Covert and overt stuttering: Concepts and comparative findings

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A B S T R A C T

Purpose: One way of conceptualizing stuttering is on a continuum from primarily covert to primarily overt. Assertions have been made as to how those with covert stuttering might be impacted differently to those with overt stuttering, but findings from well-controlled studies remain scarce. The principal aim of the present study was to compare the impact of stuttering and emotional distress related to two subgroups of persons who stutter: people with primarily overt stuttering and people with primarily covert stuttering. In exploring this, we also offer some preliminary thoughts on challenges with the terminology surrounding the concepts of 'overtness' and 'covertness'.
Methods: Twenty-one adults already enrolled in a multiple, single-case treatment study (Sønsterud et al., 2019, 2020) took part in the present study, and underwent a battery of tests that assessed anxiety, depression, fear of negative evaluation, and quality of life. The sub-groups were identified on the basis of self-categorization using the Tomaiuoli, Del Gado, Spinetti, Capparelli, and Venuti (2015) classification, as well as the evaluation of speech samples from two independent SLPs (Sønsterud et al., 2020). The classifications were further explored by five independent 'lay' assessors who reviewed pre-therapy video and rated participants' speech on a 4-point Likert Stuttering Probability Scale (1 = 'fluent with no doubt', 2 = 'fluent with some doubt', 3 = 'stuttering with some doubt' and 4 = 'stuttering with no doubt').
Results: No significant differences were found between the primarily overt and primarily covert groups in relation to self-reported symptoms of anxiety, depression, and fear of negative evaluation. However, investigation at item level identified a significant difference in linguistic avoidance between the two groups.
Conclusion: There may be fewer differences between people with primarily overt and primarily covert stuttering than previously thought with regards to emotional impact, as well as most aspects of avoidance behavior.

1. Introduction

There is broad agreement that stuttering involves more than just the visible and audible features of stuttering, yet, within public and professional contexts, the term 'stuttering severity' is, according to Yairi and Seery (2015, p. 220), often reserved for the overt speech behaviors rather than the disorder as a whole. However, the way in which persons who stutter perceive or experience their

stuttering, is not necessarily correlated with the severity of the overt speech aspects. Indeed, among those who stutter with a high frequency, some experience minimal negative emotional reactions while, among those who stutter with a low frequency, some feel severely impacted by the limitations that the fear or anxiety of stuttering places on their daily routines (Davidow & Scott, 2017; Ward, 2018).

Furthermore, there may be overlap between 'mild' stuttering and avoidance behaviors. For some people who fall within that 'mild' category, the low frequency of stuttering may be a true representation of their speech fluency, whereas for others, this may be the end result after many stuttering moments have been avoided or hidden. Word avoidance behaviors or linguistic anxiety may, therefore, be difficult to recognize in people who stutter (Sønsterud et al., 2019). Starkweather (1987) noted that, for some people who stutter, their stuttering may never be available for direct observation, and this view is reflected in Murphy et al.'s (2007, p. 5) query as to whether evidence-based practice in stuttering should de-emphasize the importance of using 'surface fluency measures' as the primary means of determining successful outcomes in stuttering. According to the authors, such measures risk failing to identify individuals who stutter and thus exclude them from stuttering therapy or stuttering therapy research. Constantino et al. (2017) suggest that in the research literature, the characterization of persons with primarily *covert* stuttering as highly anxious people who try to hide their stuttering at all costs, has not changed much over the last century. Although there is substantial evidence demonstrating how stuttering may increase health risks and negatively affect communication and quality of life for people who stutter (Boyle et al.,2018), few studies have previously rigorously explored how stuttering might affect those who stutter covertly or who are able to 'pass as fluent' (Constantino et al., 2017; Douglass et al., 2019, 2018). There is, therefore, a need to describe and measure '*covertness*' in a more nuanced and comprehensive way.

According to Douglass et al. (2019, s. 2), the distinction between covert stuttering and passing as fluent is a subtle one. To illuminate this nuanced difference, they provide an operationalized definition distinguishing between the two (underlining is our own): "*Covert stuttering refers to <u>individual moments</u> of stuttering that the speaker successfully hides. Passing as fluent refers, instead, to the <u>role</u> the speaker inhabits in the view of the listener.*" So according to this definition, "passing as fluent" involves a speaker who stutters *actively* presenting themselves to the listener as a fluent speaker, whilst covert stuttering refers to the hiding of individual moments of stuttering (which may apply to speakers who more often stutter very overtly as well as to those who are often passing as fluent).

The need to better understand this significant 'passing as fluent' subgroup of people who stutter was, therefore, a key motivation for the current study, creating the opportunity to compare the characteristics of participants with primarily covert stuttering behavior who often 'pass as fluent', with those with primarily overt stuttering behavior.

1.1. Subgrouping within the overt-covert concepts of stuttering, with regards to terminology

One way to categorize stuttering is through subgrouping. Douglass and Quarrington (1952) coined the terms '*interiorized*' and '*exteriorized*' to refer to people who stutter who showed relatively little and relatively more 'surface disfluency' respectively whilst more recently Cheasman et al. (2013) use the term interiorized stuttering to refer to a stuttering pattern which is predominantly covert. Constantino et al. (2017) describe the term 'covert' as linked to American stuttering literature and 'interiorized' to British stuttering literature.

Murphy et al. (2007) refer to two groups when describing covert stuttering: a small group that is always able to hide the stuttering, and a larger group that uses avoidance to conceal the extent of stuttering. Along similar lines, Cheasman et al. (2013) introduced the term 'borderline interiorized stuttering' when a person uses a range of avoidance strategies but demonstrates a higher percentage of overt stuttering behaviors than the authors would usually expect to find in interiorized stuttering. Levy (1987) suggests viewing stuttering along an axis, with covert stuttering at one end and overt stuttering at the other end. Levy describes further diagnostic constructs or axes which include (a) high or low avoidance, (b) silent blocks or stuttering openly, (c) infrequent or frequent stuttering, (d) mild or severe overt stuttering behaviors, and (e) stuttering as a catastrophe or stuttering as a relief.

Tomaiuoli et al. (2015) categorized stuttering into four categories: Those who display, (a) a mild overt and a mild covert component, (b) a mild overt and a moderate or severe covert component, (c) a moderate or severe overt and a mild covert component, and (d) a moderate or severe overt and a moderate or severe covert component.

Cheasman et al. (2013) claim that no two persons who stutter are the same, and this aspect remains true also for people with covert or interiorized stuttering. According to Ward (2018), the term covert stuttering is primarily used for the persons who use avoidance strategies to the extent that overt stuttering rarely, or if ever, occurs. Cheasman et al. (2013) describe 'interiorized stuttering' as largely hidden from view and which may cause embarrassment if it should be discovered. Some are more able to achieve 'hidden' stuttering than others, and some may naturally have greater amounts of overt stuttering they need to hide. According to Ward (2018), this is incidental when it comes to whether a person who stutters can be considered to have covert stuttering, and the determining factor is how (in)visible the stuttering is. Within this article we use the term "covert stuttering", meaning someone who does stutter, but is actively avoiding sounds, words and/or situations in order to "pass as fluent". We are assuming that the concept is recognized globally, although it may be termed "interiorized stuttering" by clinicians and researchers in some regions.

1.2. Covert stuttering and the need to broaden the perspective

In clinical settings, we frequently work with individuals with primarily covert stuttering who may engage in inefficient and exhausting behavior to maintain their identity as 'fluent' speakers. Manning (2010) states that some people view the fluency of persons who pass as fluent through the use of avoidance strategies as false fluency - that which is achieved by tricks and distractions, rather than being spontaneous. Manning (2010), as well as Constantino et al. (2017), claim that the previous literature covering the

phenomena is limited, and they highlight a need to consider covert stuttering within a broader perspective. Constantino et al. (2017) propose further that there might be societal prejudice rather than 'personal failing' and/or 'weakness' where people who *pass as fluent* are concerned. They refer to Foucault's work (Foucault et al., 1988) regarding ethics, where it is argued that there is 'no authentic, natural, or true self', but rather a specific ethical relationship of the self with itself (Constantino et al., 2017). According to the authors, there is no 'authentic' way to stutter, rather different ways to stutter, and overt stuttering is no more authentic than covert stuttering (2017, p. 28). They state further that the practices individuals use when they stutter might serve a purpose, and that it would be more useful to understand *'passing as fluent'* as a form of resistance. As mentioned earlier, Douglass et al. (2019) propose that it is when listeners regard a person who covertly stutters as a fluent speaker, that the person would fall into the categorization of 'passing as fluent'.

