis (2012b) concluded that the POSHA-S largely appeared to be robust in terms of administration strategy, deducing that responding a paper-and-pencil version or online version of the POSHA-S did not seem to influence the outcomes in systematic ways. Therefore, it was decided that students were given the option to respond to an online version or a paper-and-pencil version. The online version was created using the web-based software *SurveyXact*. This is Privacy Enhancing Technology that ensures data protection (<https://www.surveyxact.no/produkt/sikkerhet/>). The online version was created with the intention of making it user friendly and similar to the paper version. The students could access the online version in three ways: 1) through a link the classroom teacher posted on *Its Learning*; 2) scanning a QR.-code in the information handout, or; 3) accessing a webpage and filling out a key code provided by the research author. They could use any technical tools they wanted, i.e. computers, cellphones, or tablets. Every student opted for the online version. Students with special needs that wished to participate were offered the assistance of their teachers. Once the students had completed the survey, the class was offered a talk, or rather an open discussion, about stuttering and speech-language pathology. This was completed in every class.

Data analysis

The first main question is whether the beliefs about, and attitudes toward, stuttering held by high school students increase the older the students are. To answer this question, once the data is plotted into the POSHA-S Excel workbook, grades are grouped into 11th, 12th, and 13th grade, so that there is a total of four workbooks (11th graders, 12th graders, 13th graders, high school students in Norway total). To investigate whether significant differences between

the grades exist, the first step is to run one-way analysis of variance (ANOVA) on items, components, subscores, and OSS. Provided statistically significant ANOVA results, i.e. a statistically significant difference between the three groups, the second step is to run post-hoc tests on statistically significant items, components, subscores, and/or OSS, to confirm where the differences occurred. Post-hoc analyses were performed using the Tukey-Kramer test for unequal sample size. For each variable, the calculated value from the Tukey-Kramer test (q) is compared with a critical value obtained from the studentized range distribution with an associated alpha (0.05). Significant findings are discussed, i.e. calculated values were (q) is greater than the critical value ($q > q_{\text{critical}}$).

The second main question is whether or not the findings from this study support the current notion that Scandinavians produce some of the highest scores on the POSHA-S. To answer this question, percentile ranks are compared to those in the POSHA-S database archive. Specifically, a total of 60 standard comparisons are made, in addition to items in the demographics section, and percentiles in the 1st and 4th quartile are discussed. To date, the database is comprised of a total of 14063 respondents from 180 independent samples from around the world.

Results

Respondent characteristics

Supplementary dataset 1 provides a detailed summary of demographic characteristics divided into grade level. A total of 276 high school students completed the POSHA-S with a return rate of 77 %. Every respondent chose to use the online version. The sample was comprised of 101 11th grade students (mean age 15.94), 40 12th grade students (mean age 16.90), and 134 13th grade students (mean age 18.00). The mean age in total was 17.08, age range 5.00 yr. The ratio of males to females was 0.93:1, with 141 responding females, 132 responding males, and 4 unrefuted.

Two schools with 14 separate classes participated, with 204 students taking preparatory subjects and 67 completing a vocational education program. All respondents were full time students and 65.7 % had an after-school job and/or summer job. They reported their family's income mainly as average to above average both in comparison to family and friends and to the assumed average income in Norway.

A total of 190 respondents lived in a region in the southeastern part of Norway, and the remaining 86 lived in a region in central Norway. Only 3.62 % regarded themselves as a person who stutters, few considered themselves to be obese (3.26 %) or mentally ill (5.43 %), while 18.84 % viewed themselves as intelligent. In total 20.29 % reported not knowing anyone who stutters, 29.71 % reported knowing no one who is mentally ill, while 17.75 % reported knowing no one who is obese. A total of 54 respondents reported having a close friend with a stuttering disorder, and 35 reported having a relative with a stuttering disorder. All-in-all, the respondents rated their physical health, mental health, ability to learn, and ability to speak as average to above average.

Data analysis

Supplementary dataset 2 provides a summary of items, components, and subscores in the POSHA-S for each grade. Results from the one-way ANOVA determined 17 statistically significant items, 5 components, 2 subscores, and the OSS. The OSS is comprised of 39 items, 11 which were statistically significant determined by one-way ANOVA. Post-hoc Tukey-Kramer was run on the 25 statistically significant values to confirm where the differences occurred between the grades.

Between-grade comparisons: respondent characteristics.

Overall, the students had similar ratings of life priorities, although spending quiet time alone and attending social events was deemed more important for the 13th grade students than for the 11th and 12th graders (“spending quiet time alone”: $q(4.38)_{11^{th} \text{ vs } 13^{th}} > q(3.33)_{critical}$, $q(4.64)_{12^{th} \text{ vs } 13^{th}} > q(3.33)_{critical}$, “attending social events”: $q(4.28)_{11^{th} \text{ vs } 13^{th}} > q(3.33)_{critical}$,

$q(4.62)_{12^{\text{th}} \text{ vs } 13^{\text{th}}} > q(3.33)_{\text{critical}}$). The students rated the items in the question “I would want to be a person who...” relatively similar in regard to wanting to be a person who is left handed, or someone who has a stuttering disorder. However, the 13th graders least wanted to be a person who is obese or much overweight ($q(5.35)_{11^{\text{th}} \text{ vs } 13^{\text{th}}} > q(3.33)_{\text{critical}}$, $q(8.10)_{12^{\text{th}} \text{ vs } 13^{\text{th}}} > q(3.33)_{\text{critical}}$).

Supplementary dataset 5 provides an overview of the “Obesity/Mental illness” subscore. Interestingly, in the subscore “Obesity/Mental illness” the 12th graders scored significantly different for all items, components, and subscore, with the exception of the component “Amount known” with two associated items. Subscore “Obesity/Mental illness”: $q(4.54)_{11^{\text{th}} \text{ vs } 12^{\text{th}}} > q(3.32)_{\text{critical}}$, $q(6.57)_{12^{\text{th}} \text{ vs } 13^{\text{th}}} > q(3.32)_{\text{critical}}$, component “Impression”: $q(3.51)_{11^{\text{th}} \text{ vs } 12^{\text{th}}} > q(3.32)_{\text{critical}}$, $q(4.99)_{12^{\text{th}} \text{ vs } 13^{\text{th}}} > q(3.32)_{\text{critical}}$, component “Want/Have”: $q(7.00)_{11^{\text{th}} \text{ vs } 12^{\text{th}}} > q(3.32)_{\text{critical}}$, $q(11.22)_{12^{\text{th}} \text{ vs } 13^{\text{th}}} > q(3.32)_{\text{critical}}$. Moreover, they scored significantly different on the item “want/have intelligence”: ($q(6.03)_{11^{\text{th}} \text{ vs } 12^{\text{th}}} > q(3.33)_{\text{critical}}$, $q(6.54)_{12^{\text{th}} \text{ vs } 13^{\text{th}}} > q(3.33)_{\text{critical}}$). Further, although not statistically significant, they had a more positive overall impression of PWS, scoring 16, vs 7 among 11th graders, and 9 among 13th graders.

