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**Research Article**

# Multidimensional Individualized Stuttering Therapy Outcomes At 24 Months Post Clinic: An Embodiment and Awareness Perspective

 Hilda Sønsterud,<sup>a,b</sup>  Kirsten Costain,<sup>b</sup> and David Ward<sup>c</sup>
<sup>a</sup> Faculty of Education and Arts, Nord University, Bodø, Norway <sup>b</sup> Statped, National Service for Special Needs Education, Oslo, Norway <sup>c</sup> School of Psychology & Clinical Language Sciences, University of Reading, United Kingdom

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**ABSTRACT**

**Purpose:** Multidimensional Individualized Stuttering Therapy (MIST) is based on proactive collaborative work and shared decision making between client and clinician with the goal of identifying individual case-appropriate procedures and therapy elements in a manner that is meaningful and context-sensitive for each person. MIST combines value- and awareness-based elements from acceptance and commitment therapy (ACT) with stuttering and speech modification interventions. In keeping with the principles of ACT, we locate mindfulness as part of an embodied practice facilitated through a collaboration between the person who stutters and the speech-language therapist.

**Method:** The aim of this study was to see whether the positive results of MIST recorded at 12 months post-therapy remained stable at 24 months post-therapy and to consider the role of embodiment and awareness within MIST. Fifteen of 18 adults already enrolled in a treatment study (2015/FO12451) took part in a single-group repeated-measures design. They completed measures of stuttering severity, impact of stuttering, unhelpful thoughts and beliefs about stuttering, general anxiety symptoms, and fear of negative evaluation.

**Results:** There was a significant reduction of stuttering severity and negative impact of stuttering from pre-therapy to 24 months post-therapy. Unhelpful thoughts and beliefs about stuttering, symptoms of general anxiety, and fear of negative evaluation were reduced at 12 months post-therapy, and these values remained stable at 24 months post-therapy.

**Conclusions:** MIST was associated with positive outcomes at 24 months post-therapy, suggesting a possible connection between the person-centered approach and longer-term benefit. Findings are discussed within the context of mindfulness and embodied adjustment, and shared client-clinician decision making. The absence of a control group is a limiting factor regarding certainty of interpretation. Future research is therefore needed on collaborative and individualized approaches to stuttering therapy that include embodiment and awareness perspectives.

Multidimensional Individualized Stuttering Therapy (MIST; Sønsterud et al., 2020) is a value- and experience-based approach, focusing on the body and bodily tension, awareness of breath support, voice, and general presentation

skills. The approach progresses through combined clinician and client selection of factors involving increasing awareness across five focal areas: (a) attending to general breathing patterns and body tension; (b) encouraging low tension and effort during breathing patterns and speech production; (c) experimenting with “soft” vocal features in speech production, such as easy onset and adjusting pitch level; (d) observing and paying attention to inner experiences through value- and mindfulness-based strategies such as self-compassion

Correspondence to Hilda Sønsterud: [hilda.sonsterud@statped.no](mailto:hilda.sonsterud@statped.no). **Disclosure:** The authors have declared that no competing financial or non-financial interests existed at the time of publication.

and acceptance without judgment; and (e) including pauses, varying speech rate, and other general communication skills.

A prerequisite for change for persons who stutter (PWS) is that the PWS themselves perceive the therapy approach as appropriate and meaningful (Baxter et al., 2015; Binder et al., 2010; Bothe & Richardson, 2011; Collier-Meek et al., 2018; Ingham et al., 2012). Because client feedback is an important source of information, in the present study, self-report scales concerning therapy elements which were introduced and then evaluated by each participant as useful were recorded in a therapy preferences form (TPF; see Sønsterud et al., 2020, for detailed information). The extent to which the PWS used these elements in daily life settings was also measured. Therapy elements were individually adapted to accommodate the therapy preferences of each person who stutters following the principle of shared decision making between the PWS and the speech-language therapist (SLT). MIST does not aim to teach fluency techniques but rather to facilitate greater awareness of tension in the body and of breathing and voice mechanisms, as well as to reduce acquired tensions by finding alternative and less effortful ways to speak and communicate (Sønsterud et al., 2020). In MIST, the PWS become more active in investigating the therapy process itself and in assessing which elements are more or less helpful. In this way, the clinician can modify or withdraw therapy elements based on each person's feedback. An overarching goal of MIST is to improve awareness. MIST does not include any specific mindfulness meditation techniques but rather aims to improve awareness skills relating to different aspects of the body/mind, regardless of whether there is intention to speak is a factor or not (Sønsterud, 2020, 2023a).

Work with awareness was considered by participants in the MIST study as personally valuable. These findings support the results of Neumann et al. (2019), who employed strategies identified by adults who had "recovered" from stuttering as causal. Neumann et al. discovered that awareness of body and breathing mechanisms and adjusting breathing patterns while speaking were regarded as useful strategies by a cohort of adults who had reported "spontaneous" late recovery. According to these authors, these methods reflect "a common, non-professional understanding of effective management of stuttering, which could be used in various stuttering treatment approaches," and that some of these elements "could be emphasized and could get a stronger focus" (Neumann et al., 2019, p. 10). In the MIST approach, these elements are regarded instead as part of the professional understanding of stuttering management.