1.3. Personalized intentions considered within the concept of 'passing as fluent'

It may be possible to conceptualize stuttering on a continuum from primarily covert to primarily overt or disclosed stutter. However, the degree of 'covertness' is in many ways multifactorial, and might, among others, be influenced by communicative settings, linguistic and/or verbal factors. We have assembled a list of different patterns of covert stuttering that the framework potentially needs to accommodate:

(a) Those with a very high degree of situation avoidance so the stuttering is not experienced (by themselves as well as others). These people might have overt patterns of physical speech disfluency but completely avoid situations where this might be revealed.
(b) Those who work hard 'in the moment' to hide stuttering.
(c) Those who have been working hard 'in the moment' for so long, that the strategies have become automatic, and switching off the strategies is more effortful than using them (so fluency is fairly easy, but not necessarily completely 'real').
(d) Those whose moments of stuttering may not be recognised by others as moments of stuttering but are very much 'felt' by the individual to be moments of stuttering.

All these patterns potentially may fall within the 'covert' category, but we believe there are potential differences in 'intent' on the part of the speaker. These patterns can be related to at least three main dimensions: situation avoidance, speech strategies, and/or the interpretation of speech behaviors. Furthermore, there is also the fact that, just as with overt features, covert features are likely to vary in degree and form over time and from situation to situation. See Ward et al. (2021) for a recent discussion as to how new insights into statistical modeling can shed light on the interactions between cognitive, affective and behavioural aspects of stuttering.

1.4. Stuttering and avoidance behavior

Cheasman et al. (2013) describe seven levels of avoidance in their work with people who stutter: sound, word, speech, situation, feelings, relationship, and role level. According to Starkweather (1987), avoidance behaviors can temporarily disguise a portion of stuttering, and all people who stutter probably use avoidance behaviors to some degree. Murphy et al. (2007) highlights the considerable time and energy some individuals expend to hide their stuttering, yet remain at risk of discovery, particularly in demanding social settings, while Cheasman et al. (2013) highlight the negative thoughts people with interiorized stuttering often have around how other people will regard them if they find out about the stuttering. This fear of 'being found out' is often profound and driven by catastrophizing thoughts. Dartnall (2003) claims that many people with covert stuttering are '*always afraid of being found out.* [...] *The higher we fly, the harder we fall. The more fluent we appear to be—and are, for long periods—the harder it is when we land on our backsides'* (https://web.mnsu.edu/comdis/isad6/papers/dartnall6.html, November 4th, 2019). This sentiment is echoed by Ward (2018) who states that covert stuttering may often be associated with high levels of concern, and that such speakers often remain fixed by a sense of acute anxiety that they could stutter on a word unexpectedly (2018, p. 8). However, some persons who stutter may be comfortable with their pattern of 'passing as fluent' and may not feel anxious about using this strategy. Based on clinical experiences, we assume that this subgroup seldom sees any need for therapy though.

Social anxiety can be regarded as an intense fear of being judged, negatively evaluated, or rejected in a social situation (Iverach et al., 2018; Iverach et al., 2011). There is some evidence indicating that stuttering and social anxiety are related (Iverach & Rapee, 2014; Iverach et al., 2017; Menzies et al., 2019). Yairi and Seery (2015), as well as Manning & Beck (2013a, 2013b) suggest that anxiety might not be a primary disorder but, rather, a reaction to, or consequence, of stuttering. Indeed, several of Sønsterud et al. (2020) participants showed a decrease in levels of anxiety post therapy, even though the treatment approach did not incorporate specific anxiety reducing components.

Among the general population, individuals vary in how often they experience anxiety, and in which kinds of situations they experience it, and it is likely that the same patterns of variation exist among people who stutter. It seems reasonable to assume that those who seek therapy may be experiencing more "anxiety related" symptoms than those who do not (Sønsterud et al., 2020; Sønsterud et al., 2019). As with other clinicians and researchers in the field, we acknowledge that some people who stutter may experience social anxiety as a consequence of stuttering. However, there may be some people who both stutter and experience social anxiety as two separate 'diagnoses' (Craig, 2014; Iverach & Rapee, 2014; Menzies et al., 2019).

It is important to consider the concept of anxiety more thoroughly because it can manifest in so many ways. For example, Sønsterud et al. (2019), underlined the point that anxiety symptoms have to be considered within a more context-sensitive frame, and that there is a need to consider whether the anxiety is related to speech (speech-related anxiety), word avoidance (linguistic-related anxiety),

situations (situation-specific anxiety), and/or general or social anxiety. Avoidance behavior may be a response to anxiety symptoms. Sønsterud et al. (2019) participants disclosed high degrees of avoidance, with avoidance of words- and speaking situations particularly common for the majority of participants. As mentioned earlier, Manning and Beck (2013a) pointed out, persons who stutter can expend a great deal of energy hiding their stuttering from others in ways that can, potentially, negatively impact the individual's life to a greater extent than the stuttering itself.

1.5. Moving from avoidance to approach

At the heart of Sheehan's (1970) 'approach-avoidance conflict' therapy's philosophy was the idea that therapy should focus on encouraging engagement and reducing avoidant behaviors. The mechanisms by which this change might be achieved have been researched more by Plexico et al. (2009a,b). These researchers proposed that replacing avoidant strategies with approach strategies is central to the process of change, noting that when their participants chose to approach rather than avoid, they experienced positive social, physical, cognitive, and affective positive outcomes. For those who pass as fluent, yet continue to experience anxiety related to stuttering, we regard the process of 'coming out' as a person who stutters as a clinically important event. This concept is in line with several authors (Boyle et al., 2018; Byrd et al., 2017a, 2017b; Douglass et al., 2018).

Helgadottir et al. (2014) refer to behaviors used to prevent negative outcomes from a specific speaking situation as safety behaviors. However, these behaviors may occur alongside feared events, even when they are not successful in preventing the negative outcomes. Yet safety behaviors may also be considered 'healthy adaptive behavior', and the authors highlight a need to clearly differentiate safety behaviors from healthy adaptive behaviors. According to Lowe et al. (2017), safety behaviors can be helpful in the initial phases of treatment because they may help clients to enter situations to practice other techniques. While 'passing as fluent' could be regarded as the outcome of considerable use of safety behaviors, Constantino et al. (2017, p. 36) describe it as a means of both securing and exerting power, regarding their participants with covert stuttering as demonstrating high levels of agency in their lives. Rather than viewing their participants as passively resigned to their designation, they regarded them as active in engagements with their circumstances. They regard covert stuttering as a form of stuttering that is produced through "*the use of specific technologies of communication*" (2017, p. 36), and we recommend their work for further information.

1.6. The value of disclosing stuttering

Boyle et al. (2018) investigated the disclosure practices of people who stutter, and the relationship between disclosure of stuttering and quality of life. The authors concluded that attempts to conceal stuttering in at least some life situations are not uncommon among adults who stutter; 40% of their participants felt the need to conceal stuttering from others, and 37% confirmed that, in many arenas of their life, no one knew that they stuttered. These findings mirror our own clinical experiences, where a substantial number of people report that they quite often conceal their stuttering from others.

Dartnall (2003) recognized benefits of disclosing his stuttering, but also found good reasons for not disclosing and thus to continue passing as fluent. Dartnall asked whether people should try to pass as fluent or whether they should '*come out and own up*' to the stuttering status. There are some recent studies that explore this question. For example, Byrd et al. (2017) describe self-disclosure as a tool that can be used to reduce stigma, and suggest that self-disclosing in an informative manner might lead to more positive observer regard than choosing not to self-disclose. Indeed, there is evidence that listeners are more likely to assign traits such as 'friendly', 'outgoing' and 'confident' to speakers who self-disclose their stuttering than to speakers who do not self-disclose (Byrd et al., 2017). For McGill et al. (2018), self-disclosure is beneficial because it facilitates self-empowerment. Based on their work, they recommend that SLPs guide their clients who stutter to use educational, non-apologetic self-disclosure statements at the beginning of interactions.

1.7. A closer look at percentage of stuttered syllables or SSI-4 (Total Score), and the concept of covert stuttering

A recent study by O'Brian et al. (2020) compared the use of%SS (percentage of syllables stuttered) with self-reported stuttering severity as an outcome measure in clinical trials of stuttering therapy for adults. The findings indicated inherent instability and concerns with the reliability of%SS. The authors concluded that there are statistical reasons to favor self-reported stuttering severity instruments over%SS instruments as primary outcome measures for clinical trials with adult participants. This view is consistent with that expressed by other research teams (Davidow & Scott, 2017; Onslow et al., 2018).

In a recent treatment study (Sønsterud, 2020; Sønsterud et al., 2020), two external, independent Speech-Language Pathologists, specialized within fluency disorders, rated participants using the SSI-4 protocol (Riley, 2009). The evaluators were blinded to both the treatment and the timing of each recording. The level of inter-rater-reliability on the SSI-4 (Total Score) reached 78% agreement, indicating an acceptable level of agreement. However, substantially greater inter-rater variability was found in cases where the participants' stuttering was evaluated as non-existent or very mild. For example, for participants with overt patterns of stuttering, the variance of agreement was 87–100% with a mean percent agreement on the SSI-4 (Total Score) of 93%. Yet in cases where, unknown to the evaluators, the participants had disclosed a covert pattern of stuttering, the variance figures were 29–100% with a mean percent agreement of 62%.