Between-grade comparisons: POSHA-S ratings and graphic profile.

Figure 4 provides a visual depiction of the subscores and components that make up the OSS. Overall, the students’ OSS steadily increase from a score of 22 for 11th grade, 26 for 12th grade, and 29 for 13th grade. A significant difference occurred between 11th graders and 13th graders ($q(5.23)_{11^{\text{th}} \text{ vs } 13^{\text{th}}} > q(3.32)_{\text{critical}}$). Figure 2 illustrates the components and items that collectively amount to the subscore “Beliefs about PWS”. The “Beliefs” subscore was more positive/accurate among the older students, increasing from 41 in the 11th grade to 49 in the 13th grade ($q(6.50)_{11^{\text{th}} \text{ vs } 13^{\text{th}}} > q(3.32)_{\text{critical}}$), see Figure 2. Their level of knowledge as to the cause of stuttering also increased significantly, from 39 in the 11th grade to 55 in the 13th grade ($q(5.62)_{11^{\text{th}} \text{ vs } 13^{\text{th}}} > q(3.32)_{\text{critical}}$). Moreover, a large majority of the 13th graders believed

stuttering should be helped by a speech and language therapist, scoring 78 vs 49 among 11th graders ($q(4.95)_{11^{th} \text{ vs } 13^{th}} > q(3.33)_{\text{critical}}$). Although their view of the life potential of someone who stutters showed no significant difference, the older students believed to a larger degree that PWS can lead normal lives, scoring 95 vs 77 ($q(4.60)_{11^{th} \text{ vs } 13^{th}} > q(3.33)_{\text{critical}}$).

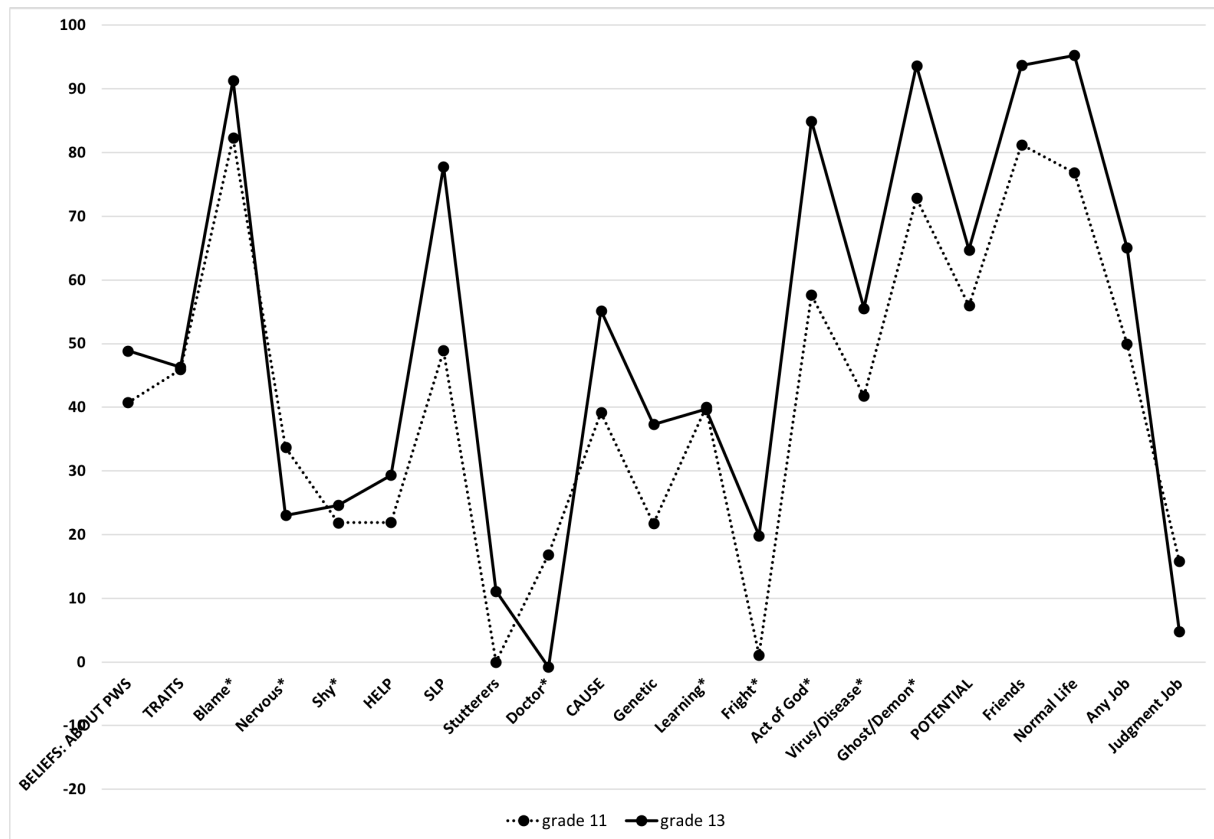


Fig. 2. Beliefs about PWS (subscore) with components and items. *Items: scores are reversed so they follow the same attitude scale.

Figure 3 illustrates the components and items that collectively amount to the subscore “Self reaction to PWS”. The “Social Distance/Sympathy” component showed a significant difference between 11th grade and 13th grade, meaning an improvement among 13th graders ($q(3.59)_{11^{th} \text{ vs } 13^{th}} > q(3.32)_{\text{critical}}$). The older students would be significantly less concerned or worried if their neighbor stuttered ($q(4.21)_{11^{th} \text{ vs } 13^{th}} > q(3.33)_{\text{critical}}$), or if their sibling stuttered ($q(3.76)_{11^{th} \text{ vs } 13^{th}} > q(3.33)_{\text{critical}}$). Although not statistically significant, they would also be less worried or concerned if they themselves stuttered, scoring 9 vs -12. The component “Helping” depicted a significant difference between 11th grade and 13th grade ($q(11.57)_{11^{th} \text{ vs } 13^{th}}$).

13th > $q(3.32)_{critical}$). Although no subordinate item in and of itself was significant, with Figure 3 it becomes apparent that there is a positive increase from 11th to 13th grade for several items in the question “If I were talking with a person who stutters, I would...”, e.g. “fill in the person’s words”, “tell the person to “slow down” or “relax””, and “make a joke about stuttering”. This was also the case for the item “People who stutter... should try to hide their stuttering”. For specific scores, see Supplementary dataset 2.