In the present study, improving awareness was combined with the speech-related focus in therapy with all participants. During the therapy process, rather than providing detailed verbal instructions for potential changes

that participants could implement or experiment with, the clinician encouraged participants to "feel" their own experience and to continue practicing and developing this awareness of self both in and outside the clinic. According to Baxter et al. (2015), there is a lack of information regarding resources and training implications in previous treatment studies. To meet the authors' concerns, we have therefore included several options for therapy elements, which could be assessed as useful for other PWS. These elements are based on the participants' own considerations (see the Method section below) and are structured into five main categories. Therapy elements that were most frequently selected by participants in each of the five categories of MIST are shown in Table 1. For further details of how therapy elements are integrated in MIST, see Sønsterud et al. (2020) and Sønsterud (2023a, 2023b).

### ***The Value of Acceptance and Commitment Therapy and Awareness-Based Approaches in the Treatment of Stuttering***

MIST highlights the value of awareness-based work and its interaction with physical processes within stuttering therapy. One of the main aims of the awareness-based focus in the MIST approach is to facilitate stuttering management at both psychosocial and sensory-motor levels. The application of mindfulness to stuttering therapy drawn from approaches such as acceptance and commitment therapy (ACT) appears to hold considerable promise in the overall treatment of stuttering (Beilby et al., 2012; Hart et al., 2024; Sønsterud et al., 2020). As with ACT, MIST is based on mindful, value-oriented collaborative assessment by therapist and client (Sønsterud, 2023a). Learning to recognize that thoughts, feelings, and even the physical sensations of stuttering may not represent a stable, unchanging "reality" but are simply appearances in embodied consciousness that continually come and go may make them less onerous. Mindfulness begins by bringing awareness to current experiences and thus attention to and observation of thoughts, feelings, and bodily sensations from moment to moment through regulation of the focus of attention (Hayes et al., 2012; Luoma et al., 2017). In both ACT and MIST, the key to tackling the present moment is mindful being of, rather than thinking about, the body (Sønsterud, 2023a; Sønsterud & Costain, 2022).

Mindfulness in speech-language therapy involves deep engagement with learning new modes of response in the form of adaptive and regulatory movement, and this requires a state of active "listening" to the body and heightened (constructive) awareness maintained while a person speaks. The clinician invites the PWS into a process of co-construction, in which increased awareness of felt sensations rather than detailed verbal instruction, or

**Table 1.** Therapy elements most frequently selected by participants in each of the five categories (1–5) of the Multidimensional Individualized Stuttering Therapy (MIST).

1. Awareness of general breathing patterns and body tension	2. Awareness of breathing patterns during speech	3. Awareness of vocal features in speech production	4. Awareness of value and mindfulness-based strategies	5. Awareness of general communication and/or presentation skills
Awareness of body and breathing mechanisms	Identifying and exploring breathing patterns when speaking	Pullouts (“voicing out”–maneuvers during blocks)	Improving self-care and self-confidence	Increased awareness and more flexible use of pauses
Anchoring the breath deeper in the body (“low breathing” contra “high breathing”)	“Low breathing” while talking	Soft onset and softer articulatory contacts (gentle voicing)	Focusing on life values (do what matters despite the stuttering)	Flexible speech rate (adjust rate to speech context)
Exhalation for relaxation to achieve a calmer state	Pullouts (“breathing out”–maneuvers before or during blocks)	Awareness of vocalization and subsequent flexible adjustment of vocal volume	Context-sensitive exposure exercises (i.e., increase social initiative taking and authentic, value-oriented behavior)	Resisting time pressure by using pauses and emphasizing particular words in utterances
Slower body movements	Exhalation in connection with talking maneuver and during blocks (pullout)	Pitch adjustments in phonation (“pitch return”) by using a personal “tuning fork”	Body–mind focus, being present in the moment (focus on breathing as a component for increasing awareness of the moment)	Awareness posture and improving eye contact

the implementation of an “educational component,” is the focus. The aim of ACT is to create a rich and meaningful life where, even during periods of pain and suffering, there is an opportunity to find meaning, purpose, and vitality (Harris, 2019; Hayes et al., 2012). Acceptance of the present moment is encouraged in ACT by moving toward authentic speaking and communication situations, which are meaningful for the person. One key to tackling the present moment is being in the body while not thinking about the body. The main goal of ACT is to foster psychological flexibility, defined as the ability to be present with full awareness and openness to experiences in life and to act guided by one's own values (Harris, 2019). Psychological flexibility can be fostered through the following six core therapeutic processes: a focus on the present moment (being here and now), self as context (a perspective taking sense of oneself), defusion (stepping back and watching own thinking), acceptance (opening up), value-direction (knowing what matters), and committed action (doing what it takes; Harris, 2019; Hayes et al., 2012).

In line with several other authors (Beilby et al., 2012; Cheasman et al., 2015; Harley, 2018; Hart et al., 2024; Michise & Palasik, 2017; Palasik & Hannan, 2013), we argue that insights gained from awareness-based approaches, as well as other mindfulness practices, may support a shift in stuttering therapy. Although the concept of mindfulness as embodied awareness has become mainstream, the tendency remains in our Western industrial cultures to separate body from mind, equating mind with thoughts and emotions (with mental–psychological, “nonphysical” contents; Hayes et al., 2012). Such perspectives can lead to fragmentation and alienation of

different aspects of therapeutic focus, for example, when breathing is conceptually and methodically cordoned off from speaking and cast in terms of techniques that are part of “breath-work.” In this study, as well as in keeping with the principles of ACT, we locate mindfulness as part of an embodied practice facilitated through a collaboration between the PWS and the SLT. In making mindful adjustments, the PWS is able to feel the difference a particular action makes at a visceral level.