There were only minor differences in agreement between evaluator 1 and evaluator 2 in cases where a more overt pattern of stuttering was disclosed; that is, video samples with SSI-4 Total scores > 18, which cover severity equivalents from 'mild' to 'very severe' stuttering. However, for the video samples with SSI-4 Total scores < 18 (which equates to 'very mild' stuttering on the SSI-4), the variance in levels of agreement between the two evaluators was quite high. Here, 44% of the video samples failed to reach the

acceptable (70%) level of inter-rater agreement. In this category the concept of 'hiding stuttering' or 'passing as fluent' seemed to occur in larger sense, which may more closely approximate those participants who disclosed a more covert pattern of stuttering. Examples of differences in considerations between the two evaluators are shown in Appendix A, to highlight this point.

Consistent with the findings in the O'Brian et al. (2020) study, Sønsterud et al. (2020) confirmed inherent inconsistencies in assessing stuttering, in particular where there were significant discrepancies between stuttering events, measured by instruments/methods such as the SSI-4 or the Stuttering Measuring System (SMS; Bainbridge et al., 2015), and negative impact associated with stuttering, measured by instruments such as the Overall Assessment of Speakers' Experience of Stuttering-Adult version (OASES-A; Yaruss & Quesal, 2006), the Wright and Ayre Stuttering Severity Self-Rating Profile (WASSP; Wright & Ayre, 2000), and the Unhelpful Thoughts and Beliefs About Stuttering Scale (UTBAS-6; Iverach et al., 2016).

Howells et al. (2018) examined the relationship between subjective evaluation of the experience of stuttering and 'objective' evaluation of the physical aspects of stuttering, comparing adverse impact ratings on the OASES-A with severity ratings on the SSI-4. Findings revealed an average impact score on OASES-A that was in the moderate to severe range, while the average score on SSI-4 was in the mild range. To highlight specific examples, one participant's responses on OASES-A indicated a severe adverse impact rating, but the same individual had a score so low on SSI-4 that it did not meet the criteria for a stuttering severity rating. The responses of some participants indicated a moderate-severe adverse impact rating on OASES-A, but their scores on SSI-4 fell within the very mild stuttering severity rating, and for 8 participants there was a discrepancy of 2–3 severity levels. The findings in the Howells et al. (2018) and the Sønsterud et al. (2020) studies showed that 11 of the 21 participants had a stuttering pattern which fell into the category of very mild or lower (SSI-4, Total Score < 18). It should be noted that several of the participants in the study disclosed a stuttering pattern which may be regarded as primarily covert stuttering. For an overview of the participants' individual scores on OASES-A and SSI-4, see Appendix B and Appendix C of Sønsterud et al. (2020).

Such findings further highlight concerns over the reliability of %SS, SSI-4, as well as SMS (O'Brian et al., 2020; Davidow & Scott, 2017). For this reason, self-evaluations were therefore used rather than %SS and SSI-4 (Total Score) as primary outcome measurements in the Sønsterud et al. (2020) study.

1.8. Summary and aim

There is a need to better understand the concept of covert stuttering. Following definitions coined by Douglass et al. (2019)) we define the terms covert or interiorized stuttering as the actual ability to achieve the desired objective to hide or pass as fluent. The principal aim of the present study was to compare the impact of stuttering and emotional distress related to two subgroups of persons who stutter, creating the opportunity to compare the characteristics of participants with primarily covert stuttering ("Other people don't know I stutter most of the time") with those with primarily overt stuttering ("It is obvious to other people that I stutter most of the time"). Our hypothesis was that there would be no differences between people with primarily overt and primarily covert stuttering when the impact of stuttering and emotional distress is concerned. In exploring this, we also offer some preliminary thoughts on challenges with the terminology surrounding the concepts of 'overtness' and 'covertness'.

2. Material and methods

2.1. Research design

The present study is part of a larger research study that has investigated individualized stuttering therapy (Sønsterud, 2020; Sønsterud et al., 2019; Sønsterud et al., 2020, 2019). Ethical approval for the study was received in June 2015 from the Regional Committee for Medical Research Ethics (2015/1275), which is seated in south-east part of Norway. All participants provided written consent before participating in the study, and participant anonymity was preserved throughout the reporting.

2.2. Participants, recruitment, and background

The recruiting process took place over approximately three months and is described in more detail in Sønsterud et al. (2019a). Although inclusion criteria for many stuttering therapy studies commonly include the requirement of > 5% or > 3% of syllable stuttered (%SS), this selection criterion was not adopted in the Sønsterud et al. (2019a, 2020) treatment study. This decision sprang partly from curiosity as to whether those with low levels of overt stuttering would be interested in participating, and also from a desire to study a broad cohort which could be considered as more representative of the population of adults who stutter. The decision was also based in ethical principles. In clinic, it is common for SLPs to work with those with overt patterns of stuttering and those with primarily covert patterns of stuttering. According to the Declaration of Helsinki (Torp, 2013), an individual's well-being should take precedence over the interests of science. The tradition of using the criterion of 5% or 3% stuttering syllables as a minimum for participation in stuttering research studies means that people with lower levels of stuttering frequency and/or people with a more covert pattern of stuttering have been excluded from much previous treatment research. Previous research findings cannot, therefore, be generalized to such individuals.

The cohort in this study comprised 21 adults of which 5 were females, with age ranging from 21 to 61 years ($M = 34.9$, $SD = 12.2$). All were diagnosed with moderate to severe stuttering prior to enrollment based on their responses on the Overall Assessment of Speakers' Experience of Stuttering-Adult version (OASES-A; Yaruss & Quesal, 2006) and the Wright and Ayre Stuttering Severity Self-Rating Profile (WASSP; Wright & Ayre, 2000). Participants were diverse regarding age, gender, work- and educational status, and stuttering pattern. Demographics and other relevant background variables are presented in Table 1.

Table 1
Demographic information for the 21 participants.

Background variables	%	n
Male gender	76.2	16
Stuttering in family	47.6	10*
Higher academic education ≥3 years	38.1	8
Stuttering treatment as adults	13.3	3
Not received stuttering treatment at all	28.6	6

Percent (%) and Frequency (n) (*1 unknown *).

Before the intervention in Sønsterud et al. (2020) study, participants self-categorized within one of the four profiles of stuttering outlined by Tomaiuoli et al. (2015). The options were (a) a mild overt and a mild covert component, (b) a mild overt and a moderate or severe covert component, (c) a moderate or severe overt and a mild covert component, and d) a moderate or severe overt and a moderate or severe covert component. Two participants self-identified with mild overt and mild covert stuttering, eight with mild overt and moderate/severe covert components, seven with moderate/severe overt and mild covert components, and four participants described themselves as having a stuttering pattern with both overt and covert components at a moderate/severe level.

2.3. Measures and instruments

The research utilized multi-factor stuttering- and psychological measures. All participants were assessed using the same measures and the same measurement procedures, as described below.

2.3.1. Personal preferences regarding therapy goals

The 'Client Preferences for Stuttering Therapy-Extended version' (CPST/CPST-E; McCauley & Guitar, 2010; Sønsterud et al., 2019; Sønsterud et al., 2017) was completed by all participants prior to the start of therapy. The CPST-E is an extended version of the CPST and records the participants' wishes regarding the overall focus of therapy; ranking of the personal importance or relevance of a series of possible goals; and hopes related to ease of speaking in a range of situations. Items are rated on a Likert scale ranging from 1 to 5 (1 = not at all important to 5 = very important). Field (2018) suggests that a value of 0.7 to 0.8 is an acceptable value for Cronbach's alpha (α), and the measurements used in this study define values above 0.7 as reliable. Internal consistency on the CPST-E (Sønsterud et al., 2017) was found to be excellent for the summarized sections ($\alpha = 0.89$) (Sønsterud et al., 2019), as well as the section 'Goals of treatment' ($\alpha = 0.81$).