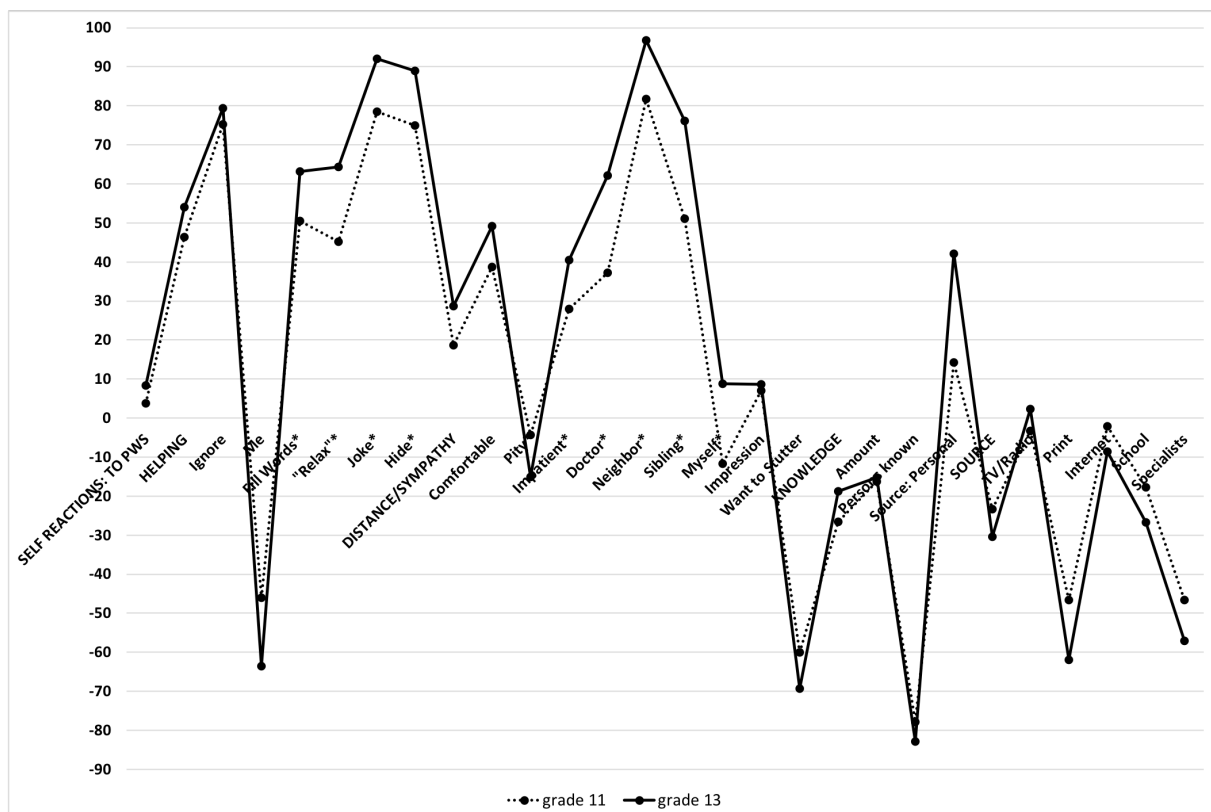


Fig. 3. “Self reactions to PWS” (subscore) with components and items. *Items: scores are reversed so they follow the same attitude scale.

In Figure 4 one can see that 12th graders score higher, i.e. more positive/accurate than 11th graders on the subscore “Self reactions to PWS” ($q(4.58)_{11^{th} vs 12^{th}} > q(3.32)_{critical}$). To the contrary, they score significantly lower than 13th graders on the subscore “Beliefs about PWS” ($q(7.19)_{12^{th} vs 13^{th}} > q(3.32)_{critical}$).

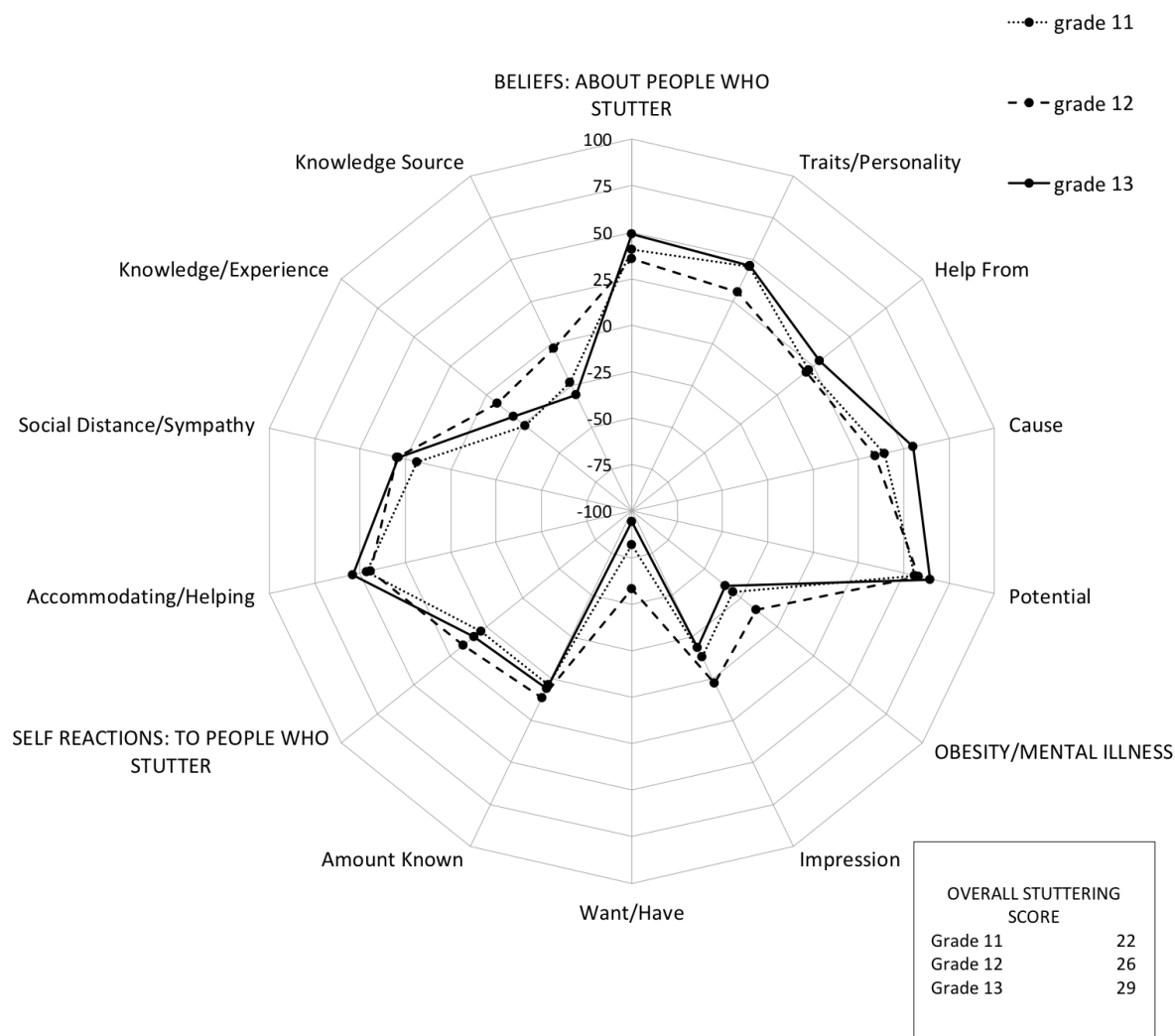


Fig. 4. POSHA-S summary ratings for high school students in Norway divided into grade level. Subscores are written in uppercase letters, while components are written in lowercase letters.