### ***Embodied Adjustment and Felt Sense***

Embodied awareness is an on-the-spot, feeling-reflection-for-action, rather than a theoretical, rational process of “thinking-about” action or experience (Shewell, 2009). The personalized adjustments made by the PWS in the MIST study (Sønsterud, 2020; Sønsterud, Kirmess, et al., 2019; Sønsterud et al., 2020) arose out of each participant's development of mindful, embodied awareness. Embodiment as a philosophical perspective is a view of the human body as phenomenological—as a directly lived and continuously experiencing subjectivity, as well as the unique spatiotemporal location occupied by each person (Merleau-Ponty, 1962). In this view, perception is at base direct, meaning that sensory experience requires no prior, intermediary cognitive process to impact the perceiver (as an experience). In the allied view of cognition as embodied, human bodily processes of all kinds (not just those of the brain) constitute consciousness and cognition in essential, nonreductive ways (Gallagher, 2005). Organ systems, emotion regulation of the whole body, and sensory–motor “couplings” between organism and world make up the

environment in which cognition arises (Gallagher, 2013). In this perspective, mind is demonstrated by our enactive and engaged, pragmatic way of being in the world through doing things such as problem solving, controlling behavior, understanding, and explaining, rather than by the abstract mental states, attitudes, and mechanisms that are only derivable from these activities (Gallagher, 2013).

In the original study, approaches to mindfulness were employed that emphasized the way each person felt when speaking and the types of minor changes they could make to improve speaking and/or manage stuttering in the real-life contexts relevant for them. These took the form of small adjustments of posture, breathing, timing, speech rate, and so forth. The clinician invited the PWS to direct their awareness inward, into the body. Importantly, this focus inward is not on specific body parts or functions but on the inner feeling landscape of the PWS and its specific topographical detail. A decisive aspect of this invitation to move inward is that it is movement *toward* speaking and being a confident speaker rather than *away from* dysfunction and distress. MIST differs from a basic traditional approach in that it is process-oriented and tactical, rather than results-oriented and technical. The therapeutic emphasis in MIST is on adjustment-making in any given speech moment, in the form of embodied tactics or adapted strategies, and where the starting point is always each person's "felt sense" (Gendlin, 1978). We return to Gendlin's concepts below.

### ***Embodied Adjustment and Mindful Vocal Performance***

Embodied adjustment can be viewed in terms of an expanded definition of adjustment-making. "Embodied adjustment" emerged from the phenomenological (lived or direct experiential), pragmatic, and bodily approach to collaborating with the PWS in MIST. Nonverbal vocal communication, including factors such as speech rate, use of pauses, pitch, and volume, and the value of these features as prosodic markers (e.g., intonation, rhythm, and accents), is a significant aspect of spoken communication. According to Shewell (2009), technical aspects of vocal performance should be viewed as part of a person's psychophysical and motor-sensory expressive makeup. In speaking to others, one is continuously integrating many actions and streams of information or feedback, both internal and external, navigating shifts in vitality, arousal, and interest (Stern, 2010). Although the ability to manage these streams of informational feedback is important, this monitoring requires intimate awareness of and ability to identify one's authentic feeling states to make the necessary adjustments in response

to such feedback. The embodied approach to tailored adjustment-making in MIST emphasizes the importance of being and doing over thinking and understanding, is holistic rather than atomistic, dynamic and process oriented rather than static and results oriented, and tactical rather than technical (Costain & Sønsterud, 2023).

The core of embodied adjustment lies in the internal, physical, and emotional "felt sense" of each person who stutters. Gendlin (1962) introduced the concept of felt meaning and felt shift (Gendlin, 1978) to describe an embodied, nonconceptual basis for meaning and change in his extension of psychotherapist Carl Rogers' (1959) theories of therapeutic change in which the concept of "optimal adjustment" is key. Gendlin describes Roger's definition of optimal adjustment as "complete openness to experience (that is, complete congruence between experience and awareness)" in a subjective process that nevertheless is not explicit or conceptually based (Gendlin, 1962, p. 252). This nonconceptual subjective process of "implicit inclusion of meanings" in following one's feeling in optimal adjustment views the act of experiencing, at its most fundamental, as one of "felt meaning." In this sense, experience is a state of awareness and thus implicitly contains meaning without the need for further conceptualization or analysis (although this may be useful). Gendlin points out the vital difference between meanings felt within one's own experience (whatever their origin) and those "introjected concepts, conclusions, judgments also due to society that an individual has instead of, not implicitly in, (own) experience" (Gendlin, 1962, p. 253). If meaning as felt experience is inherently nonconceptual, attempting to "change one's mind" through introjected concepts (technical knowledge) is unlikely to produce the vitality that can create and sustain lasting, fundamental change. Instead, change experienced as a felt shift (Gendlin, 1978) is a deeply embodied (emotionally and physically lived), qualitative movement from one feeling topography to another, meaningful beyond and without reliance on words or other symbols.