2.3.2. Considering stuttering on a continuum from overall covert to overall overt

Previous research experience has highlighted the need to consider the concept of covert stuttering within a broader perspective. In order to evaluate stuttering on a continuum between primarily covert to primarily overt, a Stuttering Probability Scale (SPS) was developed. The scale is inspired by Levy's (1987) work and places covert stuttering as one pole along an axis, with overt stuttering as another pole on the same axis. The degree of (dys)fluency was evaluated on a four-point Likert scale with the points representing 'fluent with no doubt', 'fluent with some doubt', 'stuttering with a little doubt', and 'stuttering with no doubt'. Within the concept of degree of dysfluency, five independent evaluators (age range 22–72) were invited to evaluate a dataset of video recordings of participants, as previously used in the Sønsterud et al. (2020) study. These evaluators were regarded as 'lay' assessors as they were not speech and language professionals, did not have family members, close friends or colleagues who stutter, and were not involved in the study in any other capacity. Each of these 'lay' evaluators reviewed pre-therapy video footage of the participants giving a verbal narrative based on 4 pictures (a picture-series of two neighbors who are arguing about ownership of apples from an apple-tree). The evaluators independently rated the participants' speech on the Stuttering Probability Scale (SPS), with the 4-point Likert scale ranging from 1, indicating 'fluent with no doubt', to 4, indicating 'stuttering with no doubt'. The ratings are shown in Table 2.

Four participants who did not give extended permission to share videos with persons not involved in the study, were evaluated by the SLP (first author). Of these, 3 returned the SSI-4, Total scores of >18, whilst the fourth scored < 18. The total cohort of 17 adults who stutter were categorized into two broad groups based on the mean score of the five independent evaluations of each video sample. The median was set as the cut-off point between the two groups, with Mean ≤ 2.49 defining one group with participants who were largely 'passing as fluent' and the other group with participants who were 'not passing as fluent' (Mean ≥ 2.5). These evaluations were consistent with the evaluations made by the two external evaluators who were involved in the Sønsterud et al. (2020) treatment study. Based on the summary of these listener perspective evaluations, 11 participants were regarded as 'passing as fluent' and 10 were not passing as fluent speakers. As can be seen in Table 2, 80% of the participants, who classified themselves as having a severe covert component, also were observed to have few disfluencies. However, 43% of the participants, who received high observer ratings for stuttering, also reported having a severe covert component, highlighting inconsistencies between self- and listener classifications. (Also see discussion Section 4.1.)

Table 2

Self-categorizations (based on the profiles of Tomaiuoli et al. (2015)) and 'lay' evaluator perspectives (based on the Stuttering Probability Scale (SPS): a four-point Likert scale, where 1 is 'fluent with no doubt', 2 is 'fluent with some doubt', 3 is 'stuttering with a little doubt', and 4 is 'stuttering with no doubt').

Participants	Self-categorization	Lay		Evaluator		Perspectives	
		A	B	C	D	E	Mean
2	mild overt/severe covert	1	1	1	1	1	1
3	mild overt/severe covert	2	1	1	2	1	1.4
4	mild overt/severe covert	2	1	2	1	2	1.6
6	mild overt/severe covert	2	2	1	2	2	1.8
8	mild overt/severe covert	1	1	1	1	1	1
11	mild overt/mild covert	2	2	2	3	2	2.2
12	mild overt/mild covert	2	1	1	2	2	1.6
13	mild overt/severe covert	2	2	1	1	1	1.4
15	mild overt/severe covert	2	1	1	2	2	1.6
16	mild overt/severe covert	3	2	1	4	1	2.2
1	severe overt/mild covert	4	3	4	4	4	3.8
5	severe overt/mild covert	4	4	4	4	4	4
7	severe overt/severe covert	4	4	4	4	4	4
9	severe overt/mild covert	4	4	4	4	4	4
10	severe overt/severe covert	4	4	4	4	4	4
14	severe overt/mild covert	4	4	4	4	4	4
17	severe overt/severe covert	4	3	4	4	3	3.6

NB, 17 of the 21 participants gave permission for their videos to be shared with external persons (lay evaluators).

2.3.3. Assessment of stuttering severity, impact of stuttering, and unhelpful thoughts/beliefs related to stuttering

The Wright and Ayre Stuttering Severity Self-Rating Profile (WASSP; Wright & Ayre, 2000) consists of 26 questions across five areas: (1) stuttering behaviors, (2) thoughts, (3) feelings about stuttering, (4) avoidance behavior, and (5) disadvantages due to stuttering. Each item is scored on a 7-point Likert scale, with higher scores indicating greater negative impact associated with stuttering. The WASSP has demonstrated strong internal reliability with $r > 0.80$ on each of the five sections (Wright & Ayre, 2000). Internal consistency calculated for the WASSP for the Norwegian sample in the present study reached a value higher than 0.8 ($\alpha = 0.82$), which is good.

The Overall Assessment of Speaker's Experience of Stuttering-Adult (OASES-A; Yaruss & Quesal, 2006) consists of 100 items organized into four sections. Each item is scored on a 5-point Likert scale, with higher scores indicating greater negative impact associated with stuttering (Yaruss & Quesal, 2006). According to Yaruss & Quesal (2006), the OASES-A has good internal consistency, with a Cronbach alpha coefficient reported of $\alpha > 0.80$. In the current study, the Cronbach's α was 0.83.

The Unhelpful Thoughts and Beliefs About Stuttering Scale (UTBAS-6; Iverach et al., 2016) is a short screening version of the UTBAS (St Clare et al., 2009), and provides a reliable means of screening unhelpful thoughts and beliefs associated with speech-related anxiety among adults who stutter. Preliminary results suggest the scale is stable and reliable (Iverach et al., 2016). In the current study, the Cronbach α was calculated, and showed a strong internal consistency ($\alpha = 0.87$).

2.3.4. Assessment of psychological distress and anxiety

A number of instruments are available to assess aspects related to psychological distress and anxiety. To evaluate anxiety symptoms and degree of distress, several psychological screenings were used, and are described in more detail below.

The Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) is a self-administered screening tool consisting of 14 items with a four-point ordinal response format (e.g. 'not at all', 'occasionally', 'quite often', or 'very often'), split across anxiety (HADS-A) and depression (HADS-D) The internal consistency of the HADS was calculated, and showed a coefficient alpha of α = 0.91, with a mean inter-item correlation of 0.88, which is regarded as excellent. This corresponds with findings from its use in general practice (Bjelland et al., 2002; Brennan et al., 2010; Olssøn et al., 2005).

The General Anxiety Disorder Scale (GAD-7; Spitzer et al., 2006) is a 7-item anxiety scale which aims to identify probable cases of generalized anxiety disorder. This is also a valid and reliable tool, with strong internal consistency calculated as Cronbach α = 0.92. (Stein et al., 2017). In the present study, internal consistency was calculated as Cronbach α = 0.88.

The Brief Fear of Negative Evaluation Scale (BFNE-S; Leary, 1983) correlates very highly with the original Brief Fear of Negative Evaluation scale (BFNE; Carleton et al., 2011), developed to measure the fear and worry of being judged by other people. The original scale consists of 12 items (8 positively worded, and 4 negatively worded) rated using Likert scale choices ranging from 1, 'not at all characteristic of me', to 5, 'extremely characteristic of me'. Due to concerns regarding the factor structure of the original BFNE, some researchers have proposed eliminating the reverse-worded items and instead using the eight-item scale, the BFNE-S (Straightforward Items) (Liu & Lowe, 2016). The BFNE-S scores have demonstrated excellent internal consistency in clinical samples ($\alpha = 0.96$), and there is evidence supporting the validity of the scores (Carleton et al., 2011; Stein et al., 2017). Based on the work of Liu and Lowe (2016) who found that the BFNE-S appeared to be a better measure for assessing fear of negative evaluation than the original scale, the BFNE-S is used as a tool for measuring the level of fear of negative evaluation in the present study. In the present study, internal consistency was calculated as Cronbach α = 0.87.

An advantage of using standardized, internationally recognized psychological screenings such as HADS, GAD-7, and BFNE-S in

addition to specific stuttering measures lies in the opportunity they afford to understand whether, prior to therapy, a person who stutters is experiencing challenges such as fear of negative evaluation, symptoms of anxiety or psychological distress, and to what extent.

2.4. Statistical analyses

Quantitative data were analyzed using IBM SPSS Statistics, version 25. Descriptive analyses are presented for the CPST-E, OASES-A, WASSP, UTBAS-6, BFNE-S, HADS, and GAD-7. Normality was assessed by obtaining skewness and kurtosis values. A normal distribution was found across all variables. Demographic and clinical data are presented as means (*M*), and standard deviations (*SD*). The level of significance was set to $p < .05$ for all analyses.

Reliability analysis using Cronbach's coefficient alpha was calculated to determine the internal consistency of the items that comprised the CPST-E, OASES-A, WASSP, UTBAS-6, BFNE-S, HADS, and GAD-7.

In the present study, the group with primarily covert stuttering features was analyzed separately and compared with the group with primarily overt stuttering features. Comparison of mean scores on selected continuous variables at a group-level were conducted. Stuttering severity (Frequency score and SSI-4 Total Score) has previously been evaluated and reported in Sønsterud et al. (2020). Only the SSI-4, Total scores, were therefore used in the present study.

