Training in Motivational Interviewing: Impact on client Change Talk in the Work and Income Context

A thesis submitted in partial fulfilment of the requirements for the

Degree of Master of Science in Psychology at the

University of Canterbury

By Anna Garland

2022

Table of Contents

Acknowledgements

Firstly, I would like to thank my supervisors for their ongoing support. Eileen, thank you for the data from your study, your time spent coding, and for your continued guidance and feedback from the beginning of this process. Sarah, thank you for your helpful guidance and feedback also.

To my darling son Jack, thank you for being an ongoing source of inspiration, motivation, and joy. Thank you for helping me to maintain some balance, and teaching me what is most important in life. I love you.

To my friends and Clinical classmates, thank you for your ongoing support; for the laughs, the debriefs, and the occasional statistical query, I appreciate you all so much.

ABSTRACT

Motivational Interviewing (MI) is an evidence based, client-centred approach to building motivation for change. It is an effective treatment for substance use disorders and has shown to be effective when applied to various other target behaviours, including increasing employment.

The current study set out to investigate the impact of training staff members from Work and Income New Zealand in MI, on change talk spoken by clients of the service. Data for this study was taken from a multiple baseline study conducted at Work and Income offices in the lower South Island of New Zealand (Britt et al., 2020a, Britt et al, 2020b). At baseline, participating staff members submitted audio-recordings of their standard practice with unemployed clients who were considered as being able to take up employment. Staff members then received 15 hours of workshop-based training in MI, followed by ongoing coaching and supervision. Following the workshop training staff members submitted audio-recordings of their MI sessions with unemployed clients who were considered to be able to take up employment. The current study consisted of two conditions: baseline (n = 19 audios) and intervention (post MI-workshop, n = 23 audios). All audios were coded using the Motivational Interviewing Treatment Integrity instrument, version 4.2.1 (MITI, 4.2.1) and the Client Language Easy Rating system (CLEAR).

The current study investigated the frequency of client change talk both independent of, and in relation to, sustain talk. Comparisons between baseline and intervention revealed a large positive effect (d = 1.12) of training in MI on the frequency of change talk uttered by clients. Contrary to hypotheses, staff members did not elicit an increasing pattern of change talk within sessions. In addition, greater skilfulness in MI post-workshop training did not

relate to an increase in client change talk. Implications of the current findings, as well as limitations of the study, and suggestions for future areas of research are discussed.

List of Figures

List of Tables

1. INTRODUCTION

1.1 Motivational Interviewing (MI)

Motivational Interviewing (MI) is an evidenced-based, client-centred approach to building motivation for change (Miller & Rollnick, 2013). It seeks to promote a safe and collaborative atmosphere in which clients can explore the idea of change without judgement or the expectation that they will choose to change. In MI clients are seen as being the experts in their own lives, with the freedom to make their own decisions (Westra & Aviram, 2013). Motivational Interviewing is a method of being and communicating with clients, as opposed to being something that is "done" to them, and focuses on eliciting intrinsic, as opposed to extrinsic motivation for change (Miller & Rollnick, 2013).

1.2 The Spirit of MI

The spirit of MI is comprised of four key components: partnership; acceptance; compassion; and evocation (Miller & Rollnick, 2013). *Partnership* refers to an active collaboration between two experts. The client is regarded as the expert on themselves, whilst the practitioner seeks to create an atmosphere that is conducive to change, but not coercive. This is achieved through exploration, interest and support, as opposed to persuasion, argument, or pressure to change. *Acceptance* is comprised of four, person-centred conditions: absolute worth, accurate empathy, autonomy support, and affirmation. The practitioner honours the client's inherent worth and potential as a human being, seeks to understand their internal perspective, recognises and supports their freedom to make their own decisions, and acknowledges their strengths and efforts. *Compassion* refers to a deliberate commitment by the practitioner, to promote the welfare and best interests of the client. The addition of this element helps to ensure that the practitioner is working for the client, as opposed to operating in pursuit of their own self-interest. *Evocation* is a process of enhancing intrinsic motivation

by drawing on the perceptions, goals and values of the client. It assumes that the client is equipped with the resources and motivation necessary for change to occur (Miller & Rollnick, 2013).

1.3 The Process of MI

In an attempt to capture what is encountered during the practice of MI, Miller and Rollnick (2013) described four overlapping processes (engaging, focusing, evoking, and planning) that together, describe the process of MI. These four processes are both sequential and recursive. Initial processes form a foundation upon which later processes are built, all of which may need to be revisited as change progresses. *Engaging* refers to a process of establishing a connection and a positive working relationship. Many factors, both within and outside of the immediate conversation, can either facilitate or undermine such a connection. For example, the setting in which the conversation is conducted, the emotional state of the practitioner and/or the client, and the client's current circumstances. Although not unique to MI, this therapeutic engagement is seen as a prerequisite for everything that follows, for without engagement, the following three processes cannot occur. Following the initial engagement, there is a shift towards a *focus* on a particular agenda. Through the process of focusing, the client specifies the changes that are hoped to arise, thus providing some context and direction for the conversation about change. Practitioners will typically come with their own agenda, which may or may not overlap with the client's, however the needs and wants of the client are given priority, in line with the spirit of MI. Once the change goal/s have been identified, the conversation flows into a process of *evoking*, whereby the client's own motivations for change are elicited. This process is at the heart of MI, and makes MI unique from other ways of working, essentially guiding the client to voice their own arguments for change. Once the client's motivation reaches a certain threshold, the conversation may move into the *planning* phase, which involves both developing a commitment to change and

formulating a specific plan of action. The practitioner's role in this process is to continue to elicit and strengthen change talk, as well as the client's own solutions to problems, and to promote the client's autonomy. According to Miller and Rollnick (2013) "planning is the clutch that engages the engine of change talk" (p.30), however such planning can only be achieved through the former processes. Planning, however, is optional as many people do not need to go through this planning phase, or to develop a formal change plan, in order to change (Miller & Rollnick, 2013).

1.4 Core Skills in MI

Miller and Rollnick (2013) identified five core communication skills which, although not unique to MI, may be considered prerequisite skills for reaching proficiency in MI. These skills are used strategically throughout MI to assist clients to move towards change, and the way in which they are employed varies with each of the four processes described above.

1.4.1 Asking Open Questions

In contrast to closed questions, which usually elicit short answers, open questions encourage the client to reflect and elaborate on their thoughts. Open questions are particularly relevant in MI, where the focus is not on gathering information, but on understanding the client, forming a collaborative relationship and establishing a clear direction (focus). Open questions play a vital role in evoking motivation and also in determining a plan of action.

1.4.2 Affirming

The application of this skill in MI is both general and specific. In general terms, the practitioner respects and honours the client's inherent worth and their capacity for change, as well as their freedom to choose whether to change. More specifically, the practitioner recognises and remarks on the client's unique strengths, abilities, good intentions, and efforts. The practitioner remains consciously attuned to such information throughout the encounter.

1.4.3 Reflective Listening

This is a fundamental skill in MI. Reflective statements that attempt to uncover the underlying meaning in what the client is saying help to deepen understanding. They also provide the client with the opportunity to hear their expressed thoughts and feelings again, which allows for further consideration, exploration, and elaboration. Importantly, the practitioner is selective with regards to the specific content that is reflected. Sustain talk is heard, respected, and acknowledged, however priority is given to any language spoken in favour of change.