Rather than the explicit adoption of new ideas or concepts, skills, or techniques, change as felt shift is a new form of physical and psychological responsiveness that highlights the potential for even small or subtle changes to have profound effects (Gendlin, 1978). In MIST, the types of embodied adjustments made by PWS were often minor, subtle shifts in posture, breathing support, and vocal timing that nevertheless led to significant improvement in reduction of tension and increased confidence in speaking (Sønsterud et al., 2020). Participants learned first to tune in to the subtleties of inner feeling, then to identify preferred approaches, and, most importantly, to modify these to achieve the small and equally

subtle yet powerful self-modified adjustments that led them back to more effortless speaking (or stuttering).

Mindfulness seemed to be an important element in the development of an embodied awareness that allowed useful adjustments to become “second nature” for the PWS in this study. This meant that the unique voice of each person who stutters remained their own; there was no need to change speech pattern or vocal character. Mindfulness in MIST involved active listening to the body and heightened (constructive) awareness maintained while speaking (Sønsterud, 2023a, 2023b). In MIST, the clinician invites the PWS into a process in which increased awareness of felt sensations is the basis for adjustment-making rather than detailed verbal instruction. This encourages personal movement toward the speaking situation in the direction of speaking more effortlessly, spontaneously, and freely.

In MIST, embodied adjustment is seen more in the use of tactical moves as responses to the needs of the moment than in the application of techniques that are products of a formal method. This mode emphasizes small actions that form pragmatic solutions to disfluency challenges in the moment. Implicit here is a form of prereflective, bodily awareness that produces a useful move or alerts one to the possibilities for action: the kinds of everyday momentary decisions the body often appears to be making all by itself, often “before you know it” (Gallagher, 2005). This contrasts with techniques that can be viewed as concrete knowledge applications arising from theory and thus circumscribed by rules and procedures (Costain & Sønsterud, 2023).

The MIST clinician strives to assist the PWS in identification of both the need for and the means to make embodied, felt adjustments in the present moment. This can lead to a dual discovery: acquaintanceship of each person who stutters with their own internal, felt meanings and knowledge about what within the therapeutic toolkit might resonate with both this experiential landscape and specific, real-life contexts of speaking. The goal of embodied adjustment-making is speaking more effortlessly without the PWS having to think about adjustment as method or to practice prescribed technical moves divorced from real-life contexts of use. Within the embodied adjustment process supported by MIST, there need not be opposition between being and tactical doing (Costain & Sønsterud, 2023; Sønsterud & Costain, 2022). This may be because the experience of the adjustment is not of something “else” being applied from outside, but rather of an internal movement that leads to an instant shift in the felt experience (Austin, 2008; Gendlin, 1978).

## Summary and Aim

A wide range of factors have already been identified and evaluated in the outcome research on MIST (Sønsterud, Feragen, et al., 2019; Sønsterud, Kirmess, et al., 2019; Sønsterud et al., 2020, 2022). These include personal motivation for therapy, willingness to invest time in home-based training, degree of usefulness of therapy, and the quality of the therapeutic alliance. All these elements can influence the therapy process and outcomes. We considered that through thoroughly addressing the body and bodily tension, awareness of breath support, the voice, and general presentation skills on an individual level, as summarized above, we might be able to produce positive outcomes, which could reduce relapse. In addition to considering the role of embodiment and awareness within MIST, the aim of the present study was to see whether the positive results of MIST recorded at 12 months post-therapy remained stable at 24 months post-therapy.

## Method

### Research Design and Recruitment

The original MIST study followed an A-B-A multiple case study design (Gast & Ledford, 2014). However, the aim of the present study was to determine the longer-term significance of the previously reported study (Sønsterud, 2020; Sønsterud et al., 2020). Since we report results in this article based solely on quantitative data at a group level, the design of this study can be viewed as a single-group repeated-measures design. Ethical approval was gained from the Regional Committee for Medical Research Ethics (2015/1275), and all participants provided written consent before participating in the study.

Participants were recruited through the Facebook pages of the Norwegian Association of Stuttering and Cluttering, via the public webpages of Statped (a national service center for special needs education) and via student and professional networks at the University of Oslo. Between 12 and 24 months post-therapy, one participant moved abroad, and two participants were invited to take part in alternative psychological treatment; all three were therefore excluded from the follow-up study. The final cohort comprised 13 men and two women, aged 23–61 years ( $M = 37.2$ ,  $SD = 13.2$ ). There was no contact between the SLT and study participants between 12 and 24 months post-therapy. None of the participants were active users or members of the Norwegian Association of Stuttering and Cluttering during this time. They did not participate in any additional or alternative intervention during the 12- to 24-month period post-therapy.

The SLT involved in this study has more than 25 years of experience within stuttering therapy. In addition, she has participated in several courses on ACT and mindfulness-based approaches, including a 2-year training program in ACT and a 1-week course on Mindfulness-Based Cognitive Therapy.

### **Data Collection Procedure**

Participants completed a pre-therapy phase of 6 weeks with initial evaluations during the first and sixth weeks. The individualized intervention began immediately after the pre-therapy phase and consisted of four therapy sessions, each of approximately 1.5- to 2-hr duration, conducted by the same clinician over an 8-week period. Participants were invited to pursue self-guided practice between therapy sessions. Following the therapy period, they returned for follow-up sessions at 3, 6, 12, and 24 months post-therapy. In the following, we present the results at 24 months follow-up.