International comparisons

Respondent characteristics.

Supplementary dataset 3 provides an overview of demographic characteristics, percentile ranks, and quartile compared to the lowest, highest, and median scores in the international database.

The results from the current study have been compared to those in the international database of POSHA-S research. The database comprises a total of 14063 respondents from 180 independent samples representing 44 countries. The number of respondents in the current study is 276, placing it in the 93rd percentile. The respondents in the current study range in age from 15 till 20, with a mean age of 17.08 (3rd percentile). The age in the international

database ranges from 11.82 to 63.35, with a median of 36.75. The median education in the international archive is 14.68 yr., while the students' mean education is 12.11 yr. (12th percentile). The male to female ratio is 0.93:1, vs a median of 0.49:1 internationally (84th percentile). Moreover, the percent of male respondents is 47.46 %, vs a median of 33.05 % internationally (83rd percentile). The median income score in the archive is 1, while the students (their family's) mean income score is 22 (92nd percentile).

On the items “earn money”, “be free”, “attend social events” and “having exciting experiences”, the students score in the 89th, 94th, 95th and 90th percentile. Moreover, on the item “spend time alone”, the students score in the 97th percentile. Further, they score in the 21st, 27th, 12th and 0 percentile on the items “solve big problems”, “do my job/duty”, “practice my religion”, and “help the less fortunate”.

POSHA-S ratings and graphic profile.

Supplementary dataset 4 provides a summary of items, components, and subscores that comprise the OSS, with the highest, lowest, and median score internationally, comparing with the total score, percentile rank, and quartile for respondents in the current study.

Supplementary dataset 5 provides an overview of the “Obesity/Mental illness” subscore with international comparisons.

Out of the 60 standard comparisons that make up the OSS and the “Obesity/Mental illness” subscore, 7 scored in the 1st quartile (11.67 %) and 12 scored in the 4th quartile (20.00 %). The students had an OSS score of 26. In the international database, the lowest recorded OSS is -15, while the highest is 65, with a mean score of 17. Comparing this to the Norwegian high school students, they score in the 82nd percentile, meaning that only 18 % of the samples in the database score higher. Their overall impression of PWS is relatively good, scoring 9 (“Impression” 71st percentile). Further, they would be less worried or concerned if their neighbor stuttered (“neighbor” 73rd percentile), if their brother or sister stuttered (“sibling” 94th percentile), or if they themselves stuttered (“myself” 76th percentile).

Components and subscores are displayed in the radial graph, see Figure 5. The radial graph illustrates how the respondents' stuttering attitudes compare to the highest, lowest, and median scores in the international database. All in all, the students have a relatively good understanding as to the cause of stuttering ("Cause" 83rd percentile), in addition to who PWS can seek help from ("Help" 76th percentile); even though an SLP as a source of help is less known among the students than among those in the international database ("SLP" 21st percentile). The students' knowledge sources are relatively sparse ("Source" 22nd percentile), with "print" (5th percentile) and "specialists" (18th percentile) being the most infrequent. Although the students know an average amount of people who have a stuttering disorder ("persons known" 68th percentile), they state personal experience as a source of knowledge more frequently than the respondents in the international database ("source: personal" 77th percentile). On the whole, the students score in the 4th quartile in terms of "Knowledge/Experience" (89th percentile).

The students score reasonably high in terms of "Beliefs about PWS" (78th percentile), while they score considerably accurate in regard to "Traits/Personality" they associate with someone who stutters (90th percentile); whereof most respondents do not believe PWS to be "shy" (78th percentile) or "nervous" (73rd percentile), see Figure 5 for an overview. Although the students score moderately with regard to PWS doing any kind of job they want ("any job" 64th percentile), they score in the 1st quartile concerning those who stutter having "jobs requiring them to correctly understand and decide important things" (11th percentile).

Altogether the students score average concerning their "Self reactions to PWS" (57th percentile), mostly they feel comfortable when talking to a stutterer ("comfortable" 74th percentile), although they would feel pity for the person ("pity" 12th percentile). Their behavior is rather "Accommodating/Helping", scoring in the 4th quartile in terms of not filling in the persons words ("fill words" 81st percentile), while they score in the 3rd quartile in regard to not telling the person to "slow down" or "relax" (72nd percentile). However, they do

not view themselves as sources of help to those who stutter, scoring in the first quartile (“Me” 14th percentile). On the item “I believe stuttering should be helped by...people like me”, 65 % answered “no”, while 10 % responded “yes”.