1.4.4 Summarising

Summaries are essentially a collection of reflections that capture the key aspects of what the client has been saying. They can be used to make links between current and prior discussions, transition from one task to another, and collate what has been talked about at the end of a session. Accurate summaries promote understanding and demonstrate that the practitioner truly values what the client has to say, as well as provide another opportunity to reflect back change talk. They also provide an opportunity for clients to add anything important that they feel has been missed.

1.4.5 Informing and Advising

When delivering MI, practitioners often wrongly assume that they should never offer information or advice to clients, however there are occasions when it is appropriate for this to occur, for example when the client requests it. Within MI, it is important that the practitioner only offers information or advice with the client's permission. Furthermore, the practitioner must understand the client's needs and perspective, and support them to draw their own conclusions. The client is not obliged to agree with or act upon the information or advice given, and this should be openly acknowledged.

1.5 Efficacy of MI

Motivational Interviewing has a large evidence base, with more than 1700 controlled clinical trials worldwide and more than 100 meta-analyses and systematic reviews (Miller, 2019). Motivational Interviewing was originally developed to support individuals with alcohol-related problems to modify their drinking (Miller & Rollnick, 2013), however it is now recognised as an effective treatment across a range of substance use disorders such as alcohol, cannabis and cocaine (Burke et al., 2003; Hettema et al., 2005). Beyond the field of addictions, MI has also been found to be effective in facilitating change in various other target behaviours, including but not limited to, attendance and in-session engagement among psychiatric and dually diagnosed patients (Romano & Peters, 2015; Swanson et al., 1999), readiness to change among eating disorder patients (Dunn et al., 2006), dietary change (Burke et al., 2003), and treatment adherence in diabetes (Doherty & Roberts, 2002). New Zealand (NZ) data also suggest that MI may be effective in increasing motivation to change among those with criminal convictions (Anstiss et al., 2011; Austin et al., 2011), and as a preparation for treatment for adolescents with anxiety and depression (Dean et al., 2016), and for men attending stopping violence programmes (Soleymani, 2019). Motivational Interviewing is 10-20% more effective than no treatment and at least as effective as other treatment approaches across a range of areas (Lundahl & Burke, 2009). It is generally regarded as a brief intervention, making it more cost effective than many alternatives. For example, MI interventions have been found to take more than 100 minutes less on average when compared to other treatment approaches such as Cognitive Behaviour Therapy (CBT) and 12-step. Furthermore, treatment effects have been found to last up to one-year post-treatment (Lundahl et al., 2010). Motivational Interviewing is effective regardless of age, gender or problem severity and may be of particular benefit for ethnic minority groups (Hettema et al., 2005; Lundahl et al., 2010; Lundahl & Burke, 2009). It can be used both as a stand-alone

intervention and as a means of increasing an individual's motivation to attend or engage in another intervention (Hettema et al., 2005). With appropriate training and ongoing supervision and coaching, MI can be learnt without any prior training or professional background (Schwalbe et al., 2014).

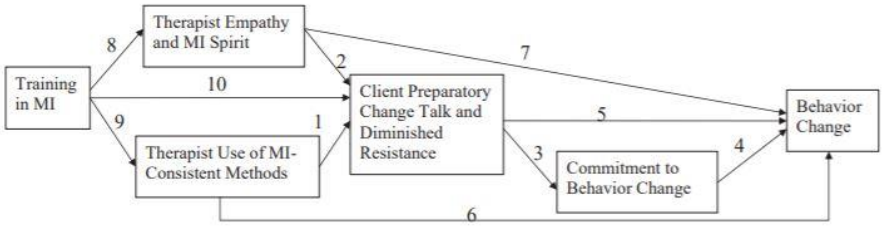
1.6 Client Change Talk

Change talk is hypothesised to mediate both proximal and long-term outcomes in MI (Miller & Rollnick, 2013). Change talk refers to client utterances in support of behaviour change, whereas sustain talk is used to describe speech favouring the status quo (Miller & Rollnick, 2013). Clinicians use reflections and open questions to evoke change talk and to encourage the client to elaborate further on their change talk. Through this process, change talk is strengthened and motivation increased by allowing the client to more fully engage with their own reasons for change (Westra & Aviram, 2013). This central tenet of MI has roots in self-perception theory (Bem, 1972) which posits that individuals develop insight into their attitudes and beliefs by observing their own behaviour and hearing themselves speak. There is consistent support for client change talk as a mechanism of change and a predictor of positive outcomes in MI (Apodaca & Longabaugh, 2009; Copeland et al., 2014; Morgenstern et al., 2012; Moyers, et al., 2009).

1.7 The Theory of MI

A theory of MI proposed by Miller & Rose (2009) identifies two active components: a relational component which is concerned with empathy and the spirit of MI and a technical component which relates to the process of evoking and reinforcing client change talk. The two components are not thought to operate in isolation, rather, it is the combination of technical and relational factors that is thought to influence outcomes. Figure 1 illustrates several pathways by which MI may influence behaviour change.

Figure 1. Hypothesised Relationships Among Process and Outcome Variables in Motivational Interviewing (MI).



Note. From "Toward a Theory of Motivational Interviewing*",* by Miller, W. R., & Rose, G. S. (2009). Toward a theory of motivational interviewing. *American Psychologist, 64*(6), 527–537. https://doi.org/10.1037/a0016830.

There is strong support for Paths 1 and 2 in Figure 1, with evidence suggesting that MI-consistent practice significantly increases client change talk and decreases resistance i.e. the reaction that occurs when we expect or attempt to force change that the client is not yet ready for (Magill et al., 2018; Miller et al., 2004; Moyers & Martin, 2006; Moyers et al., 2007; Pace et al., 2017; Schoener et al., 2006). Interestingly, only one of these studies found a decrease in sustain talk associated with MI consistent behaviours (Moyers et al., 2007). Two of the aforementioned studies found that MI consistent therapist behaviours were related to an increase in client change talk but also in sustain talk (Magill et al., 2018; Pace et al., 2017). Paths 3, 4 and 5 in Figure 1 relate to a theorised second link in the chain, namely the relationship between client change talk and outcome. It was hypothesised that behaviour change would be directly related to clients' change talk during MI; however early research failed to support this (Miller et al., 1993). It was later suggested that change talk may not operate as a singular construct (Amrhein et al., 2003). In collaboration with psycholinguist Paul Amrhein, Miller and colleagues determined that change talk can be separated into five subcategories which resemble components of natural language:

1. Desire – statements reflecting a willingness to change.
2. Ability – statements reflecting the ability to change.
3. Reasons – statements reflecting a rationale for changing the target behaviour.
4. Need – statements reflecting the need to change.
5. Commitment to change – statements indicating that the client will change.

They identified Commitment language as the only subcategory predictive of a change in outcome, with the strength of utterances and pattern across the session also implicated. Desire, Ability, Reasons, and Need are predictive of commitment language, however, do not directly predict outcome in terms of behaviour change (Amrhein et al., 2003). Consequently, change talk has been divided conceptually into *Preparatory language* (Desire, Ability, Reasons & Need) and *Mobilising language* (Miller & Rose, 2009), with mobilising language including Commitment talk, as well as Activation (indicating a movement towards change but falling short of a commitment) and Taking Steps (specific actions towards change).