Since MIST takes an individualized, dynamic, and process-oriented approach, clients' levels of satisfaction and evaluation of usefulness of therapy elements were routinely collected in a TPF (Sønsterud et al., 2020). Through co-design of the therapy with each participant, the approach becomes individualized and may not be regarded as consistent with already established, traditional stuttering therapy approaches. Thus, a detailed program description, such as might exist in a manual for the documentation of fidelity in treatment research, cannot be included here. In striving to develop the best stuttering therapy for each person, we rather had to "look past arguments about what therapies are 'best'" (Bernstein Ratner, 2024) and regularly observe the individual responses to the therapy. Even though a detailed description of procedures and content of each therapy session is lacking, the main principles and content of therapy can be seen as movement from Category 1 to Category 2 (see Table 1 above). Elements in Category 2 were often explored by adding elements from Categories 3 and 5, while Category 4 (awareness of value and mindfulness-based strategies) was used as a background therapy feature throughout the intervention (see Table 1 and Sønsterud et al., 2020, for more details). Examples of activities, exercises, and topics of conversations used in MIST are described in detail in Sønsterud (2023a, 2023b).

### **Measures and Instruments**

The research questions were addressed using repeated measures. Assessment of stuttering severity and impact of stuttering: Two assessments were used to measure

stuttering severity and impact, respectively: the Wright and Ayre Stuttering Severity Self-Rating Profile (WASSP; Wright & Ayre, 2000) and the Overall Assessment of Speakers' Experience of Stuttering-Adult version (OASES-A; Yaruss & Quesal, 2006). WASSP includes 26 questions across five domains: (a) stuttering behaviors, (b) thoughts, (c) feelings about stuttering, (d) avoidance behavior, and (e) disadvantages due to stuttering. The OASES-A consists of 100 items organized into four sections: (a) General Information, (b) Reactions to Stuttering, (c) Communication in Daily Situations, and (d) Quality of Life.

Assessment of general anxiety symptoms and negative judgment related to stuttering: Three assessment tools were used to evaluate anxiety symptoms and negative judgment related to stuttering: Unhelpful Thoughts and Beliefs About Stuttering Scale (UTBAS-6; Iverach et al., 2016), which is a short screening version of the UTBAS (St Clare et al., 2009); General Anxiety Disorder Scale (GAD-7), which aims to identify probable cases of generalized anxiety disorder (Spitzer et al., 2006); and Brief Fear of Negative Evaluation Scale (BFNES; Liu & Lowe, 2016), developed to measure the fear and worry of being judged by other people. The original scale consists of 12 items (eight positively worded and four negatively worded) rated using a Likert scale from 1 = *not at all characteristic of me* to 5 = *extremely characteristic of me*. Due to concerns regarding the factor structure of the original BFNES, some researchers have proposed eliminating the reverse-worded items and instead using the eight-item scale, the BFNES (Straightforward Items; Liu & Lowe, 2016), also used in the present study. UTBAS-6 provides a reliable means of screening unhelpful thoughts and beliefs associated with speech-related anxiety among adults who stutter (Iverach et al., 2016). The reliability of assessments is an important consideration in research, and internal consistency (Cronbach's alpha) is a frequently used indicator of reliability. Field (2018) suggests that a value of  $\alpha = .70$  to  $\alpha = .80$  is an acceptable value for Cronbach's alpha. All the assessments used in this study reached satisfactory values ( $\alpha > .80$ ). An advantage of using standardized, internationally recognized psychological screening tools such as the GAD-7 and the BFNES, in addition to specific stuttering measures, is the opportunity these afford to investigate whether, and to what extent prior to therapy, a person who stutters experiences challenges such as symptoms of anxiety or fear of negative evaluation (Sønsterud et al., 2022).

### **Statistical Analyses**

Quantitative data were analyzed using IBM SPSS Statistics, Version 27. Descriptive analyses were produced



for the OASES-A, the WASSP, the UTBAS-6, the GAD-7, and the BFNES. The Shapiro–Wilk test was used to determine whether outcome score sets were normally distributed or significantly differed from a normal distribution. A normal distribution was found for all measures. Reliability analyses using Cronbach’s coefficient alpha was calculated to determine the internal consistency of the items that comprised the WASSP, the OASES-A, the UTBAS-6, the GAD-7, and the BFNES. To measure whether levels of long-term outcomes remained stable at 24 months, stuttering impact scores (OASES-A) and levels of stuttering severity (WASSP) were compared between two time points (pre- and 12 months post-therapy, pre- and 24 months post-therapy, and between 12 and 24 months post therapy), using mean, standard deviation, and *p* value. As with the measures OASES-A and WASSP, the UTBAS-6, the GAD-7, and the BFNES (Straightforward Items) were compared between two time points (pre- and 12 months post-therapy, pre- and 24 months post-therapy, and 12 and 24 months post-therapy). Furthermore, Cohen’s *d* (Cohen, 1988) was calculated for the paired-sample *t* tests to determine the effect sizes between pre-therapy and 24 months post-therapy.

Paired-samples *t* tests were calculated to examine the stability of total scores on the WASSP and OASES-A from pre-therapy to 24 months post-therapy and between 12 and 24 months post-therapy. Paired-samples *t* tests were also used to see whether total and subscale scores on the UTBAS-6, the GAD-7, and the BFNES differed from pre-therapy to 12 months post-therapy, from pre-therapy to 24 months post-therapy, and between 12 and 24 months post-therapy. Level of significance was set at *p* < .05.