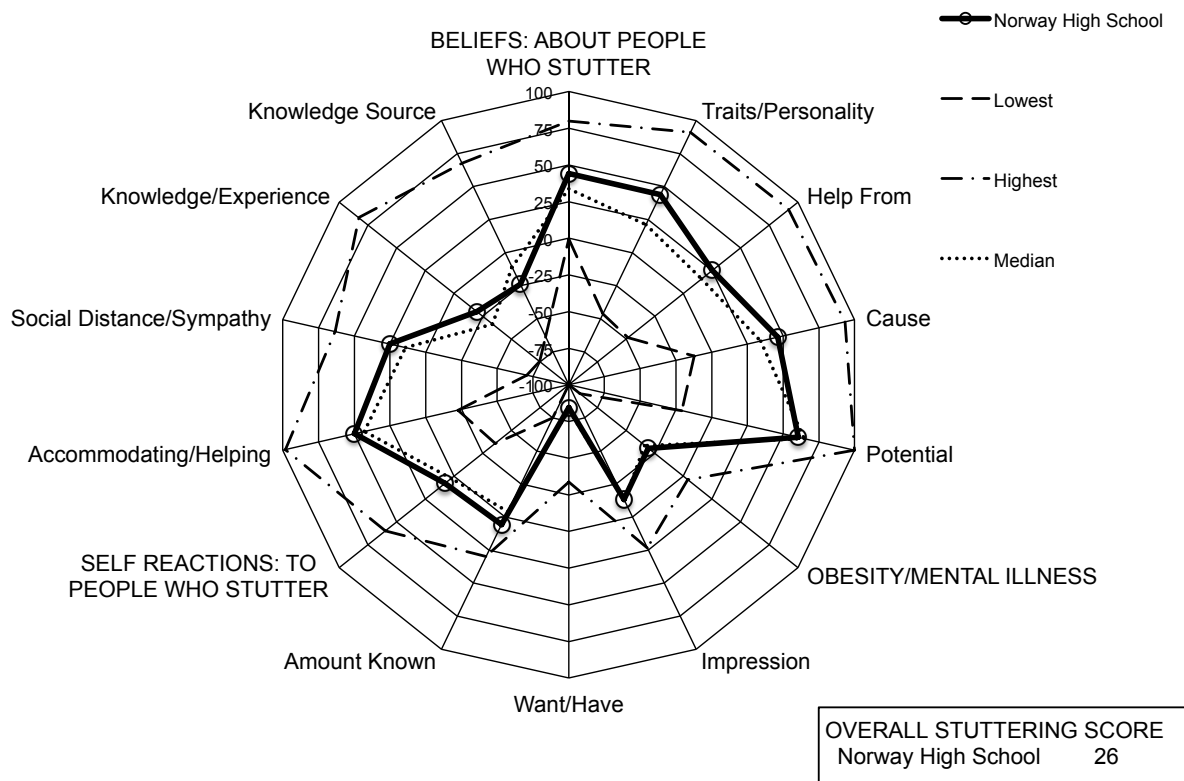


Fig.5. POSHA-S summary ratings for high school students in Norway compared to the lowest, highest, and median scores in the international database. Subscores are written in uppercase letters, while components are written in lowercase letters.

Discussion

International comparisons

The foregoing data highlight that this age group is not overly represented in the international archive, with their mean age and level of education both being in the 1st quartile. When examining their scores on life priorities compared to those in the database, the age group they represent seems to become apparent. This can be seen in items such as “earn money”, “be free”, “attend social events”, and “having exciting experiences” all scoring in the upper end of the 4th quartile, while items like “solve big problems”, “help the less fortunate”, and “practice my religion” all score in the 1st quartile. The students also seem to reflect typical Scandinavians, scoring in the 97th percentile on the life priority “spend quiet time

alone”, something which is not surprising for an average Norwegian who often values and prioritizes spending time alone.

When comparing the students’ scores to those in the international database, the Norwegian high school students seem to have a less stereotypical view of people who stutter. They have more accurate and positive beliefs about people who stutter (34 vs 44), especially in terms of traits/personality they associate with someone who stutters (21 vs 44). Their behavior and way of being is more accommodating and helping, e.g., they are less likely to fill in the person’s words when talking to someone with a stuttering disorder (33 vs 58). They would also be less worried or concerned if someone close to them stuttered (-2 vs 66), or if they themselves stuttered (-39 vs 3). On the other hand, when talking to someone who stutters, they would feel more pity for the person (18 vs -12).

On the component “Potential”, the students score quite close to the median in the international database on three out of four items; “People who stutter...”, “can make friends”, “can lead normal lives”, “can do any job they want”. Yet, somewhat surprisingly, the students score in the 1st quartile (11th percentile) on the question “People who stutter... should have jobs where they have to correctly understand and decide important things”, with a score of 10 vs a median of 40 internationally. Considering their other results on the POSHA-S, this seems rather unexpected. Looking more closely at the data, one can find that 20 % answered “no”, 30 % answered “yes”, while 50 % responded “unsure”. Perhaps the uncertainty the students reveal does not necessarily mean that they believe them to be incapable, but rather an uncertainty as to whether or not the *person* or *individual* is capable or suited for such work. Meaning, they may be unsure because they know nothing more of the person other than the fact that he or she is someone who stutters. One can speculate whether or not the answer to this question would be different if one was asking the same thing about someone with a different human attribute or characteristic. Further, if the wording were more similar to the other items in the same component cluster, with “can have...”, instead of “should have...”,

perhaps the results to this query could be different. While this is a plausible interpretation, one cannot exclude that a possible explanation for this lies in the fact that role entrapment and occupational discrimination might still be pervasive, also among high school students in Norway.

High school students in Norway score higher on the POSHA-S than others in their age group internationally (see POSHA-S results in e.g. Flynn and St. Louis (2011); Kenneth O. St. Louis, Aneta M. Przepiorka, et al. (2014); St. Louis and Tellis (2015)). Norwegians, and Scandinavians in general, have been found to have some of the highest scores on the POSHA-S (St. Louis, Sønsterud, et al., 2016). The high school students in the current study appear to lend further support to this notion. Overall, the subscores “Beliefs about PWS” and “Self reactions to PWS” score in the 78th and 57th percentile (44 vs 34, 8 vs 2), while their OSS scores in the 82nd percentile (26 vs 17). In total, 20 % of the ratings that make up the OSS were in the 4th quartile. See supplementary dataset 4 and 5 for a detailed summary.

Between-grade differences and comparisons to Scandinavian adults

The POSHA-S results and following statistical analysis make it clear that a positive change occurs between first year and last year students. Students in their final year of high school have mean ratings for the “Beliefs about PWS”, “Self reactions to PWS”, and OSS that are 4-8 points higher, i.e. more accurate/positive, than 11th graders. They have more knowledge about the cause of stuttering, and they are more aware of who can help those who stutter (speech language therapist, others who stutter). What’s more, the older students believed to a significantly larger extent that PWS can lead normal lives, with a positive outlook to their life potential.

The 13th graders behavior is significantly more “accommodating/helping”, showing that they are less likely to fill in the persons words, tell them to “relax” or “slow down”, make a joke about stuttering, and, further, believe to a larger degree that those who stutter should not hide their stuttering. Although these items were not statistically significant in and of

themselves, looking at the percentage of “yes”, “no”, and “unsure” answers, one can see a positive change. The older students are more certain and clear in their responses, e.g., while 60 % of 11th graders would not tell the person to “slow down” or “relax” when talking to a person who stutters, 75 % of 13th graders’ answer “no”.

St. Louis and Rogers (2011) stated that when calculating percent of significant differences of the 60 standard comparisons, large differences is defined as being >30 %, while moderate differences is defined as being between 10-30 %. When comparing the 11th graders to the 13th graders, the percent of significant differences is estimated as 38.88 % for all 60 comparisons, while it is estimated as 34.29 % on the stuttering-specific items, meaning that there are large differences between the grades. This lends support to previous research findings on the development of stuttering attitudes.

Despite being accommodating and helping, all in all the students do not view themselves as sources of help for PWS, with a score of -55 vs a median of -27 internationally (1st quartile, 14th percentile). Comparing 11th graders to 13th graders did not yield a significant difference, still, there is a slight indication of a negative trend. Among 11th graders there is a 57 % negative response, while it is 73 % among 13th graders. Parallel to this, the level of uncertainty declines. St. Louis (2016) encourages including to the nonstuttering majority in the management of stuttering, pointing out how they may have the possibility to improve treatment outcomes, better the quality of life, and promote greater life potential. That being said, the results may indicate that this is an important aspect to include in attitude altering campaigns or efforts. The students need to be made aware of the impact their way of behaving has on others, and they need to be made aware of the fact that they can make a difference.