Independent sample t-tests were conducted to determine if there were significant differences between participants with primarily covert-, or primarily overt stuttering. Analysis of variance was utilized to compare these two subgroups. Where pairwise comparisons of post hoc tests were statistically significant ($p < .05$), Cohen's *d* was calculated to determine the effect size (small = 0.20–0.49; medium = 0.50–0.79; and large $\geq$ 0.80) (Cohen, 1988). A bar chart was developed, which displayed individual variability in self-reported experiences of avoidance behavior related to words and situations (WASSP, subscale 'Avoidance due to stuttering'), based on the four sub-groups of Tomaiuoli et al. (2015).

3. Results

Overall, and in accordance with our hypothesis, findings indicated that the variances between those with primarily covert stuttering and those with primarily overt stuttering can be considered more equal than previously thought. However, at an item-by-item level there were significant differences when the impact of personal preferences regarding therapy goals and coping strategies were concerned.

3.1. Reliability of measurements

The reliability of measurements is an important consideration in research, with a measurement considered reliable if it provides consistent results in consistent conditions. Internal consistency (Cronbach's alpha (α)) appears to be the most frequently used indicator of reliability, and indicates the extent to which a tool measures what it intends to. Field (2018) suggests that a value of $\alpha = 0.70$ to $\alpha = 0.80$ is an acceptable value for Cronbach's alpha (α), and the measurements used in this study define $\alpha = 0.70$ and above as reliable. Internal consistency calculated for the OASES-A and WASSP for the Norwegian sample in the present study reached satisfactory values ($\alpha > 0.80$). Cronbach's α was also calculated for HADS, GAD-7, UTBAS-6, and BFNE-S, and were found to be satisfactory ($\alpha > 0.80$).

3.2. Personal preferences regarding goals in therapy

Group differences (overt group vs covert group) regarding personal goals in therapy were investigated, and significant differences were identified on two of the four sub-scores: 'to gain a sense of control over the stuttering' and 'to have fluent speech'. More detailed information is provided in Table 3.

Table 3

Client Preferences for Stuttering Therapy (CPST-E): The degree of importance (1 = not at all important to 5 = very important) assigned to goals for the two subgroups: primarily overt stuttering (*n* = 10) and primarily covert stuttering (*n* = 11).

Client Preferences for stuttering therapy	Overt Mean	SD	Covert Mean	SD	p	η²
To gain a sense of control over the stuttering	4.30	0.65	5.00	0.00	.003**	2.15
To participate easily in most or all speaking situations	4.30	0.68	4.55	0.82	.814	
To have fluent speech	3.70	1.06	4.55	0.52	.029*	1.08
To have more positive feelings associated with stuttering	4.20	1.14	4.09	1.22	.466	

Mean, Standard Deviation (SD), *p*-value (Note: **$p < .01$, *$p < .05$) and Cohen's *d* (η²).

3.3. Impact of stuttering and physical and emotional differences

Individual variations concerning self-reported impact of stuttering, stuttering severity, and avoidance behaviors were measured through the OASES-A, the WASSP and the UTBAS-6. No significant differences between the two groups were found. See Tables 4–6 for further details.

Individual variations regarding self-reported symptoms of anxiety, depression and fear of negative evaluation were measured through the HADS, the GAD-7 and the BFNE-S, and further compared. No significant differences between the groups with primarily overt and primarily covert stuttering were found, as shown in Table 7.

Table 4
Overall Assessment of Speakers' Experience of Stuttering-Adult version (OASES-A): Overall impact- and sub-scores (1 = mild negative impact, 5 = severe negative impact) for the two groups: primarily overt stuttering ($n = 10$) vs primarily covert stuttering ($n = 11$). Higher scores are indicating greater negative impact associated with stuttering.

Sections OASES-A	Overt Mean	SD	Covert Mean	SD	p
Overall stuttering impact	2.77	0.58	2.82	0.66	.865
General information	3.02	0.33	3.06	0.50	.814
Reactions	2.81	0.53	3.00	0.75	.519
Communication	2.78	0.76	2.72	0.84	.864
Quality of life	2.56	0.88	2.52	0.76	.904

Mean, Standard Deviation (SD) and p-value.

Table 5
Wright and Ayre Stuttering Self-Rating Profile (WASSP): Total Score and sub-scores, with higher scores indicating greater negative impact associated with stuttering, for the two groups: primarily overt stuttering ($n = 10$) vs primarily covert stuttering ($n = 11$).

Sections WASSP	Overt Mean	SD	Covert Mean	SD	p
Total Score	97.90	21.66	98.45	25.19	.958
Stuttering behaviors	35.50	6.65	33.09	7.54	.449
Thoughts about stuttering	12.80	3.77	11.00	4.52	.336
Feelings about stuttering	20.80	7.87	23.18	8.50	.514
Avoidance due to stuttering	12.60	4.77	14.09	5.39	.512
Disadvantage due to stuttering	17.10	5.95	17.09	5.86	.997

Mean, Standard Deviation (SD) and p-value.

Table 6
Unhelpful Thoughts and Beliefs About Stuttering (UTBAS)−6: Total Score and sub-scores, with higher scores indicating greater negative impact associated with stuttering, for the two groups: primarily overt stuttering ($n = 10$) vs primarily covert stuttering ($n = 11$).

Sections UTBAS	Overt Mean	SD	Covert Mean	SD	p
UTBAS-1 Frequency	14.60	4.17	14.73	4.71	.949
UTBAS-2 Belief	12.80	5.05	14.00	5.57	.612
UTBAS-3 Anxiety	15.10	6.45	14.45	6.35	.820
UTBAS Total Score	42.50	14.21	43.18	16.02	.919

Mean, Standard Deviation (SD) and p-value.

Table 7
Total scores on the General Anxiety Disorders (GAD-7), the Hospital Anxiety and Depression Scale (HADS) and sub-scores (HADS-Anxiety and HADS-Depression) and BFNE-S for the two groups: primarily overt stuttering ($n = 10$) vs primarily covert stuttering ($n = 11$).

Psychological screenings	Overt Mean	SD	Covert Mean	SD	p
GAD-7 Total Score	6.80	6.48	8.00	7.24	.695
HADS-Total Score	9.80	6.51	9.82	7.55	.995
HADS-Anxiety	6.40	3.81	6.64	4.68	.901
HADS-Depression	3.40	3.31	3.18	3.16	.879
BFNE-S (Straightforward Items)	20.70	7.62	21.18	10.37	.906

Mean, Standard Deviation (SD) and p-value.

3.4. Stuttering impact and differences regarding avoidance behavior

Discrepancies were revealed between the participants' self-evaluation of the negative impact on stuttering (OASES-A and WASSP), severity ratings based on SSI-4 (two external evaluators, see appendices in Sønsterud et al., 2020), and classification by the lay assessors (Table 2). A total of 11 participants fell under the ≤ 18 Total Score, with some reaching the SSI-4 criteria for 'Very mild stuttering', and others having an SSI-4 score so low that it did not reach the criteria for an SSI-4 severity rating at all. These 11 participants were judged by the lay assessors as 'fluent with no doubt', or 'fluent with some doubt', yet the responses of these same participants on the OASES-A and WASSP indicated moderate or moderate-severe negative impact of stuttering. Variability in self-reported experiences of avoidance behavior were investigated (OASES-A) with the aim to see whether there were differences at an item-level between the two groups. Significant differences were found, as seen in Table 8.

In the OASES-A, each item is scored on a 5-point Likert scale, with higher scores indicating greater negative impact associated with stuttering. Variability in self-reported experiences of avoidance behavior, in particular of words and of situations, were further investigated using the WASSP, subscale 'Avoidance due to stuttering' to see whether there were differences between the four groups of Tomaiuoli et al. (2015): (a) Mild overt and mild covert components, (b) Mild overt and moderate/severe covert components, (c) Moderate/severe overt and mild covert components, and d) Moderate/severe overt and moderate/severe covert components. The following differences can be seen in the bar chart below (Fig. 1).

Table 8

Self-reported experiences of stuttering (OASES-A), with higher scores indicating greater negative impact associated with stuttering, for the two groups: primarily overt stuttering ($n = 10$) vs primarily covert stuttering ($n = 11$).