## Results

As already reported by Sønsterud et al. (2020), most of the participants experienced reductions in the impact of stuttering and stuttering severity at 6 months, and improvements were maintained for 89% of the original sample at 12 months post-therapy. To measure whether levels of long-term outcomes remained stable at 24 months, stuttering impact scores were compared to outcome measures pre-therapy and at 24 months for the cohort of 15 participants. In the present study, a significant reduction was found in stuttering severity (WASSP) and negative impact of stuttering (OASES-A) over the 24-month period post-therapy (where Cohen’s *d* indicated medium-to-large effect sizes). As shown in Table 2, except for the subscale Disadvantages Due to Stuttering (WASSP), which indicated a continued reduction also between 12 and 24 months post-therapy, the levels of long-term outcomes remained stable between 12 and 24 months post-therapy.

Mean scores for UTBAS-6 pre-therapy and at 12 and 24 months post-therapy are presented in Table 3. When unhelpful thoughts and beliefs about stuttering (UTBAS-6) were examined, the levels of long-term outcomes remained stable between 12 and 24 months post-therapy, and medium-to-large effect sizes were found over a period of 24 months post-therapy.

Mean scores for the GAD-7 and the BFNES at 12 and 24 months post-therapy show a similar pattern to that outlined in Tables 2 and 3 and are presented in Table 4.

Higher scores indicate greater negative impact associated with general anxiety symptoms and degree of fear

**Table 2.** Total and subscale scores on the Wright and Ayre Stuttering Severity Self-Rating Profile (WASSP) and the Overall Assessment of Speakers’ Experience of Stuttering–Adult version (OASES-A).

Scores	Pre-therapy <i>M</i> ( <i>SD</i> )	12 months <i>M</i> ( <i>SD</i> )	<i>p</i> (pre-12)	24 months <i>M</i> ( <i>SD</i> )	<i>p</i> (pre-24)	<i>p</i> (12–24)	<i>d</i> (pre-24)
WASSP total scores	92.7 (20.9)	72.0 (23.5)	< .001	70.1 (29.1)	< .001	.632	0.90
WASSP Stuttering Behaviors	32.8 (6.9)	28.0 (9.2)	< .001	27.7 (9.9)	.002	.851	0.61
WASSP Thoughts About Stuttering	11.0 (4.3)	9.0 (3.9)	.044	8.3 (4.4)	.011	.316	0.62
WASSP Feelings About Stuttering	21.1 (7.8)	14.5 (6.8)	.001	15.4 (7.8)	.016	.567	0.73
WASSP Avoidance Due to Stuttering	12.1 (4.5)	8.0 (2.4)	.003	9.1 (4.1)	.043	.122	0.70
WASSP Disadvantages Due to Stuttering	16.2 (6.0)	12.5 (6.2)	< .001	10.3 (5.8)	< .001	.023	1.00
OASES-A total scores	2.7 (0.5)	2.3 (0.5)	< .001	2.2 (0.6)	.001	.572	0.91
OASES-A General Information	3.0 (0.4)	2.4 (0.4)	.001	2.5 (0.4)	< .001	.606	1.25
OASES-A Reactions to Stuttering	2.8 (0.5)	2.4 (0.6)	.001	2.4 (0.7)	< .001	.919	0.67
OASES-A Communication in Daily Situations	2.6 (0.8)	2.3 (0.7)	.007	2.2 (0.8)	< .001	.334	0.50
OASES-A Quality of Life	2.4 (0.6)	1.9 (0.6)	< .001	1.8 (0.7)	.001	.139	0.92

**Table 3.** Total and subscale scores on the Unhelpful Thoughts and Beliefs About Stuttering Scale (UTBAS-6).

Scores	Pre-therapy <i>M (SD)</i>	12 months <i>M (SD)</i>	<i>p</i> (pre-12)	24 months <i>M (SD)</i>	<i>p</i> (pre-24)	<i>p</i> (12–24)	<i>d</i> (pre-24)
UTBAS-6 total score	41.4 (12.5)	31.9 (13.1)	< .001	32.7 (14.2)	.001	.712	0.65
UTBAS-6 Frequency	14.6 (4.1)	10.8 (4.3)	< .001	10.9 (4.7)	.003	.930	0.84
UTBAS-6 Belief	12.7 (4.0)	10.7 (4.5)	.012	11.3 (6.4)	.300	.694	0.27
UTBAS-6 Anxiety	14.1 (5.7)	10.3 (4.8)	< .001	10.5 (5.1)	.001	.827	0.67

of being judged. As seen in Table 4, there was a significant reduction in the general anxiety symptoms score and degree of fear of negative evaluation at 12 months post-therapy, and the levels of long-term outcomes remained stable at 24 months post-therapy.

## Discussion

While the results of the present study show maintenance of positive effect over 24 months as recorded using the scores of the WASSP, the OASES-A, the UTBAS-6, the GAD-7 and the BFNES, the more complex issue of exactly how this form of collaborative person-centered therapy has contributed to achieving these results (and of which aspect of therapy impacted which of the specific indices) is difficult to answer and ultimately beyond the scope of this article. In reviewing the feedback recorded by participating SLTs from the PWS, however, the global improvement across indices appears linked to the reflexive embodiment and mindfulness perspectives used in the therapy, as well as to its organic, flexible, and PWS-led format. This discussion will necessarily be limited to describing these elements to provide context for our hypothesis that they contributed in large part to the robust and longer-term positive effect of the MIST approach.