The 12th graders scored somewhat differently than the others. They had less knowledge about the cause of stuttering and did not have a high level of familiarity with PWS – two factors found to be important to the beliefs and attitudes people hold (Arnold & Li, 2016). Their scores on the “Beliefs” subscore were lower than for 11th and 13th graders,

however, they scored higher on the “Self reactions” subscore (16, vs 4 and 8) and on the “Overweight/mentally ill” subscore (-15 vs -30 and -36). They had more positive impressions of people who are mentally ill and/or much overweight or obese (3 vs -13 and -18), and they were less negative to wanting to be a person who is overweight or mentally ill. These findings indicate a carry-over effect, something which has been observed in previous research (St. Louis & Tellis, 2015). If this is the case, it could provide valuable information that can be implemented in attitude altering campaigns and initiatives.

When comparing the student respondents in the present study to the Scandinavian adult respondents in St. Louis, Sønsterud, et al. (2016), the likeness in responses become apparent. A total of 42 Swedes and 86 Norwegians (mean age 41.7, 0.41:1 male to female) constituted the Scandinavian sample. In Table 3, selected items, components, subscores, and OSS are compared. Here, one can observe that the OSS gradually increases from 22, to 26, to 29, and 34, i.e., a 5-point increase from 13th graders to adults, while the mean ratings for the “Beliefs about PWS” and “Self reactions to PWS” are 2-8 points more positive/accurate. A similar pattern can be found for several component scores, e.g. “Distance/Sympathy”, “Cause”, “Traits”, and “Helping”. The high school students’ stuttering attitudes seem to gradually approximate those held by Scandinavian adults.

Despite the similarities, there are some interesting differences in the attitude changes. For example, “Help from: other PWS” increased from 0 for 11th graders, to 8 for 12th graders, and 11 for 13th graders. The adult respondents, on the contrary, do not follow this pattern, scoring -16. A similar course can be detected for “Any job”, “Potential”, and “Impression of PWS”. Responses to “Judgment job” become increasingly more negative/inaccurate for each grade level; 11th graders the score is 16, 12th graders 10, 13th graders 5, and adults -18. There are several potential explanations as to why this happens, and it is something which likely would require further investigation, perhaps using a qualitative approach. With that said, it

may be an indication that issues regarding occupational discrimination and role entrapment occur and should be addressed.

Conclusions and future directions

This study has addressed attitudes and beliefs toward stuttering and people who stutter held by high school students in Norway, while comparing them to Scandinavian adults and the international database archive. Overall, the results lend support to the notion that stuttering related attitudes gradually become more favorable, approximating those held by adults in the same society/culture (see e.g. Glover et al. (2019); Kenneth O. St. Louis, Aneta M. Przepiorka, et al. (2014); St. Louis and Rogers (2011)). The results also lend support to the current notion that Scandinavians produce some of the highest ratings on the POSHA-S, corresponding to findings in e.g. St. Louis, Sønsterud, et al. (2016).

Even though the students score quite well on POSHA-S ratings, room for improvement is easily recognized when comparing them to the highest scores in the international archive (see Figure 5). Although the stuttering stereotype is less prominent in their ratings, it is still detectable; e.g. how they would feel pity while talking with someone who stutters (45 % “yes”), and that 42 % were unsure if people who stutter are shy. The fact that 65 % did not view themselves as sources of help for PWS, while only 10 % believed so, potentially highlights an important area for improvement if we are to successfully include the nonstuttering majority in the management of stuttering.

The negative score concerning “Judgement job”, may indicate occupational discrimination and/or role entrapment that may warrant future investigation. It would also be interesting to see if the same pattern concerning the gradual improvement of stuttering attitudes continues among university students in Norway, like e.g. Kenneth O. St. Louis, Aneta M. Przepiorka, et al. (2014) found among American undergraduate and graduate students. The indication of a carry-over effect observed among 12th grade students would also

benefit by further research. This tendency has been observed previously, but still more research is needed (St. Louis & Tellis, 2015).

The study's representativeness may be weakened by the fact that respondents only came from two schools in two regions of Norway. However, the data were obtained from a three-stage probability sampling scheme, and the number of respondents exceeded the recommended minimum number of respondents in POSHA-S research (St. Louis, 2012c). Considering that previous research has found that POSHA-S ratings are quite similar within a country or area of geographical proximity or culture, there is no reason to believe that this should be any different among high school students. Nevertheless, it cannot be ruled out that this may have reduced the representativeness of the results. Although there were more male than female respondents in the 11th and 12th grade, and there were more female than male respondents in the 13th grade, it is unlikely that this should effect the results, as previous findings have found minimal to no difference in male and female responses (see e.g. St. Louis (2012a).

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Supplementary dataset 1

Summary of demographic characteristics for high school students in Norway, divided by grade level (11th, 12th, 13th).

VARIABLE	11 th grade	12 th grade	13 th grade	Total
Number	101	40	134	276
Age	15,94	16,90	18,00	17,08
Education	11,00	12,00	13,00	12,12
Income Score	23	28	21	22
Income: Family/Friends	3,31	3,42	3,32	3,33
Income: Countrymen	3,52	3,63	3,45	3,50
Male:Female	1,53	1,86	0,51	0,93
DESCRIPTORS				
Male	60,40 %	65,00 %	32,84 %	47,46 %
Female	39,60 %	35,00 %	64,93 %	51,09 %
Single	98,02 %	95,00 %	95,52 %	96,01 %
Married	0,00 %	0,00 %	2,24 %	1,09 %
Parent	1,98 %	2,50 %	2,24 %	2,17 %
Student	71,13 %	57,14 %	55,60 %	60,79 %
SELF-IDENTIFICATION				
Intelligent	15,84 %	22,50 %	20,15 %	18,84 %
Left handed	8,91 %	7,50 %	6,72 %	7,61 %
Obese	3,96 %	0,00 %	3,73 %	3,26 %
Mentally Ill	3,96 %	10,00 %	5,22 %	5,43 %
Stuttering	5,94 %	5,00 %	1,49 %	3,62 %
NO PERSONS KNOWN...				
Intelligent	9,90 %	5,00 %	5,97 %	7,25 %
Left handed	2,97 %	0,00 %	4,48 %	3,26 %
Obese	23,76 %	12,50 %	14,93 %	17,75 %
Mentally Ill	37,62 %	15,00 %	28,36 %	29,71 %
Stuttering	23,76 %	10,00 %	20,90 %	20,29 %
HEALTH & ABILITIES				
Physical Health	55	45	44	48
Mental Health	52	51	44	48
Ability to Learn	52	54	52	52
Ability to Speak	59	63	65	62
LIFE PRIORITIES				
Be Safe/Secure	78	71	86	81
Be Free	83	71	83	81
Spend Time Alone	57	49	77	66
Attend Social Events	36	26	58	45
Imagine New Things	32	44	42	39
Help Less Fortunate	3	3	4	4
Have Exciting Experiences	24	33	12	19
Practice My Religion	-22	-20	-38	-29
Earn Money	68	82	75	73
Do Job/Duty	65	59	75	69
Get Things Done	75	64	75	74
Solve Big Problems	57	62	65	62
IMPRESSION				
Intelligent	39	33	37	37
Left Handed	32	31	21	26
Obese	-15	3	-26	-18
Mentally Ill	-11	3	-11	-9
Stuttering	7	16	9	9
WANT/HAVE				
Intelligent	67	23	69	62
Left Handed	6	-11	-6	-2
Obese	-78	-59	-96	-84

VARIABLE	11 th grade	12 th grade	13 th grade	Total
Mentally Ill	-85	-57	-92	-85
Stuttering	-60	-54	-69	-64
AMOUNT KNOWN				
Intelligent	17	4	20	17
Left Handed	11	0	12	10
Obese	10	13	8	9
Mentally Ill	-2	10	4	2
Stuttering	-16	3	-15	-13

Note. Work status (working, not working and retired) is not included.