With regards to the pattern of change talk, previous research has demonstrated an increasing pattern of change talk frequency across time within sessions (Amrhein et al., 2003; Neame, 2012). Amrhein (2003) further observed an increasing pattern of commitment language strength across time within session, and particularly at the end of the session, with this pattern found to be predictive of reduced substance use at follow up. Interestingly, in Neame's (2012) study an increasing pattern of overall change talk frequency was observed among those who demonstrated subsequent behaviour change, as well as those who did not. However, those in the change condition also demonstrated a decreasing pattern of sustain talk both within and across sessions. When examined as two independent frequency counts change talk has been identified as being unrelated to outcome, whilst sustain talk has been found to be associated with worse clinical outcomes (Magill et al., 2014; Magill et al., 2018; Pace et al., 2017). However, it has been suggested that client change language may be best

conceptualised as a balance of statements for and against change, as opposed to independently analysing the effects of change versus sustain talk (Magill et al., 2018).

The final links in the causal chain model involve training in MI. According to the theory (Miller & Rose, 2009), by training clinicians in MI there should be a change in practice behaviour, which leads to an increase in client change talk, and a subsequent improvement in client outcomes. Workshop-based training alone may not be sufficient to induce change in clients' behaviour (Hall et al., 2016). Feedback and coaching, both individually and combined, have been found to significantly improve and extend the effects of a 2-day workshop on clinicians' MI proficiency (de Roten et al., 2013; Schwalbe et al., 2014), with improvements in relational (Path 8 Figure 1) and technical skills (Path 9) (Miller et al., 2004). One might also expect to see an increase in client change talk as clinicians learn and practice MI (Path 10). Moreover, changes in practice behaviour may also influence client outcomes, through or apart from the mediation of change talk (Paths 6 and 7 in Figure 1) (Miller & Rose, 2009).

1.8 Measurement of MI

The explicit emphasis on the spirit of MI, as opposed to the techniques that comprise it, can present a challenge when identifying competence in the practice of MI (Moyers, 2004). While elements such as giving personalised feedback are somewhat easier to quantify, active ingredients in MI such as empathy can be difficult to measure reliably. Furthermore, goals in MI such as developing discrepancy between values and behaviours can be achieved using a range of processes that may not be captured by a simple procedural checklist (Moyers et al., 2005). Several authors have identified concerns regarding the quality and fidelity with which MI interventions have been delivered (Madson et al., 2005; Moyers et al., 2003). It has been argued that for psychotherapy research and training to advance, there is a need for instruments that assess adherence to evidence based treatments such as MI, as well as

practitioner competence (Madson & Campbell, 2006). The ability to evaluate adherence and competence will help to ensure that practitioners are appropriately following the tenets of MI, as well as providing the potential to facilitate skill development (Madson & Campbell, 2006). Over time, a number of coding instruments have been developed to measure practitioner and client behaviour, and provide an indicator of both the fidelity and effectiveness of MI.

The Motivational Interviewing Skills Code (MISC) is the original behavioural coding system providing comprehensive information about the process of MI. The most up-to-date version (MISC 2.1; Miller et al., 2008) considers the particular relevance of Commitment language in behaviour change and separates this from the other four language categories (Desire, Ability, Reasons and Need). The MISC 2.1 was designed to evaluate the quality of MI, however, it can also be used to measure the effects of training, expert level use of MI, and client language. It provides detailed information about therapist and client behaviours during MI sessions and may be considered the most precise MI coding instrument available (Moyers et al., 2003). The authors recommend a total of three coding "passes", where the rater codes three different criteria consecutively after listening to an audio-recording of an MI session, however they note that with experienced coders it may be possible to combine the second and third passes. The first pass provides a global rating of the practitioner and the client. Practitioners are rated on three dimensions (Acceptance, Empathy and Spirit) to provide an overall impression of their performance during the interview, whereas clients are assigned a single global rating based on their level of Self-Exploration. The second and third passes consist of ratings of both practitioner and client utterances referred to as behaviour counts. There are fifteen practitioner behaviour counts in total (Advise, Affirm, Confront, Direct, Emphasise Control, Facilitate, Filler, Giving Information, Question, Raise Concern, Reflect, Reframe, Support, Structure, Warn), and eight client behaviour counts (Reason [subcodes: Desire, Ability, Need], Other, Taking Steps, Commitment, Follow/Neutral). With

the exception of Follow/Neutral, each of these client behaviour counts is recorded with a positive or negative valence, depending on whether it reflects a tendency towards (Change Talk) or away from (Sustain Talk) the target behaviour change (TBC).

The MISC 2.1 (Miller et al., 2008) was intended to improve upon earlier versions in terms of reliability, efficiency, and relevance to both training and clinical practice, however psychometric data are still emerging. Whilst it has been acknowledged that the reliability and validity of an instrument must be re-established following any revisions, the changes are believed to have improved upon the original instrument (Miller et al., 2008). The MISC 2.1 is relatively labour intensive, given that three passes are typically recommended to code a single session of MI. Moreover, coders require intensive training and supervision to achieve a proficient and reliable standard, making the MISC less cost effective than other measures (Moyers et al., 2005).

The Client Language Easy Rating (CLEAR) coding system (Glynn & Moyers, 2012), previously known as the MISC 1.1, is a simple measure designed to classify and quantify client language as either Change Talk (CT) or Counter-Change Talk (CCT), otherwise referred to as sustain talk. It is an appropriate and efficient way to characterise these types of client language. As such, the CLEAR provides a measure of client language (change talk) that has been found to be predictive of future change. This coding system does not account for the different language categories, instead providing a simple tally of utterances, which is useful when all that is of interest is the quantity of CT and CCT in a MI session. There are several benefits to using the CLEAR, for example, given its simplicity it is relatively easy to be trained in and subsequently utilise. Furthermore, the CLEAR does not rely on session transcripts. One key advantage of the CLEAR is the ability to calculate the Percent Change Talk, which considers the frequency of change talk in relation to sustain talk (% CT = CT / [CT + CCT]), therefore providing a measure of the balance between pro-and-anti change

statements. The CLEAR is coded in just one pass making it less labour-intensive than other measures (Glynn & Moyers, 2012). It also provides a measure of practitioner efficacy, as this depends on eliciting and strengthening client change talk (motivation for change). The inclusion of the CLEAR is in line with recommendations for MI outcome research (Miller & Rollnick, 2013). Although data is not available regarding the psychometric properties of the CLEAR, the language categories are based on the client behaviour section of the MISC which has known psychometric properties. For example, Tappin et al., (2000) reported Intraclass Correlation Coefficients (ICCs) in the Excellent range (.77 for CT and .76 for CCT), with client behaviours found to be rated more reliably than therapist functioning. Furthermore, the CLEAR built on the MISC by using definitions of change talk consistent with more recent MI research.

The Motivational Interviewing Treatment Integrity (MITI) 4.2.1 coding instrument (Moyers et al., 2014) is designed to measure MI skilfulness and treatment fidelity, and provide structured feedback about ways to improve practice in real world settings. The MITI was derived from the MISC, however is substantially shorter, involving just one pass. It is a more condensed, reliable and economic version of the MISC, and can be used for training purposes or as a quality measure in clinical trials. Given the brevity of this system, it is important to note that key process variables, such as client change talk, are excluded, meaning that the MITI should not replace the MISC as a measure for examining causal mechanisms in MI. It may also be better suited to measuring foundational or entry level competence in MI, as opposed to more advanced skills (Moyers et al., 2005).