Items OASES-A	Overt Mean	SD	Covert Mean	SD	p	η^2
How often are you able to speak fluently?	3.10	0.74	2.36	0.67	.027*	1.04
How often do you say exactly what you want to say even if you think you might stutter?	2.30	0.48	3.55	1.04	.003**	1.64
How often do you do not say what you want to say (e.g. avoid or substitute words, refuse to answer questions etc.)	2.80	0.92	3.91	0.94	.013*	1.20
How difficult is it for you to introduce yourself?	4.10	0.57	2.64	1.03	.001**	1.83

Mean, Standard Deviation (SD), p-values (Note: **$p < .01$, *$p < .05$) and Cohen's d (η^2).
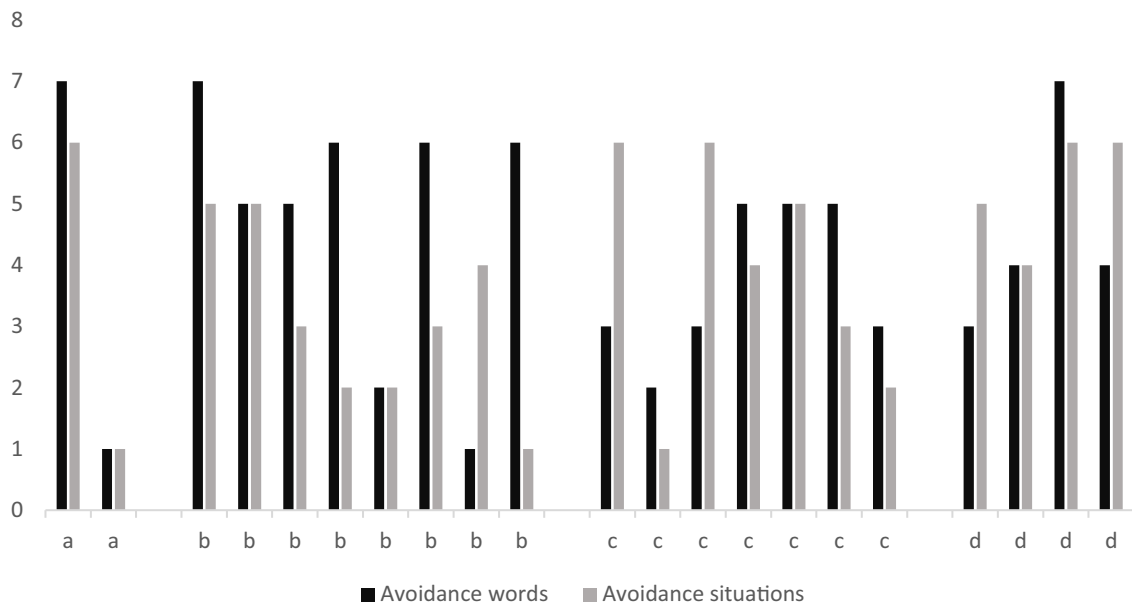

Fig. 1. WASSP (Avoidance due to stuttering), 1 = 'none' and 7 represents 'very severe' stuttering considered within the concept of Tomaiuoli et al. (2015) four profiles: a) Mild overt and mild covert components, b) Mild overt and moderate/severe covert components, c) Moderate/severe overt and mild covert components, and d) Moderate/severe overt and moderate/severe covert components.

4. Discussion

Findings from the present study indicate that there may be fewer differences between people with primarily overt and primarily covert stuttering than previously indicated, including emotional and social aspects, as well as avoidance behaviors. Furthermore, no significant differences were found between the groups in relation to self-reported symptoms of anxiety, depression, and fear of negative evaluation. Indeed, the findings identified no significant differences between the two groups in almost all aspects related to stuttering impact. Significant differences were, however, found on two sub-scores when considering personal goals in therapy ('to gain a sense of control over the stuttering' and 'to have fluent speech'), in which the group of participants with primarily covert stuttering regarded speech fluency and having a sense of control over the stuttering as even more important than the group with primarily overt stuttering did.

The findings confirm those of Constantino et al. (2017), and align with conclusions reached by previous researchers (O'Brian et al., 2020; Cheasman et al., 2013; Davidow & Scott, 2017), in that the way in which persons who stutter perceive their own stuttering, is not necessarily related to the frequency or severity of overt stuttering behaviors.

4.1. External vs internal evaluation of covert and overt stuttering

Our findings further support those of Logan (2015), who suggests that 'covert events' can reflect challenges in either speech planning or speech execution, and that it is difficult to reliably identify covert events or decide whether triggers for such events are language- or motor based. The external evaluation process in Sønsterud et al. (2020) study confirms the challenges raised by Logan (2015), where the total dataset measured by SSI-4 disclosed 78% agreement between the two evaluators. However, when these figures were analysed in more detail, agreement between the two evaluators reached 93% for samples in the overt stuttering subgroup but decreased to 62% for samples in the covert stuttering subgroup.

Based on the agreements between evaluator 1 and evaluator 2 in the study of Sønsterud et al. (2020), it might be worthwhile to consider whether one of the evaluators, in major part of the evaluations, was more sensitive to subtle signs of tension than another. When looking at the Appendix A, on the assessments without the *, on 50% of occasions Evaluator 1 calculated a higher Total Score and Evaluator 2 calculated higher scores on the remaining occasions. This pattern changed noticeably for the assessments marked *, where Evaluator 2 calculated the higher Total Score on 6 out of 7 occasions. Within the SSI-4 calculation, it seems that in some cases differences in scoring the %SS subsection of the assessment is responsible for the differences in evaluations, whilst in others the physical concomitants subsection appears responsible for driving the differences. There may be simple explanations to these differences. It is possible that one evaluator was more sensitive to subtle signs of tension than the other, and then identified a higher number of moments of stuttering than the other. This aspect may be related to the interpreting of behaviors. One evaluator may have interpreted instances of circumlocution as moments of stuttering, whilst the other evaluator may have interpreted those same instances of circumlocution as *avoiding* moments of stuttering, even though SSI-4 does not record avoidance behavior. There may be some further factors that may have affected the evaluations, and a closer discussion of such elements is described below.

In the present study, the evaluations of stuttering frequency and stuttering severity may have been influenced by certain speech elements; for certain speakers being treated differently by the two external, independent evaluators. Furthermore, both of the evaluators had been trained using the Stuttering Management System (SMS; Bainbridge et al., 2015) where interjections are generally treated as fluent syllables but can also be treated as part of a longer stuttered moment. An example of interpretational differences would include judgement as to the nature of a filler or schwa sound immediately preceding a stuttered moment. Particularly, interjected 'em' sounds appeared frequently in the video samples of some participants, often immediately prior to a stuttered moment, but occasionally with no obvious association. However, the same 'em' sound occasionally appeared without being associated with a stuttered moment. In such cases the evaluator sometimes treated these interjections differently in their different contexts. That is, one evaluator may have counted 'em' as a fluent syllable, whereas the other may have interpreted the 'em' as indicative of a stuttering moment. As seen in Appendix A, differences such as these may threaten the reliability of the measurement. We are not alone in highlighting such concerns, as several researchers have raised concerns about inherent instability, and problems with the reliability of, for example,%SS or SSI-4 measurements (O'Brian et al., 2020; Davidow & Scott, 2017; Onslow et al., 2018).

4.2. The interaction between the editing and repairing phases in speech production

Regardless of whether we stutter or not, repair elements are common in speech production. Logan (2015) points to the work of Levelt (1983) and his use of the term *reparandum* when referring to the portion of an utterance that features the challenge that the person attempts to repair, and which might trigger disfluencies. Sometimes the reparandum is overt in nature and occurs when the speaker and the listener can hear or observe it, and sometimes the reparandum is covert. Such covert events are, by definition, hidden, such that neither the listener nor the speaker hears it in the speech signal (Logan, 2015). Logan describes these covert events as located within the portions of an utterance "*that the speaker has planned but has not yet spoken*" (2015, p. 73). The positional relationship between the moment of interruption and the reparandum varies and, with covert events, the moment of interruption can occur before the reparandum, within it, or in advance (Logan, 2015). According to Levelt (1983), the *editing phase* is usually characterized by silence and/or the production of one or more editing terms. These might include nonword vocalizations such as 'um' or 'uh' or other types of 'fillers' such as 'you know', like' and 'well' and suchlike (see Section 1.3 for a discussion as to how these instances of circumlocution may be interpreted differently within the context of stuttering moments).

4.3. Considering stuttering within a continuum of covert and/or overt stuttering

There is consensus that both covert and overt aspects of stuttering should be considered in both clinical work and research (see review in Ward et al., 2021). Measuring the impact of stuttering, reactions to stuttering, changes in communication, avoidance behaviors and quality of life have, over time, become a standard part of evaluation. It is important to note that authors of both the OASES-A (Yaruss & Quesal, 2006) and the SSI-4 (Riley, 2009) state that their assessment is to be used alongside other measures of stuttering. Findings from the present study re-assert that need. In identifying individual variation in the impact ratings and severity ratings produced by a wider range of measurements, it can, in a more general sense, capture a person's speaking patterns, coping behaviors and different forms of anxiety and psychological distress. Consistent with the work of Tichenor and Yaruss (2021), our findings emphasize a need to identify individual variation within the severity ratings and adverse impact ratings produced. Tichenor and Yaruss confirmed that stuttering behaviours vary across time and situation, and that stuttering behaviors were considered more variable than adverse impact associated with stuttering. Furthermore, Douglass et al. (2019, p. 2) state that neither covert stuttering or passing as fluent are monolithic, because a speaker may not pass as fluent with each listener in all speaking situations. According to the same authors, a person may try to be covert and pass as fluent, and sometimes they may not, a decision-making process which is based on, among others, speaking partners and environments. We therefore believe it is valuable to consider stuttering within a continuum between covert stuttering and overt stuttering. This includes the value of including several datapoints, as well as integrating subjective and objective measures of stuttering and its impact.