The original MIST study provides corroboration of the philosophical approach taken by Baxter et al. (2015) and Swift et al. (2017), who argue the need for greater creativity in support and clinical practice and for therapy elements to be used in a more flexible, individual-oriented, and context-sensitive manner. The results of the present study further support the importance of individualized stuttering therapy approaches for PWS. MIST is a multi-dynamic approach and there is no simple, linear cause-effect connection from therapy element to effect within each of the specific indices for which scores were gathered.

Rather, the therapy approach and pragmatic focus on embodied awareness and adjustment represents a qualitative shift in stance through MIST, toward intervention in stuttering therapy as a matter of personal, collaborative, bodily engagement of the PWS rather than application of a program by the SLT or the teaching and acquisition of specific techniques. The comprehensive, robust positive results, maintained over time, however, clearly indicate that the unique elements of MIST warrant further study and replication and should be of interest to clinicians and researchers.

### ***MIST: Relative Efficacy of Existing Approaches***

Results show significant improvement on all indices from pre-therapy to 12 months post-therapy and demonstrate that this improvement is maintained at 24 months. This stability is noteworthy and stands in contrast to results of other interventions. Detailed comparison with results reported for other stuttering interventions remains a challenge because of the limited information provided in published reports (Bloodstein et al., 2021; Ward, 2018). Menzies et al. (2019) reported that an approach combining speech restructuring therapy with an internet-based cognitive behavioral therapy outperformed a program that focused on speech restructuring alone. OASES-A total impact mean scores at 6 months post-therapy for both the experimental group and the control group in this study were similar to those of the MIST study (Sønsterud et al., 2020). However, the values reported in the MIST study remained stable at both 12 and 24 months post-therapy, even without any further intervention.

Other well-documented, effective approaches include the Comprehensive Stuttering Therapy Program (Langevin et al., 2010) and the Integrated Fluency and Acceptance and Commitment Therapy Intervention approach of Beilby et al. (2012) and Hart et al. (2024). As with the

**Table 4.** Total scores on the General Anxiety Disorder Scale (GAD-7) and Brief Fear of Negative Evaluation Scale (BFNES).

Scores	Pre-therapy <i>M (SD)</i>	12 months <i>M (SD)</i>	<i>p</i> (pre-12)	24 months <i>M (SD)</i>	<i>p</i> (pre-24)	<i>p</i> (12–24)	<i>d</i> (pre-24)
GAD-7 total score	6.7 (5.8)	4.2 (4.0)	.001	4.3 (4.6)	.016	.567	0.46
BFNES (Straightforward Items)	20.7 (8.9)	16.6 (7.0)	.002	16.9 (7.1)	.043	.122	0.48

present study, Beilby and colleagues combined ACT with speech-related therapy. These studies support Boyle's (2011) assertions that mindfulness-based strategies facilitate stuttering management at both psychosocial and sensory-motor levels, skills that are important for successful long-term stuttering management and which tend to be less focused upon in speech restructuring programs.

According to Bloodstein et al. (2021), several therapy programs that integrate prolonged speech, such as the Camperdown program in Australia, have reported reduced stuttering (%SS) by approximately 50%. These authors point out that the program "can facilitate fluency but does not address affective and cognitive concerns that most individuals who stutter have about their speaking and fluency, nor will it necessarily remove anxiety or self-concept as a person who stutters" (p. 435). Although we do not claim that MIST is more effective than other therapies, our results show that it is a valuable approach, also when compared with more established approaches. As indicated in Table 4, there was a significant reduction in the general anxiety symptoms score and degree of fear of negative evaluation at both 12- and 24-months posttherapy, even though MIST did not include any particular focus on anxiety reducing elements. These reductions in symptoms are instead regarded as positive by-products in MIST. Furthermore, in terms of clinical and temporal resource management, MIST treatment contained only four 1.5- to 2-hr sessions. Compared with many stuttering programs, this is a short period of contact time that nevertheless proved effective for almost all participants both at post-clinic and at 24 months follow-up.

### ***Speech as a Whole-Body Performance of Self***

As mentioned earlier, speech can be considered an embodied achievement that is a performance of communication (Stern, 2010). Quite apart from actual linguistic content, vocal communication as vocal interaction involves use of the physical voice itself to influence, engage, dominate, control, touch, and inspire (Rodenburg, 1992; Shewell, 2009). The embodiment perspective can be useful in understanding the voice as a central means of self-expression and identity (Shewell, 2009). The results of the present study provide further support for approaches to stuttering management that include an embodiment perspective to address both psychosocial and sensorimotor dimensions through integration of these aspects. Topics such as the phenomenon of embodiment; the nonlinguistic, nonverbal aspects of the voice; and the specific body of the individual PWS are still little-discussed in accounts of therapy and intervention for stuttering (Costain & Sønsterud, 2023; Sønsterud & Costain, 2022). See also Shewell (2009) and Austin (2008) for more details.

Our experience with MIST indicates that concepts of embodied cognition can help to reconnect therapy to the body, as well as offset the dominant rational-cognitive focus implicit in many intervention approaches, despite the increasing popularity of mindfulness techniques in the field (see Sønsterud et al., 2020, for a more detailed description of the main concepts). One of the key insights to emerge from this study and that may provide an explanation as to why positive outcomes were well maintained 2 years post clinic, is recognition of the PWS as an active evaluator and co-designer in stuttering therapy, as well as integration of an expanded definition of adjustment-making that lies at the heart of the intervention. Embodied adjustment in the MIST study appeared to support small but powerful changes that improved confidence and lowered anxiety symptoms and degree of fear of negative evaluation.