Coding the MITI 4.2.1 involves global ratings of both the relational component (partnership and empathy), and the technical component (cultivating change talk and softening sustain talk) of MI, as well as behaviour counts. Cultivating change talk provides a measure of the client's own language in favour of change and confidence in making that

change. Softening sustain talk measures the practitioner's ability to avoid focusing on reasons not to change. Partnership conveys that the client has the knowledge and wisdom necessary for change to occur. Empathy refers to the practitioner's attempts to understand the client's experience and perspective. Global scores involve the rater assigning a single number from a 5-point Likert scale to characterise an entire interaction (for example, an intervention session). A default score of "3" is the starting point and the coder moves up or down as indicated. Scores are designed to capture the rater's overall impression of the dimension, sometimes referred to as the "gestalt." The MITI 4.2.1 also includes ten behaviour counts: Giving Information, Persuade, Persuade with Permission, Question, Simple Reflection (SR), Complex Reflection (CR), Affirm, Seeking Collaboration, Emphasising Autonomy, and Confront. Behaviour counts are tallied for each occurrence and summary scores are generated. Behaviour counts require the coder to tally instances of specific practitioner behaviours from the beginning of the segment being reviewed until the end, without making a judgement as to the overall quality of the event. Emphasising Autonomy, Seeking Collaboration and Affirm are coded as MI-Adherent (MIA) behaviours, whilst Persuade and Confront are deemed MI Non-Adherent (MINA) behaviours. Other behaviours are tallied, however are not coded as MIA or MINA. The MIA behaviours exist within a hierarchy whereby the bar is intentionally set higher for codes of high importance in MI (i.e. those that are harder to achieve and of greater theoretical interest). This protects such codes from being assigned too easily. For example, the Emphasise Autonomy code, is of greater importance than the Seek Collaboration and Affirm codes, respectively: if the coder is unsure which code is most appropriate, then the lower code should be assigned.

The authors of the MITI suggest that summary scores, computed from code frequencies, may better capture the critical indices of MI functioning, as opposed to using individual scores (frequency counts). Such summary scores can be used to help determine

competence in MI. Below is a partial list of summary scores that can be used as outcome measures in determining competence in MI, along with formulas for computing them.

- Technical Global = (Cultivating CT + Softening ST) / 2
- Relational Global = (Partnership + Empathy) / 2
- % Complex Reflections = CR / (SR +CR)
- Reflection-to-Question Ratio = Total Reflections / (Total Questions)
- Total MI Adherent = Seeking Collaboration + Affirm + Emphasizing Autonomy
- Total MI Non-Adherent = Confront + Persuade

The MITI 4.2.1 proposes two levels of competence in MI - "fair" and "good". Below are the basic competence and proficiency thresholds for clinicians. It should be noted however that these are based on expert opinion, as opposed to being supported by normative or other validity data. Therefore, thresholds should always be used in conjunction with other data (Moyers et al., 2014).

Table 1. *Basic Competence and Proficiency Thresholds*

	Fair	**Good**
Relational	3.5	4
Technical	3	4
% CR	40%	50%
R:Q	1:1	2:1
Total MIA	-	-
Total MINA	-	-

The MITI represents a cost effective and focused tool for measuring competence in MI, and is particularly suited to clinicians, trainers and supervisors. For example, the MITI

has demonstrated good sensitivity for detecting improvement in clinical practice following training in MI (Moyers et al., 2005). It is also one of the only tools capable of measuring the technical hypothesis of MI (Owens et al., 2017). When financial, time or other constraints prohibit the use of the MISC, the MITI provides a reliable, sensitive and informative alternative (Moyers et al., 2005). It has demonstrated acceptable psychometric properties across a variety of research settings including cancer prevention and control (Campbell et al., 2009), addictions (Martino et al., 2008a; Martino et al., 2008b; Pierson et al., 2007; Turrisi et al., 2009), and HIV medication compliance (Parsons et al., 2007). Furthermore, summary measures have been found to correlate with client outcomes in the expected direction. For example, enhanced fidelity in terms of the spirit of MI and percentage of complex reflections has been found to predict cannabis cessation at three-month follow-up (McCambridge et al., 2011), whilst a higher reflection to question ratio was predictive of a reduction in both male and female aggression (Woodin et al., 2012). All items in the MITI have demonstrated inter-rater reliability in the good to excellent range (0.65 to 0.98) (Moyers et al., 2016; Owens et al., 2017). Owens et al., (2017) also reported on the predictive utility of the MITI, particularly as it relates to drug use outcomes, whilst Moyers et al., (2016) demonstrated satisfactory construct validity when comparing the cultivating change talk global rating against the change talk rating from the MISC.

Other specialised coding systems have also been developed to meet a range of needs within the field. Examples include, the Sequential Code for Observing Process Exchanges (SCOPE; Martin et al., n.d.) coding instrument (designed to measure the relationships between MI-specific practitioner behaviours and subsequent client behaviours) and the Motivational Interviewing with Significant Others (MISO; Apodaca et al., 2007) coding instrument (designed to measure the language of significant others, for example family members, who are participating in a session of MI).

1.9 Training in MI

Growing interest and enthusiasm for MI has created a significant demand for training. This led to the development of the Motivational Interviewing Network of Trainers (MINT; http://www.motivationalinterview.org). Founded in 1997, MINT is a professional organisation of more than 2000 members spread across the globe who train in over 55 different languages (Miller, 2019). Whilst 2-day workshops are most often requested of MINT trainers, data regarding the efficiency of such workshops is mixed (Baer et al., 2004).

Miller & Mount, (2001) evaluated the outcome of a 2-day workshop with masters' level parole officers using self-report measures and audio-recorded participant sessions. They reported large gains on self-report measures of MI skills and modest gains in MI consistent behaviours, as measured by post-training audios, however they found little to no reductions in MI inconsistent behaviours during subsequent interactions with clients. Changes in clinician behaviour that were observed immediately post-training, were not consistently maintained at four-month follow-up. Furthermore, client language (i.e. change talk and sustain talk) did not change as a function of training.

Baer et al., (2004) evaluated a 2-day training workshop on MI for addiction and mental health clinicians. The 14-hour training consisted of brief didactics and demonstrations, followed by experiential activities, and was delivered by experienced trainers. Clinicians also received handouts adapted from the work of Miller & Rollnick on the major tenets of MI. Participating clinicians were assessed using self-report and audio-recorded sessions with both real and standardised patients. Assessments were completed in the week prior to training (baseline), the week following training (post) and approximately two-months after the initial training (follow-up). On average clinicians appeared to develop skills in MI, some but not all of which were maintained over a two-month follow up, and approximately half of the sample were able to reach and maintain proficiency standards in a

majority of areas. It is noted however that clinicians were considered to be more skilful prior to training than a sample of parole officers studied previously (Miller & Mount, 2001), demonstrating fewer MI inconsistent behaviours at baseline. Perhaps prior clinical training provided a foundation from which MI consistent behaviours could be more easily adopted and maintained, compared to those from non-clinical backgrounds. Hall et al. (2016) suggest that the complexity of MI may reflect not only the acquisition of new skills and therapeutic processes, but also the suppression of previous practice behaviours that are inconsistent with the spirit of MI.

Miller et al., (2004) conducted a randomised trial with licensed substance abuse professionals comparing the following training conditions: (a) clinical workshop only; (b) workshop plus practice feedback; (c) workshop plus individual coaching sessions; (d) workshop, feedback and coaching; or (e) a waitlist control group or self-guided training. Audio-recorded sessions were analysed at baseline, post-training, 4, 8, and 12 months later. Relative to controls, participants in the four training conditions demonstrated larger gains in proficiency, with coaching and/or feedback leading to a further increase in proficiency.