Supplementary dataset 2

Results from items, components, subscores, and *Overall Stuttering Score* for high school students in Norway divided by grade level, and combined score, in addition to previous scores from Scandinavian adults*.

	11 th grade	12 th grade	13 th grade	Total	Adults*
OVERALL STUTTERING SCORE	22	26	29	26	34
BELIEFS: ABOUT PWS	41	36	49	44	57
TRAITS	46	31	46	44	79
Blame*	82	67	91	84	98
Nervous*	34	18	23	26	75
Shy*	22	8	25	21	64
HELP	22	20	29	25	26
SLP	49	57	78	64	91
Stutterers	0	8	11	7	-16
Doctor*	17	-6	-1	5	5
CAUSE	39	34	55	46	65
Genetic	22	11	37	28	31
Learning*	40	32	40	39	44
Fright*	1	-10	20	9	47
Act of God*	58	76	85	74	94
Virus/Disease*	42	19	56	45	80
Ghost/Demon*	73	76	94	84	96
POTENTIAL	56	58	65	61	58
Friends	81	82	94	87	94
Normal Life	77	79	95	86	98
Any Job	50	62	65	59	57
Judgment Job	16	10	5	10	-18
SELF REACTIONS: TO PWS	4	16	8	8	10
HELPING	46	44	54	50	67
Ignore	75	58	79	75	98
Me	-46	-46	-63	-55	-44
Fill Words*	51	58	63	58	81
"Relax"*	45	50	64	55	76
Joke*	78	68	92	84	99
Hide*	75	77	89	82	91
DISTANCE/SYMPATHY	19	30	29	25	34
Comfortable	39	61	49	47	44
Pity*	-4	-18	-15	-12	13
Impatient*	28	50	40	37	47
Doctor*	37	53	62	52	87
Neighbor*	82	76	97	88	99
Sibling*	51	66	76	66	70

	11 th grade	12 th grade	13 th grade	Total	Adults*
Myself*	-12	18	9	3	10
Impression	7	16	9	9	7
Want to Stutter	-60	-54	-69	-64	-70
KNOWLEDGE	-27	-7	-19	-20	-30
Amount	-16	3	-15	-13	-46
Persons known	-78	-72	-83	-79	-85
Source: Personal	14	47	42	33	40
SOURCE	-23	-3	-30	-24	-30
TV/Radio	-3	11	2	2	-10
Print	-47	-38	-62	-53	-28
Internet	-2	6	-9	-4	-67
School	-18	42	-27	-14	-10
Specialists	-47	-34	-57	-50	-34

Note. *Scandinavian responses obtained from St. Louis, Sønsterud, et al. (2016). *Items: scores are reversed so they follow the same attitude scale.

Supplementary dataset 3

Summary of demographic characteristics, percentile ranks, and quartile compared to the lowest, highest, and median scores in the international database.

VARIABLE	POSHA-S			Norway high school		
	Lowest	Highest	Median	Total	Percentile	Quartile
Number	7	639	60	276	93 %	Q4
Age	11,82	63,35	36,75	17,08	3 %	Q1
Education	4,78	20,70	14,68	12,11	12 %	Q1
Income Score	-43	65	1	22	92 %	Q4
Income: Family/Friends	-52	87	9	3,33	33 %	Q2
Income: Countrymen	-78	68	0	3,50	58 %	Q3
Male:Female	0,00	75,00	0,49	0,93	84 %	Q4
DESCRIPTORS						
Male	0,00 %	100,00 %	33,05 %	47,46 %	83 %	Q4
Female	0,00 %	100,00 %	66,95 %	51,09 %	15 %	Q1
Single	0,00 %	100,00 %	46,20 %	96,01 %	84 %	Q4
Married	0,00 %	100,00 %	53,80 %	1,09 %	13 %	Q1
Parent	0,00 %	100,00 %	49,00 %	2,17 %	18 %	Q1
Student	0,00 %	100,00 %	11,58 %	60,79 %	75 %	Q4
SELF-IDENTIFICATION						
Intelligent	0,00 %	96,64 %	27,82 %	18,84 %	28 %	Q2
Left handed	0,00 %	25,00 %	7,75 %	7,61 %	48 %	Q2
Obese	0,00 %	56,46 %	6,03 %	3,26 %	24 %	Q1
Mentally Ill	0,00 %	23,08 %	0,73 %	5,43 %	87 %	Q4
Stuttering	0,00 %	100,00 %	0,00 %	3,62 %	89 %	Q4
NO PERSONS KNOWN...						
Intelligent	0,00 %	72,22 %	1,60 %	7,25 %	87 %	Q4
Left handed	0,00 %	66,67 %	4,53 %	3,26 %	38 %	Q2
Obese	0,00 %	63,64 %	9,17 %	17,75 %	74 %	Q3
Mentally Ill	0,00 %	92,31 %	25,77 %	29,71 %	57 %	Q3
Stuttering	0,00 %	70,86 %	28,47 %	20,29 %	28 %	Q2
HEALTH & ABILITIES						
Physical Health	12	85	43	48	69 %	Q3
Mental Health	-19	94	56	48	25 %	Q2
Ability to Learn	-8	89	57	52	41 %	Q2
Ability to Speak	-45	90	62	62	52 %	Q3
LIFE PRIORITIES						
Be Safe/Secure	17	100	82	81	47 %	Q2