### ***Clinical Implications***

Even though there is general agreement in the field of stuttering therapy that intervention needs to be individualized, there remains a lack of research regarding stuttering approaches that are based on individual variations in both response and effectiveness (Baxter et al., 2015; Bothe & Richardson, 2011; Ingham et al., 2012). There is a need to individualize stuttering therapy even further. In this regard, an individual-in-context perspective and personal significance are key concepts in the MIST approach based on a fundamental aim to locate strategies, tasks, and elements that work best for the individual person who stutters at any point of everyday life. This aspect is in line with the pluralistic approach (McLeod, 2018) that emphasizes each person's experience of exploring elements and options and evaluating which of these are the most useful. In this way, the persons themselves then become active co-designers in therapy, which in turn makes therapy individualized and adjusted to the person's own life. In MIST, the clinician is considered merely a guide or facilitator of resources from which a client might benefit at a specific time during their life journey (Sønsterud, 2020). The original MIST study confirmed that there are many factors that can influence treatment outcomes (e.g., degree of personal motivation, considerations of usefulness of therapy elements, and quality of the working alliance), and this complexity poses a challenge when managing confounding elements in different therapy programs. As Baxter et al. (2015, p. 688) conclude, a significant proportion of participants may benefit from a range of different types of intervention, and although both the range and the volume of intervention research have grown considerably, the evidence remains unclear. Even though MIST involves a "direct linkage between goal identification, and what happens on a moment-by-moment basis in therapy" (McLeod, 2018, p. 95), it is important to note that the focus on the individual aspects and

adjustments of therapy elements in MIST does not position it as in competition with, or opposition to, many of the skills and strategies espoused by other, more established stuttering approaches. In personalized process-oriented therapies such as MIST, conclusions about cause and effect at the level of therapy element and specific outcome measure are difficult to make. We note, however, that elements or tasks that PWS found useful in the MIST approach closely mirror those valued highly by the participants in the study by Neumann et al. (2019) mentioned in the introduction. These elements were regarded by the authors as “nonprofessional” in their understanding of effective treatment of stuttering, which runs counter to the perspective taken in the MIST approach, where these same elements are considered part of a professional understanding of the management of stuttering.

The embodied awareness concepts applied in MIST and which have been assessed as useful by many adults who stutter might therefore hold promise for the management of stuttering, as well as for other areas of speech-language therapy where there are commonalities with stuttering therapy regarding both the client–clinician relationship (Sønsterud, Kirmess, et al., 2019) and individual evaluation of therapeutic processes (Table 1).

### **Strengths and Limitations**

The MIST approach was co-designed with adults who stutter to enable measurement of evaluation and level of satisfaction on therapy elements considered useful at an individual- and context-sensitive level (Sønsterud et al., 2020). This aspect may be considered a strength in research on treatment effectiveness. Even though the measurements at baseline functioned as control values for each participant, a major consideration regarding the interpretation of results is the absence of a control group during the follow-up period. Although measures to control for reliability and validity were applied during the MIST therapy period, our current reporting of the follow-up study must include the caveat that external influences cannot be ruled out during the 24-month post clinic period. The current study is also limited by reliance on self-report measures only, although the participant’s experience can legitimately be regarded as more important than clinical measures, particularly in an approach that does not focus specifically on stuttering reduction as a goal. Self-selection bias may also have been a factor; participants were seeking stuttering therapy and therefore likely to be motivated, although again, it is reasonable to assume that any adult who stutters and seeks therapy of any sort displays a degree of motivation. Thus, these findings may not be representative of the experiences of PWS in general. Nevertheless, the findings represent the experiences of a

diverse group of persons and may well reflect those of the wider population of adults who stutter. Both persons with overall overt stuttering and persons with overall covert stuttering responded positively to the MIST approach. Furthermore, a significant reduction in symptoms of anxiety was observed. Despite positive outcomes for most of the participants, some may have benefited further from a more intensive therapy approach (shorter time intervals between the sessions) and/or over a longer period (expanding the therapy period, for example from a few months to 12 months). Additional support from other professionals, such as psychologists, might also be useful for some PWS. The study did not include specific measures of mindfulness, which would have been useful to measure changes in awareness, and such measures need also to be included in future research. Replication of the research involving the use of specific measures of mindfulness and biological measures such as galvanic skin response could improve confidence in the utility of the MIST approach and help clarify issues of effect.

### **Conclusions**

Findings suggest that the MIST approach, which is based on proactive collaboration and shared decision making between each person who stutters and the SLT, showed a positive effect in clinical and real-life settings alike that remained constant even at 24 months post-therapy. Results provide additional support for a possible connection between the person-centered approach and positive longer-term outcomes. The PWS’s level of satisfaction with and felt responses to elements integrated in stuttering therapy appear to be of great significance to the outcome of therapy. Evaluations from PWS need to be included as a basic source of information in stuttering treatment and further stuttering research. However, the absence of a control group in this study places a limit to certainty in interpretation of the results. The concept of shared decision making within a person-centered approach that emphasizes mindful, embodied awareness of the PWS in stuttering and stuttering therapy is therefore still emerging and needs to be explored further.

### **Data Availability Statement**

All data generated and analyzed during this study are included in this published article.

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