Madson et al. (2009) carried out a review of MI training research, consisting of 28 studies published between 1999 and 2007, conducted with professionals from a variety of disciplines. The length of training was variable, ranging from less than 8 hours to more than 24 hours at the other extreme, however the majority of trainings ranged from 9 to16 hours. The most common methods for training involved a combination of didactic instruction and experiential activities. Some of the more involved trainings also included a coaching/supervision component, consisting of follow up/booster sessions and ongoing contact with the trainer, however the majority relied on workshop-based training alone. The studies varied with regards to the objectivity of outcome measures, however overall, the results were favourable with regards to the impact of training. There were reported increases

in participant confidence in using MI, acquired knowledge in MI and interest in advancing this knowledge, intention to use and actual integration of MI into practice, and improvements in MI related skills such as reflections and open-ended questions. Unfortunately, only a few of the studies examined the effect of training on client outcomes, and of those that did, findings were mixed. Furthermore, studies were primarily based on a pre-post-test design; therefore, no conclusions can be drawn regarding skill acquisition and implementation over time. Overall, the review pointed to inconsistencies in the length of training, the methods employed, and the use of psychometrically valid outcome measures, which combined, limit the inferences that can be made.

Dunn et al. (2015) examined and described within-provider variability in MI skill, that is, how consistent a provider's MI performance is from one session to another. The study used data collected from an effectiveness trial in which providers were trained to deliver single-session brief interventions (BIs) using MI for patients presenting with drug abuse in primary care settings. Interventionists included both routine and nonroutine providers. Routine providers were social workers employed by the primary care clinics. Non-routine providers consisted of research personnel who acted as on-call substitutes whenever a clinic social worker was unavailable. The training was delivered in four cohorts and consisted of workshop-based training (didactics, demonstrations, and skills practice) followed by up to five optional weekly sessions, during which providers engaged in telephone-based role plays. Sessions were audio-recorded, and providers received individual feedback from the trainer via email. All four cohorts received the same method of training, however there were inconsistencies in training dose, with the routine providers receiving more workshop-based hours than non-routine providers. Once the study commenced, all BIs were audio-recorded, with every fifth audio for each provider reviewed by the trainer. Feedback was subsequently provided via email. Providers received group supervision on a monthly basis for 1.5 hours,

during which an audio-recording would be reviewed. There would also be space to practice relevant MI skills. Individual face to face supervision was not provided during the study. A total of 15 providers were examined for up to three years post-training. There was a large degree of variability in MI integrity within-providers and in most cases, within-provider variability was greater than between-provider variability, suggesting that the quality of MI being delivered may not always be consistent. There was no evidence to suggest any considerable improvement in providers' skills over time. Dunn et al.'s findings raise questions as to the extent of ongoing coaching and supervision required to ensure that MI interventions are consistently delivered with a high degree of integrity.

In a meta-analysis by de Roten et al., (2013), MI training typically delivered in a 12 to 16-hour workshop, resulted in modest to robust gains in skill (effect size = .69), particularly when compared to control groups. They noted that gains in MI proficiency were further enhanced through ongoing coaching and feedback (effect size = .82) over time.

Schwalbe et al., (2014) conducted a meta-analysis of MI training studies in real world treatment settings. Across studies, training led to gains in MI skills with a medium to large effect (d = 0.76). On average three to four feedback/coaching sessions over a six-month period was sufficient to sustain skills among trainees. However, high rates of attrition from feedback/coaching contributed to the erosion of post-workshop skills over time.

Hall et al., (2016) conducted a systematic review of training outcomes for MI in the substance use disorder treatment sector. They considered sustained practice change to have occurred when over 75% of participants met beginning proficiency in MI spirit at follow-up. They identified 20 studies, 15 of which included follow-up using standard fidelity measures. For 11 of the studies, the proportion of clinicians who reached beginning proficiency was either reported or calculated. Only two studies demonstrated sustained practice change

according to the authors' criterion and of the twenty studies initially identified, only two measured client outcomes, with mixed results. The authors concluded that training is unlikely to result in sustained practice change unless competency is benchmarked and monitored, and training is ongoing.

The MI training literature is growing and there has been a notable improvement in the quality of studies in recent times. Of promise is the transition from primarily workshop-based trainings to those that include ongoing coaching and supervision, which is in line with current recommendations (Miller & Rollnick, 2013). However, more high-quality research is needed to determine the best practices for training in MI (Söderlund et al., 2011), as well as greater description of the exact methods used, so as to allow for replication (Madson et al., 2018).

1.10 The Impact of MI Training on Client Change Talk

Glynn and Moyers (2010) directly tested the idea that clinicians can manipulate client change talk. During a conversation about alcohol use, clinicians alternated (in 12-minute segments) between change talk evocation (CT from MI) and Functional Analysis (FA from Cognitive-Behavioural Therapy), reinforcing change talk in the CT condition only. Clients' use of change talk increased significantly during the CT condition, as opposed to the FA condition (64% in CT versus 51% in FA). Additional evidence comes from research by Moyers and colleagues, who found that MI consistent therapist responses were typically followed by client change talk, whilst MI inconsistent responses tended to be followed by sustain talk (Moyers & Martin, 2006; Moyers et al., 2007). Furthermore, psycholinguistic analysis of pre- and post-training session recordings has revealed a significant increase in the frequency and strength of client change talk following practitioner training in MI (Miller et al., 2004). Similar results have also been obtained with community mental health workers (Schoener et al., 2006) and Diabetes Nurse Educators (Neame, 2012).

Schoener et al. (2006) provided training in MI and ongoing supervision to a group of community mental health therapists working with clients with co-occurring disorders. The training was delivered by members of MINT and consisted of a 2-day didactic and experiential workshop. This was followed by 8-biweekly small group supervision sessions. Therapy sessions were audio-recorded and coded using the MISC (Moyers et al., 2003) to ensure fidelity to MI. Therapists demonstrated a significant improvement in MI skill following training in MI, which included both the acquisition of MI consistent behaviours and the suppression or reduction of MI inconsistent behaviours. With 2-days of training and ongoing supervision, therapists were able to achieve proficiency in MI despite the numerous demands on their time, and high, complex caseloads. Importantly, this change in therapist proficiency was accompanied by a significant increase in client Change Talk.

Taken together these results support the idea that clinicians can be trained to attend to and respond consistently to client change talk, and in doing so, can significantly increase the frequency with which clients speak favourably about change, and thereby maximise the likelihood of clients following through with behaviour change. If this is the case, and clinicians can be trained to utilize techniques reliably, then MI can be more widely disseminated, at relatively low cost (Glynn & Moyers, 2010). The current study adds to the research by explicitly examining the relationship between MI training and client change talk.

1.11 MI in the Employment Context

Motivation is thought to be an important element in returning to work, for example following sickness or injury, or in seeking employment. Many of the behaviours that MI has been found to address, for example substance use, engagement in mental health treatment, antisocial behaviour, physical health, and medication compliance, have also been identified as barriers to employment (Manthey et al., 2011). Motivational Interviewing has therefore been recommended as method of increasing employment among individuals receiving

employment support (Muscat, 2005; Wagner & McMahon, 2004), vocational rehabilitation (Lloyd et al., 2008; Manthey, 2009; Manthey et al., 2011; Page & Tchernitskaia, 2014; Wagner & McMahon, 2004) and career counselling (Stoltz & Young, 2013). The following is a review of studies of MI within the employment context.