4.4. Avoidant behavior and coping in daily life settings

In many ways, our clinical experience mirrors the work of Murphy (2007), who observed that the more an individual regarded avoidance behavior as 'successful', the more stuttering was hidden, and the greater success the individual experienced in hiding the stutter, the more that same person feared the surface behavior of stuttering. Thus, the more successful the persons were at appearing fluent, the more embarrassment and shame they experienced when the stuttering appeared. According to Murphy et al., (2007) 'success in passing' as a fluent speaker increased the intolerance for stuttering. Findings in recent studies (Sønsterud et al., 2019a, 2020) confirm that both the participants with overall covert and overall overt stuttering experienced negative emotional reactions such as frustration, embarrassment, and helplessness, and avoided speaking in certain situations or to certain people.

Results of the present study indicate that the participants struggled with negative emotional and social impact of stuttering and that they had developed a myriad of social-related avoidance behaviors, regardless of whether their stuttering was regarded as overall covert or overall overt. The psychological distress which may be associated with stuttering seems to be equal between the two groups. However, when avoidance behaviors or safety behaviors are concerned, findings in the present study have shown significant differences between the participants with covert stuttering compared with the participants with overt stuttering, and this aspect is related to the feature of avoiding words. The present study has revealed that avoiding *words* was more frequently reported in the group of participants with primarily covert stuttering behavior.

4.5. The definition of covert vs overt stuttering

In the stuttering literature where informational material is included within a clinical context, people who stutter are often categorized into two main groups: those who stutter covertly and those who stutter overtly. The Stuttering Foundation states that '*the covert stutterer*' attempts to avoid '*contact with feared words and situations*' and that '*the overt stutterer*' '*struggles laboriously through word after word as he communicates*' (Guidelines | Stuttering Foundation: A Nonprofit Organization Helping Those Who Stutter (stutteringhelp. org), December 30th 2020). Such a rough categorization may have grains of truth but may fail to capture the realities or nuances. Within the present study, we observed that *situation* avoidance for example, was common among both groups, regardless of whether their stuttering is associated with primarily overt or primarily covert stuttering. However, there were significant differences between the two groups relating to *linguistic* avoidance, such as avoiding or substituting words, and the person less frequently saying exactly what they want to say if stuttering is anticipated. The findings overall indicate that people who stutter might equally choose avoidance as a strategy regardless of their pattern of stuttering. This rather gets to the heart of the challenge regarding definitions and common understanding of terminology - does covert mean the *desire* to hide or internalize moments of stuttering, or the ability to *achieve* this desire. We think that, rightly or wrongly, most people use the term 'covert' to describe hiding moments of stuttering. There was a tendency for those who self-evaluated as mild overt with a moderate or severe covert component of Tomaiuoli et al. (2015) categorization, to acknowledge word related avoidance behavior more than those with a mild covert and a moderate or severe overt component. Furthermore, there was a tendency for participants who self-evaluated themselves within subgroup d (moderate to severe overt and moderate to severe covert components), to consider their avoidance behavior of both words and situations very relevant. We suggest that there is a need to further nuance these four profiles, to differentiate those whose overt stuttering behaviors reflect the true extent or intensity of their stuttering and those whose overt stuttering behaviors are mediated or reduced through avoidance strategies.

Clearly, a fundamental issue with definition lies with the difficulty in separating people who are passing as fluent due to naturally low levels of stuttering, from those who are deliberately hiding moments of stuttering. Sønsterud et al. (2019) found a wide range of coping strategies were disclosed at both individual and group levels. We are aware that it is problematic to label a person as a person with covert stuttering based only on the observation of video recordings, and this may serve as a useful adjunct when classifying a speaker as 'passing as fluent'. We are also aware of the likelihood that some participants with seemingly 'mild stuttering' could be 'lucky' during the recordings, or there could be participants who are using fluency strategies and may still be very open about their

stuttering. It is the self-categorizations which allow us to see the subjective experience of the *balance* between overt and covert, and the listener perspective that can contribute to an evaluation of whether a speaker is passing as fluent or not.

Whether video recordings may be a useful method for classification of 'passing as fluent' or not, as a method for classification of covert or interiorized stuttering versus overt or exteriorized, the same classification may be problematic. The concept 'covert' or 'interiorized' stuttering may imply that there is a psychological difference between 'interiorized' and the 'exteriorized' forms. 'Passing as fluent' is, in contrast, a term without this type of connotation. From our point of view, stuttering begins as something exterior, but may be interiorized in some cases, rather than the reverse, which can be implied from the term exteriorized. We recognize that we do not have sufficient support for considering psychological differences just based on the video recordings. The difficulties may, in part, reflect differences between the speaker's experience and the listener's perceptions. The latter may not always reflect the former.

Nevertheless, both qualitative and quantitative data were collected in the previous main treatment study, and much of the data are already reported in the Sønsterud et al. (2019a, 2019, 2020). We therefore believe that the categorization used in the present study is valid and may serve as solid foundation when considering the concept of overt and covert stuttering and comparative findings. At the same time, we acknowledge that the concept of covert stuttering needs to be explored further in future research. One obvious line of research would be to have participants complete stuttering-based psychological profiling questionnaires. In addition, it would be of interest to consider including the teaching of personality profiling as a part of clinician training and in clinical practice and research related to stuttering.

4.6. The emotional and social impact of stuttering and stuttering management

There may well be a relationship between the experience of individual variances in stuttering and experiences of limitations in social activities. Sønsterud et al. (2019) found that communication was regarded as especially challenging in social settings requiring 'small talk'. Most of the participants were concerned about how stuttering interfered with their social relationship with other people, in particular in educational and work-related settings. The findings indicate that there were no significant differences between the two groups in terms of impact of stuttering, symptoms of anxiety, degree of unhelpful thoughts and beliefs about stuttering, desire for positive feelings associated with stuttering, fear of negative evaluation, experiences of disadvantages related to stuttering, and quality of life. These findings confirm those of Cheasman et al. (2013), who did not find a clear-cut distinction between exteriorized (overt) and interiorized (covert) stuttering.

Sønsterud et al. (2019) suggest that participants found avoiding words challenging, indicating that clinically significant levels of linguistic-related anxiety need to be taken into account in addition to the more commonly accepted factor of social anxiety (Craig & Tran, 2014; Iverach & Rapee, 2014; Menzies et al., 2008; Messenger et al., 2004). As highlighted in the introduction, fear of negative evaluation is common in adults who stutter (McAllister, 2015). In the present study, symptoms of general anxiety, fear of negative evaluation, negative thoughts and reactions related to stuttering, were equivalent across the two groups. Screening individuals seeking stuttering treatment for symptoms of anxiety has been suggested (Sønsterud et al., 2020). As already pointed out, clinicians need to be aware of the range of available measurements, and to consider whether the anxiety is related to speech (speech-related anxiety), word avoidance (linguistic-related anxiety), situations (situation-specific anxiety), and/or general or social anxiety. Stuttering management may differ depending on the trigger for the fear or the symptoms of avoidance and anxiety involved. These findings suggest an improved context-sensitivity where stuttering management is concerned. Further differentiation of these differences may contribute to more individualized and context-sensitive support for those seeking stuttering therapy.

Multidimensional Individualized Stuttering Therapy (MIST; Sønsterud et al., 2020) was shown to be efficacious in clinical settings and effective in real life settings for most of the participants, regardless of whether the person's stuttering was considered as primarily overt or primarily covert (see appendices in the Sønsterud et al., 2020 study). MIST combines value and awareness-based elements from Acceptance and Commitment Therapy (ACT) with those of stuttering and speech modification interventions. It incorporates a selection of therapy elements across five areas: (1) general breathing patterns and body tension, (2) breathing patterns during speech production, (3) vocal features in speech production, (4) value and mindfulness-based strategies, and (5) general communication and/or presentation skills. MIST may be unique in that the goal is not to teach fluency-enhancing techniques but to facilitate a better awareness of tension. Although MIST did not include a particular focus on anxiety reducing components, a significant reduction in symptoms of anxiety was nonetheless observed. We believe, therefore, that in addition to helping those with primarily overt stuttering, MIST may benefit people with primarily covert stuttering behavior who tend to have a high degree of linguistic anxiety, as well as social anxiety symptoms. This may challenge the assumption that psychological consultation is automatically required in clinical settings where covert stuttering is concerned.