VARIABLE	POSHA-S			Norway high school		
	Lowest	Highest	Median	Total	Percentile	Quartile
Be Free	8	90	65	81	94 %	Q4
Spend Time Alone	-18	90	39	66	97 %	Q4
Attend Social Events	-27	77	14	45	95 %	Q4
Imagine New Things	-13	84	33	39	57 %	Q3
Help Less Fortunate	9	88	50	4	0 %	Q1
Have Exciting Experiences	-62	73	-17	19	90 %	Q4
Practice My Religion	-90	97	22	-29	12 %	Q1
Earn Money	-5	90	56	73	89 %	Q4
Do Job/Duty	9	100	75	69	27 %	Q2
Get Things Done	16	100	74	74	48 %	Q2
Solve Big Problems	9	93	71	62	21 %	Q1
IMPRESSION						
Intelligent	0	93	57	37	7 %	Q1
Left Handed	-100	59	23	26	69 %	Q3
Obese	-100	27	-18	-18	61 %	Q3
Mentally Ill	-100	40	-7	-9	52 %	Q3
Stuttering	-66	100	4	9	71 %	Q3
WANT/HAVE						
Intelligent	18	100	73	62	38 %	Q2
Left Handed	-91	41	-2	-2	50 %	Q3
Obese	-100	-28	-83	-84	36 %	Q2
Mentally Ill	-100	-13	-83	-85	36 %	Q2
Stuttering	-96	6	-69	-64	53 %	Q3
AMOUNT KNOWN						
Intelligent	-37	78	30	17	21 %	Q1
Left Handed	-66	50	-2	10	65 %	Q3
Obese	-69	50	6	9	61 %	Q3
Mentally Ill	-100	44	-15	2	84 %	Q4
Stuttering	-91	98	-30	-13	65 %	Q3

Note. Work status (working, not working and retired) is not included. Percentiles and quartiles are obtained by comparing the total score from the Norwegian high school with the international database.

Supplementary dataset 4

Summary of items, components, and subscores that comprise *Overall Stuttering Score* with the highest, lowest, and median score internationally, comparing with the total score, percentile rank, and quartile for high school students in Norway.

	POSHA-S			Total	Percentile	Quartile
	Lowest	Highest	Median			
OVERALL STUTTERING SCORE	-15	65	18	26	82 %	Q4
BELIEFS: ABOUT PWS	0	80	34	44	78 %	Q4
TRAITS	-46	91	21	44	90 %	Q4
Blame*	-44	100	83	84	63 %	Q3
Nervous*	-77	95	1	26	73 %	Q3
Shy*	-93	79	-21	21	78 %	Q4
Help	-48	92	16	25	76 %	Q4
SLP	-1	100	94	64	21 %	Q1
Stutterers	-100	93	-2	7	49 %	Q2
Doctor*	-100	100	-34	5	72 %	Q3
Cause	-12	93	34	46	83 %	Q4
Genetic	-67	100	17	28	68 %	Q3
Learning*	-100	100	24	39	62 %	Q3
Fright*	-98	100	-1	9	50 %	Q3

	POSHA-S			Norway high school		
	Lowest	Highest	Median	Total	Percentile	Quartile
Act of God*	-82	100	67	74	65 %	Q3
Virus/Disease*	-83	100	40	45	53 %	Q3
Ghost/Demon*	-15	100	89	84	35 %	Q2
Potential	-21	100	65	61	43 %	Q2
Friends	-67	100	94	87	40 %	Q2
Normal Life	-16	100	91	86	47 %	Q2
Friends	-47	100	49	59	64 %	Q3
Judgment Job	-93	100	40	10	11 %	Q1
SELF REACTIONS: TO PWS	-36	60	2	8	57 %	Q3
Helping	-22	98	43	50	66 %	Q3
Ignore	-57	100	82	75	30 %	Q2
Me	-100	100	-27	-55	14 %	Q1
Fill Words*	-93	100	33	58	81 %	Q4
"Relax"*	-100	100	8	55	72 %	Q3
Joke*	-60	100	91	84	45 %	Q2
Hide*	-57	100	76	82	58 %	Q3
Distance/Sympathy	-71	63	14	25	68 %	Q3
Comfortable	-62	100	30	47	74 %	Q3
Pity*	-80	100	18	-12	12 %	Q1
Impatient*	-67	100	64	37	32 %	Q2
Doctor*	-67	100	43	52	61 %	Q3
Neighbor*	-80	100	77	88	73 %	Q3
Sibling*	-100	90	-2	66	94 %	Q4
Myself*	-100	50	-39	3	76 %	Q4
Impression	-66	100	4	9	65 %	Q3
Want to Stutter	-96	6	6	-64	53 %	Q3
Knowledge	-75	83	-34	-20	89 %	Q4
Amount	-91	98	-30	-13	74 %	Q3
Persons known	-96	60	-86	-79	68 %	Q3
Source: Personal	-95	100	12	33	77 %	Q4
Source	-64	68	-11	-24	22 %	Q1
TV/Radio	-65	86	12	2	39 %	Q2
Print	-90	100	-13	-53	5 %	Q1
Internet	-100	93	-21	-4	59 %	Q3
School	-92	100	-4	-14	32 %	Q2
Specialists	-96	94	-33	-50	18 %	Q1
OBESITY/ MENTAL ILLNESS	-90	4	-34	-31	52 %	Q3
IMPRESSION	-100	23	-13	-13	55 %	Q3
Obese	-100	27	-18	-18	61 %	Q3
Mentally Ill	-100	40	-7	-9	52 %	Q3
WANT/HAVE	-100	-34	-83	-85	38 %	Q2
Obese	-100	-28	-83	-84	36 %	Q2
Mentally Ill	-100	-13	-83	-85	36 %	Q2
AMOUNT KNOWN	-75	30	-4	6	63 %	Q3
Obese	-69	50	6	9	61 %	Q3
Mentally Ill	-100	44	-15	2	84 %	Q4

Note. Percentiles and quartiles are obtained by comparing the total score from the Norwegian high school with the international database. *Items: scores are reversed so they follow the same attitude scale.

Supplementary dataset 5

Summary of subscore “Obesity/Mental illness” with accompanying components and items, for 11th, 12th, and 13th grade, total score (Norway high school), POSHA-S (with lowest, highest and median scores), in addition to previous scores from Scandinavian adults*. To the far right percentiles and quartiles for high school students in Norway (compared to international database).

	11 th grade	12 th grade	13 th grade	Total	POSHA-S			Adults*	Percentile	Quartile
					Lowest	Highest	Median			
OBESITY/MENTAL ILLNESS	-30	-15	-36	-31	-90	4	-34	-42	52 %	Q3
Impression	-13	3	-18	-13	-100	23	-13	-14	55 %	Q3
Obese	-15	3	-26	-18	-100	27	-18	-21	61 %	Q3
Mentally Ill	-11	3	-11	-9	-100	40	-7	-7	52 %	Q3
Want/Have	-82	-58	-94	-85	-100	-34	-83	-93	38 %	Q2
Obese	-78	-59	-96	-84	-100	-28	-83	-93	36 %	Q2
Mentally Ill	-85	-57	-92	-85	-100	-13	-83	-93	36 %	Q2
Amount Known	4	11	6	6	-75	30	-4	-19	63 %	Q3
Obese	10	13	8	9	-69	50	6	-14	61 %	Q3
Mentally Ill	-2	10	4	2	-100	44	-15	-23	84 %	Q4

Note. Percentiles and quartiles are obtained by comparing the total score from the Norwegian high school with the international database. *Scandinavian responses obtained from St. Louis, Sønsterud, et al. (2016).