Hampson et al.'s (2015) study comprised 26 individuals diagnosed with long-term mental illness randomised to either an experimental (intervention) or control group. Those in the intervention group participated in an hour long semi-structured session with a psychologist, designed to explore future goals and resolve ambivalence relating to reengagement with work, study or other social participation options. Participants were also provided with an information pack which outlined options for work, study, and community participation. Those in the control group were sent the same information pack by post. Psychologists delivering the intervention were required to complete pre-reading on the topic of MI before attending a 1-day workshop conducted by an accredited MI trainer. They also attended a half-day peer supervision session, to evaluate their adherence to MI principles through observation and feedback on audio-recorded MI sessions. At 12-month follow-up, the MI group were found to have significantly higher rates of employment than the control group, with a large effect size. However, the small sample size was noted as a limitation of the study, along with the lack of an objective measure of MI competency.

Secker and Margrove (2014) conducted a qualitative study in which employment consultants reported positive effects of using MI with clients recovering from mental illness, following training in the technique. Twelve employment support workers and two supervisors attended a 2-day MI training, followed by two 1-day refresher sessions. The training consisted of demonstrations, coaching and skills practice, and exercises. Interviews were carried out following the initial training and again nine-months later. Interviews were designed to explore staff members' experiences of using MI and their perceptions of the

impact for people in recovery. The authors described several potential benefits of using MI in employment settings, including reducing client resistance; resolving ambivalence relating to employment, including perceived barriers; and developing clear, realistic employment goals. They noted that training in MI for employment support workers merits further investigation, however suggested that the difficulties in using MI described by some employment support workers is indicative of a need for ongoing evaluation and support to develop and maintain MI skills.

A further qualitative study (Evolution Research, 2014) conducted by the Department of Social Services in Australia looked at the utility of MI with jobseekers with a disability. Disability Employment Services (DES) consultants participated in a 2-day training workshop, provided by a registered MI facilitator. The training consisted of formal presentations and practical workshop-based activities. During the implementation phase, DES consultants were required to trial MI techniques where appropriate, with as many participants as possible. Following training and implementation of MI staff and services users' perceptions, and use of, MI were evaluated through a combination of qualitative and quantitative data. Overall, the results were positive, and supportive of the use of MI with this population. They recommended that more research be conducted in this area, and specifically that future research include training in MI which is focused on MI for jobseekers; training is provided over time and its implementation supported systemically within the workplace; and changes in motivation and employment be measured over a longer time period. Limitations of this study included the lack of an objective measure of MI competency and limited data regarding the quantity and fidelity of the MI provided to service users.

In the only study to explore the mechanism of change within MI for employment focused conversations, Wewiorski et al., (2021) examined whether client change talk and sustain talk, as well as practitioner skilfulness, were associated with taking steps towards

employment (e.g. requesting a referral to supported employment or conducting a job search). The study included 195 MI conversations from 39 clients (unemployed veterans with a serious mental illness such as schizophrenia, bipolar, depression with psychotic features). Practitioners were the researchers from the study. Client change talk and sustain talk, and practitioner skilfulness were coded using an adaptation of the MISC 2.1 (Miller et al., 2008) and the MITI 4.2 (Moyers et al., 2014). The intensity of client change talk and sustain talk was rated as low (characterised by statements such as "maybe," "probably"), moderate (the default rating), or high (statements which include the likes of "very," "really," and "definitely"). Practitioner skilfulness was measured according to the proportion of open questions and complex reflections, the ratio of reflections to questions, and global technical and relational skills. Wewiorski, et al. (2021) found that the frequency and intensity of client change talk and sustain talk during a session positively and negatively respectively predicted a client taking steps toward employment. Furthermore, practitioners' MI technical proficiency (cultivating change talk and softening sustain talk) also predicted client behaviour change related to employment. Practitioners' relational proficiency and use of specific MI skills (e.g. % open questions, reflection to question ratio, or % complex reflections) were not found to predict client behaviour change. Given that this research was undertaken with a very specific population, it is unclear how the results might generalise to a general unemployed population, and for staff who work in these settings. A further limitation of the study is the absence of information regarding the MI training received by practitioners.

There is some support for the use of MI in the general employment context. Torres et al. (2019) conducted a randomised controlled trial investigating the impact of training in MI on Vocational Rehabilitation (VR) counsellors' counselling skills and their clients' engagement in return-to-work behaviours. Counsellors in the experimental group received 4-hours of workshop-based training in MI, followed by weekly voluntary coaching sessions

over a 4-week period. Compared to those in the comparison group, counsellors in the experimental group showed significant gains in their perceived MI competence, whilst their clients demonstrated improved engagement in VR services and stronger working alliances with their counsellors, based on self-report measures. In an attempt to ensure training fidelity, the authors developed a training manual consisting of 4-modules. All counsellors were then trained by the same trainer. Counsellors were provided with ongoing support in form of optional supervision, however of the 32 counsellors in the experimental group, only seven participated in follow-up sessions. Furthermore, there was no objective measure of the counsellors' adherence to MI, which limited the inferences that can be made.

Britt et al. (2018) conducted two studies in which unemployed and under-employed individuals' readiness to change was used to determine the level of intervention they received. The studies were conducted at Opportunities for Employment (OFE), a not for profit organisation that supports unemployed people in Canada to obtain employment. In Study 1, participants were randomly assigned to either an experimental or a control condition. Control participants received the standard OFE program which consisted of job search activities. Participants in the experimental condition attended the OFE program and received either group-based MI (consisting of two 3-hour workshops) or an individual MI depending on their readiness to change. In Study 2, participants attended the OFE program and received either group-based MI (consisting of three three-hour workshops) or an individual MI depending on their readiness to change, similar to the experimental condition in Study 1. Readiness to change was assessed objectively using the University of Rhode Island Change Assessment (URICA) scale (McConnaughy et al., 1983). Workshop and MI facilitators received 2-days of training in MI, as well as ongoing supervision and coaching provided by a member of MINT. All sessions were audio-recorded and the level of consistency between MI facilitators and the fidelity of the MI provided was evaluated using the MI Treatment

Integrity scale (MITI; Moyers et al., 2010). Britt et al. (2018) concluded that MI can lead to increased motivation for employment, increased engagement in employment programs and subsequently increased employment and retention in positions. Furthermore, this research included participants with physical disability (13%) and mental illness (23%) who are likely to experience significant barriers to employment. This research is the only study that has measured employment outcomes from MI provided within a context similar to the Work and Income New Zealand (WINZ) context. Moreover, it is the only study of MI in the employment context to have provided MI training and ongoing coaching and supervision consistent with recommendations by Miller & Rollnick, (2013).

In conclusion, it has been proposed that by increasing confidence and resolving ambivalence, MI can increase motivation to undertake work-related activities. Moreover, there is increasing evidence that MI can reduce long-term disability by increasing engagement with appropriate services and reducing dependence on welfare (Hampson et al., 2015). Stoltz and Young (2013) describe MI as an "untapped resource" in the career context, however they emphasize the need for focused training, given that the application of this approach without a firm understanding of the theory can produce ineffectual results that may strengthen individuals' resistance to change. By advancing research in this area there is potential for the use of MI to produce notable benefits for individuals who are under- or un-employed, as well as to society more generally.

1.12 The Present Study

It appears that MI training and the impact on client change talk warrants further investigation. Moreover, given that MI has been recommended as a method of increasing employment, further research in this area, and in the NZ context, is likely to be of benefit.