4.7. The significance of a sense of control over stuttering

Lack of internal control and/or speech control has frequently been associated with stuttering (Craig & Andrews, 1985; De Nil & Kroll, 1995; Helgadottir et al., 2014; Swift et al., 2017; Van Lieshout et al., 2014). This corresponds with Hayhow et al. (2002) and Sønsterud et al. (2019) studies, in which the majority of participants highly valued obtaining a sense of control over their stuttering.

Riley et al. (2004) suggest that self-perception of stuttering severity is significantly associated with the concept of control. Their study also indicated a significant association between increased external locus of control and avoidance behaviors, while De Nil and Kroll (1995) suggest that the locus of control might be predictive of change in self-evaluation of stuttering. There is some evidence to support the hypothesis that internal locus of control can be a significant predictor for a positive therapy outcome (Craig & Andrews, 1985).

In Sønsterud et al. (2019) study, the majority of participants considered to gain a sense of control over the stuttering' as important. Furthermore, in the present study the therapy preference 'to have fluent speech' was considered important, and this goal was particularly highly valued for the participants with primarily covert stuttering.

Although feelings of control were valued highly by the participants, it is useful to reflect upon the concept of control, and to consider whether increasing a sense of control could have negative implications too, particularly for individuals negotiating the impact of covert stuttering behavior. Findings in the Constantino et al. (2020) study confirms that too much effort can limit spontaneity. The authors suggest that spontaneity is meaningfully distinct from fluency, and that adverse life impact of stuttering is predicted by temporary perception of spontaneity, and not by perception of fluency (2020, p. 994). This may indicate that control should not be utilized constantly, but at the same time it may be of importance to regain control when it is lost. Control in the wider sense could also refer to options that a person might have over their stutter, for example being able to pull-out of a block in a controlled manner. In this way, persons who stutter may regain control of their stuttering. Van Riper's (1973) stuttering modification approach provides one model of therapy where speech fluency is controlled but without eliminating the stutter. An alternative way to improve control, is to integrate a series of procedures such as Camperdown type approach (O'Brian et al., 2012) which may affect all aspects of speech production and on a continual basis rather than focal moments of stuttering. We believe that the desire for speech control may limit freedom of communication for some people who stutter, by creating potential barriers to interpersonal and/or communicative actions. There is (near) ultimate speech control, as offered for example in the Camperdown program, which indeed limits freedom of communication. This is different to fluency control. Hence, there is a balance to be struck with gaining control over blocks with strategies such as easy stuttering or stuttering modification, whilst not focusing on necessarily trying to eliminate the stuttering. Individuals may *want* more control over their speech, but if this is not within their power to achieve or to maintain, the focus on this may be detrimental rather than positive. More 'control' could potentially mean more barriers to freedom of communication. Harris (2019) asserts that the more individuals focus on things they want to change that are not within their control, the more powerless and upset they are likely to feel, leading to manifestations such as helplessness, hopelessness, anxiety, sadness, frustration, and anger.

A focus on the sense of control may have negative or positive consequences, dependent on the context. Findings in the present study indicate a need to further investigate the relationship between sense of control and stuttering, and in particular within the context of perfectionism, in which has shown negative relationships with self-compassion and subjective well-being, and seen within the frame of multidimensional personality trait (Stoeber et al., 2020). Hewitt and Flett (1991) differentiate perfectionism into three dimensions: Self-oriented, other-oriented, and socially prescribed perfectionism. According to the authors, self-oriented perfectionism is related to the person's beliefs that it is important to strive for perfection. Persons with dominantly self-oriented perfectionism expect to be perfect. Other-oriented perfectionism may be related to the person's beliefs that it is important for others to strive for perfection. Other-oriented perfectionists expect others to be perfect, and finally, social perfectionism reflects the belief that striving for perfection is important to others. Social perfectionists believe that others expect them to be perfect (Hewitt & Flett, 1991; Stoeber et al., 2020). It is interesting to include the dimensions of perfectionism in the discussions here and consider whether personality differences are associated with different stuttering behaviors. For example, it is tempting to hypothesize that people with primarily covert stuttering behavior may have an increased level of self-oriented and/or socially prescribed perfectionism within their personality. Exploring whether there is a relationship between perfectionism and self-compassion across different groups (Tóth-Király & Neff, 2020), including groups of people with primarily covert- or overt stuttering behavior, might also be relevant. The findings of the present study indicate a need to further investigate the relationship between experienced sense of control, multidimensional models of perfectionism, the degree of self-compassion, and stuttering, and to consider the impact that perfectionism or the desire for control may have.

5. Clinical implications

In the present study, both those with primarily covert stuttering behavior and those with primarily overt stuttering behavior rated the goals of improving speech fluency and gaining control over their stuttering as very important to them. An individual's desire for increased speech fluency and/or an increased sense of control, must be considered within a context-sensitive framework. Individuals seeking speech therapy usually come with ideas about what they want to gain from the therapy process. During initial discussions, the SLP can begin to form a general sense of the person's speech, stuttering, personality, and communication style, and also gather information about how the person perceives that they function in various contexts. The gathering of information includes observation of both verbal and non-verbal communication, formal measures and informal talks and interviews to form an impression of what is

important and meaningful for the individual. The SLP should spend time identifying the person's goals and developing an understanding of what these goals really mean to the person. These different goal levels can be classified as *process goals* and *outcome goals.* Outcome goals are goals that have the ultimate desired outcome as the target, and process goals are specific actions or processes of performing (Zimmerman & Kitsantas, 1997). As reported in Sønsterud et al. (2019a), the majority of the participants initially stated that their goals were to improve speech fluency or reduce stuttering. In such cases, the SLP could investigate further, asking what would happen or what would be different for the person if they achieved these goals. Based on the work of Zimmerman and Kitsantas (1997), goals such as these might be defined as process goals rather than outcome goals, since several participants felt that increasing speech fluency or reducing stuttering would contribute to the attainment of broader goals such as optimizing educational, or work achievement or increasing social activity in daily life. We believe that all these aspects are considered important because they 'anchor' the therapy process and help create a sense of collaboration and shared purpose (McLeod, 2018; Wampold, 2015).

6. Strength and limitations

The current study's sample size, although large for a multiple single case design, could be seen as a limitation for the quantitative analyses. The present findings may therefore not be representative of the experiences of people who stutter in general. Nevertheless, the sample included a diverse group of participants, and may therefore still reflect those of the wider population of adults who stutter. Further, the participants were invited to categorize themselves within one of the Tomaiuoli et al. (2015) four profiles of stuttering. Although this categorization covers only a limited number of subcategories, it seems to be a useful tool to differentiate the extent of covert and non-covert stuttering behavior in persons who stutter. (Also see Section 4.1 for a discussion of the difficulties surrounding the categorization and identification of covert and overt stuttering.)

7. Conclusion

Findings indicate that there may be fewer differences between people with primarily overt and primarily covert stuttering than previously thought, with regards to emotional reactivity and anxiety, as well as most aspects of avoidance behavior. However, investigation at item level identified a significant difference in linguistic avoidance between the two groups. The findings also indicate a need to integrate cognitive and behavioral elements in therapy in a more flexible and individualized manner to help ensure a better carry over of gains into everyday settings. Finally, we contend that there is a need to investigate subgroups of stuttering further, and with larger participant numbers to advance our understanding of covert stuttering.

Author statement

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Oslo, December 7th 2021
Hilda Sønsterud

Declaration of Competing Interest

The authors report no conflicts of interest. The authors are responsible for the content and writing of the paper.

Appendix A. Percentage agreement (SSI-4 Total Score) between two independent evaluators involved in the study of Sønsterud et al. (2020)

Video samples (randomized samples)	Evaluator 1 SSI-4 Total Score	Evaluator 2SSI-4 Total Score	Percentage agreement (%)
Severity equivalent:			
SSI-4, Total score < 18			
(Very mild stuttering)			
1	4	4	100
2	4	6	67*
3	6	8	75
4	7	14	50*
5	7	7	100
6	8	11	73
7	8	17	47*
8	8	15	53*
9	8	10	80
10	9	9	100
11	9	15	60*
12	11	17	65*
13	11	10	91
14	11	18	61*
15	14	4	29*
16	15	16	94
17	15	11	73
18	17	16	94
Severity equivalent:			
SSI-4, Total score ≥ 18			
(Mild to very severe stuttering)			
19	22	17	77
20	26	26	100
21	31	27	87
22	32	29	91
23	37	34	92
24	42	38	90

* Percentage agreement (%) did not reach the minimum value of Cronbach's alpha, $\alpha = 0.7$.

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