The present study evaluated the frequency of change and sustain talk, as well as the patterns across time within conversations between WINZ staff and unemployed clients. The relationship between MI skilfulness of practitioners and the frequency of change talk of clients was also explored. It was hypothesised that following workshop training in MI there would be:

1. A significant increase in client change talk, in terms of overall frequency of change talk and the ratio of change talk to sustain talk, but not necessarily a decrease in the overall frequency of sustain talk.
2. A pattern of increasing change talk in relation to sustain talk over time within sessions.
3. A significant difference between the three proficiency groups (Not MI, Fair, Good) in the frequency of change talk uttered by clients, with those deemed to have reached a "Good" level of proficiency in MI eliciting the most change talk.
4. A significant relationship between MI skilfulness (MITI scores) and client change talk, with higher scores/greater skilfulness in MI related to increased change talk. In particular, we expected to find a significant relationship between technical skilfulness and client change talk, with greater technical skill resulting in increased change talk (both frequency and change talk in relation to sustain talk).

2. METHOD

2.1 Research Design

The study comprised a multiple baseline design across WINZ staff, as this design is well suited to applied research (Blampied, 2013, Kazdin, 1982). A particular advantage of the design is that it allows the effectiveness of the intervention to be explored at the individual level. In this design an individual participant is the unit of analysis, and serves as his/her own control, with replications across participants. Statistical analysis was also applied at the group level.

2.2 Participants

Data for this study were collected as part of a larger study (Britt et al., 2020a, Britt et al, 2020b) which aimed to evaluate the effectiveness of MI provided by WINZ staff as a means of increasing motivation to seek training and/or employment, and engagement in training and/or employment. Ethical approval was granted by the Human Ethics Committee at the University of Canterbury and the Ministry of Social Development.

Participants for the current study included WINZ clients and frontline WINZ staff (n = 5) from offices in the lower South Island (Timaru, Dunedin, Invercargill). It was intended that data also be collected from the Nelson office; however, data collection, including from the lower South Island, was put on hold due to the Covid-19 pandemic.

Staff self-selected into the study after their managers suggested they may be interested and following their attendance at an information session on the study. Staff comprised four case managers and one work broker. Four were female and one male. Their age ranged from 34 to 60 years, with a mean age of 45.4 years. Length of employment with WINZ was also variable, ranging from 26 months to 25 years, with a mean number of years' experience of

15.8 years. In terms of ethnicity, four out of five staff members identified as NZ European, while one identified as NZ Māori/NZ European.

Work and Income clients were clients who had been deemed by WINZ to be able to take up employment, aged 18-64 years, and did not require an interpreter. Clients were invited to participate in the research by the WINZ staff member at their next appointment. Clients ranged in age from 19-44 years, with a mean age of 28.74 years. 55% of clients identified as female, whilst 45% identified as male. In terms of ethnicity, 67% identified as NZ European, 15% NZ Māori, 7% NZ Māori/European, 4% Chinese, 4% NZ Māori/Cook Island Māori, and 4% Samoan/NZ European.

2.3 Procedure

2.3.1 Baseline Phase

To establish a baseline, clients of each participating staff member were asked if they would be willing to participate in the research as a control group. During the 4-week baseline period n=19 participants received a conversation with the WINZ staff member as per standard practice. These sessions were audio-recorded and coded using the MITI 4.2.1 (Moyers et al., 2014).

2.3.2 Training Phase

Following the baseline phase, staff members received 15-hours (5-hours a day for 3-days held fortnightly) of workshop-based training in MI. The training took place during work hours and was provided by an experienced MI trainer who is a member of the MINT. The focus of the training was on supporting participants to adopt the basic style of MI and to continue to develop this in practice. Staff were introduced to the spirit of MI; the righting reflex (the tendency for people in helping professions to want to make things right and focus on solutions, as opposed to building motivation for change); the four processes in MI; the five

core skills; and methods for evoking and responding to change talk. The training consisted of video-recorded demonstrations, didactic teaching, modelling, and practice exercises with feedback. Throughout the training, participants were given multiple opportunities to practice and receive feedback on their MI skills.

Following the MI workshop training, staff continued to practice their MI skills during conversations with WINZ clients. Individual MI conversations focused on increasing the client's motivation to change some behaviour, in relation to obtaining employment. This could be more directly related to getting employment (e.g., preparing a curriculum vitae, attending training) or could be more distally related (e.g., receiving counselling for mental health issue, decreasing drug use, going to bed earlier to be able to wake up in time for work or to attend training).

These sessions were audio-recorded and coded using the MITI 4.2.1 (Moyers et al., 2014). There were 16 audios in total submitted by the 5 WINZ staff. Staff were then provided with individual feedback to further develop their MI skills.

Staff also attended group coaching every 2-weeks for 2-hours. These group coaching sessions used a learning community format developed by Miller and Moyers (2015). Segments (10-minutes) of two audio-recordings from two different staff were reviewed during each coaching session, and each staff member received feedback from the trainer and other staff members using a structured format, as per the leaning community guidelines, and individual feedback and coaching from the trainer at a later time. A total of six coaching sessions were conducted, the majority of which were delivered by the trainer who provided the MI workshop training. On two occasions, the sessions were provided by another member of MINT who is also an experienced MI trainer. Coaching sessions commenced

approximately 2-weeks after the workshop training. Sessions also continued once staff had begun recruiting for the intervention phase of the study.

2.3.3 Intervention Phase

Participating staff were able to begin recruiting participants for the intervention phase when they had reached a fair level of proficiency on the MITI on at least two audios, or at the end of 16 weeks of post-workshop individual feedback and coaching. All sessions were audio-recorded and coded during the intervention phase, and feedback and coaching continued to be provided.

During the intervention phase, staff met with clients who had consented to participate in the research as described above. It was intended that intervention participants would receive a 20 to 40-minute individual MI conversation, up to four times over 8-weeks (one session every 2-weeks). This decision was was based on research by Britt et al. (2018) which found that most participants showed increased motivation for employment within four sessions. Furthermore, whilst research that shows that one session of MI can be effective, additional sessions have been found to produce greater effects (Lundahl et al., 2010). However, the research was put on hold due to the Covid-19 pandemic with only one session having been conducted with all intervention clients. A total of five audios had been submitted at this point by four staff members.

In the current study the audios (n=23) from the training and intervention phases were used to evaluate the impact of MI training on client change talk.

2.4 Measures

All audio-recorded sessions (Baseline n=19, Post-workshop n=23) were coded using the Client Language Easy Rating (CLEAR) system (Glynn & Moyers, 2012) to measure the frequency of change talk within sessions, and the Motivational Treatment Integrity Scale –

MITI 4.2.1 (Moyers et al., 2014) as a measure of staff members' skilfulness in MI. Coding of the audios was completed by the members of MINT who were also involved with the training and coaching, and who are experienced coders, given that the writer was not named in the original Human Ethics application. It was hoped that there would be an opportunity for the writer to code additional data from the Nelson office, however this part of the research was put on hold due to the Covid-19 pandemic.

2.5 Reliability

Fifty percent of audios from pre-MI training (Baseline) and twenty percent of audios from post-MI training (Training and Intervention) were double coded to allow for inter-rater reliability checks. Both independent coders were blind to the other's ratings. Inter-rater reliability was considered acceptable when it was at least at a good level of agreement (see below). Data regarding inter-rater reliability for the MITI was taken from the wider study Britt et al., (in press). In this case, twenty percent of audios from the baseline and training phase were double coded using the MITI.

While several methods have been developed to measure inter-rater reliability, Intraclass Correlation Coefficient (ICC) was used in this instance. Intraclass Correlation Coefficient is more conservative than the Pearson correlation coefficient since it corrects for chance agreement and systematic bias. Intraclass Correlation Coefficient has been indicated as the reliability measurement of choice (Cicchetti, 1994) and has been used in comparable studies (Campbell, 2007; Neame, 2012). Table 2 outlines guidelines for interpreting the level of clinically significant agreement between raters (Cicchetti, 1994).

Table 2. *Guidelines for Interpreting the Level of Clinically Significant Agreement*

ICC Statistic	**Level of Agreement**
<.40	Poor

.40-.59	Fair
.60-.74	Good
.75-1.00	Excellent

Inter-rater reliability for the MITI was calculated using the kappa statistic (Britt et al., in press). Table 3 outlines the guidelines for the interpretation of the kappa statistic.

Table 3. *Guidelines for the Interpretation of the Kappa Statistic*

Kappa Statistic	**Level of Agreement**
≤ 0	No Agreement
0.01 – 0.20	None to Slight
0.21 – 0.40	Fair
0.41 – 0.60	Moderate
0.61 – 0.80	Substantial
0.81 – 1.00	Almost Perfect

2.6 Outcome Measures

Coded data were examined to determine whether there was any distinction between pre- and post-MI training with regards to the language WINZ clients used during sessions. Change talk frequency was the primary outcome measure investigated. In addition, the pattern of change talk within sessions was explored, as well as the relationship between MI skilfulness of practitioners, as measured by the MITI 4.2.1, and client change talk. In line with research by Amrhein et al., (2003), sessions were divided into ten equal deciles by dividing audio-recordings for each participant by time into ten equal intervals. Utterances were then coded and tallied in sequence to explore the pattern of change talk over the course

of the session. This was to test whether there was any difference in the slope of client utterances between pre-and-post-MI training.

2.7 Data Analysis

Coding data were entered into a spreadsheet. Given the variation in the length of audios, frequency ratings were calculated for total Change Talk and Sustain Talk (total change talk or sustain talk utterances divided by length of session). Frequency ratings were then used as the basis for comparison. Since the frequency data captured the frequency of change talk, independent of sustain talk, the percent change talk (calculated as Total CT/Total CT+ST*100) was also calculated, in order to explore the frequency of change talk in relation to sustain talk. Unless stated otherwise, data were analysed using IBM SPSS Statistics (Version 27). Where possible effect sizes were calculated using Cohen's *d* (1962), which is calculated by the difference between two means, divided by the pooled standard deviation. Cohen's (1988) guidelines for determining the size of the effect were used (see below).

Table 4. *Guidelines for Interpreting the Size of the Effect*

Cohen's *d* Statistic	**Size of Effect**
0.20	Small
0.50	Medium
0.80	Large

Hypothesis 1: Following workshop MI training there will be a significant increase in client change talk.

An Independent *t*-test was used to assess the mean difference in the frequency of client change talk between baseline and post-workshop training. Data were analysed to ensure that the assumptions for parametric testing were met. The Shapiro-Wilk test,

skewness, kurtosis, and plots were used to determine whether the underlying distribution was normal, with results indicating that data were normally distributed across both levels of the independent variable. Homogeneity of variance was tested using Levene's Test for Equality of Variances. This test produced a significant result, suggesting that the variance in the groups varied substantially, however, SPSS produced a modified *t*-test to account for the unequal variance.

The Mann-Whitney test was used to assess the mean difference in the frequency of client sustain talk between baseline and post-workshop training given that these data did not meet the assumptions for parametric testing described above.

An independent *t*-test was also used to assess the mean difference in the ratio of change talk to sustain talk between baseline and intervention.

Hypothesis 2: Following workshop training in MI there will be a pattern of increasing change talk in relation to sustain talk across time within session.

Sessions were divided by time into ten equal intervals. The Percent Change Talk was calculated for each decile within sessions. An exploratory data analysis process was employed, with data being transformed into visual plots using SPSS. The focus of this part of the study was to examine patterns in the data in terms of client change talk across time within session. This process was repeated for both baseline and post-workshop training for comparison.

Hypothesis 3: Following workshop training in MI there will be a significant difference between the three proficiency groups in the frequency of change talk uttered by clients.

The difference between the three proficiency groups was analysed using a series of one-way between group ANOVAs. Staff were grouped by their level of proficiency determined by the MITI ("Fair" or "Good" - see Table 1 Basic Competence and Proficiency

Thresholds p. 23). Those staff members who did not reach at least a Fair level of proficiency in MI were assigned to the "Not MI" group. Dependent variables included the frequency of change talk and the percent change talk. Analyses examined the differences between the three groups across four discrete MI skills (global relational, global technical, reflection to question ratio, percent complex reflections). Data were analysed to ensure that the assumptions for a one-way between groups ANOVA were met. Homogeneity of variance was tested using Levene's Test for Equality of Variances. This test produced a non-significant result, suggesting that the variance in the groups was approximately equal. Residual scores were also analysed to ensure that they followed an approximately normal distribution.

Hypothesis 4: Following workshop training in MI there will be a significant relationship between MI skilfulness (MITI scores) and client change talk.

The relationship between MI skilfulness and client change talk was analysed using a series of correlations. The relationships between technical global scores, relational global scores, reflection to question ratio, and frequency of client change talk were analysed using Spearman's correlation co-efficient which is most appropriate when dealing with ordinal level variables and when the assumptions for parametric testing are not met (reflection to question ratio). The relationship between percent complex reflections and frequency of client change talk was analysed using Pearson's correlation since the assumptions for parametric testing were met. Reflection to question ratios were converted to percentages for the purposes of conducting the analysis.

The relationships between technical global measures, relational global measures, percent complex reflections, reflection to question ratio, and the percent change talk were analysed using Spearman's correlation coefficient, since the assumptions for parametric testing were not met.

3. RESULTS

3.1 Reliability

Inter-rater agreement on the frequency of change talk utterances was found to be in the excellent range, with an ICC of .90 (p <.001). Inter-rater agreement on the frequency of sustain talk utterances was also found to be in the excellent range, again with an ICC of .90 (p <.001).

Inter-rater agreement regarding staff skilfulness ranged from moderate to perfect agreement (Britt et al., in press). Table 5 outlines the inter-rater agreement for all summary measures on the MITI 4.2.1.

Table 5. *Inter-Rater Agreement for Summary Measures on the MITI*

Summary Measure	**Level of Agreement (Kappa)**
Global Relational	Substantial (0.63)
Global Technical	Perfect (1.0)
R:Q	Moderate (0.50)
%CR	Substantial (0.61)
MIA	Perfect (1.0)
MINA	Moderate (0.55)

3.2 Mean Change Talk Frequency Pre- and Post-MI Training

There was a significant difference in the frequency of change talk between baseline and post-workshop training; t (37.48) = -3.88, p <.001. The difference was in the hypothesised direction, with practitioners evoking a higher frequency of change talk following training in MI (post-training mean change talk frequency $\bar{x}$ =69 [*SD* = .34]

compared to baseline mean change talk frequency $\bar{x}$ =37 [*SD* = .19]). This difference yielded a large effect size (Cohen's *d* = -1.12).

There was no significant difference in the frequency of sustain talk between baseline and post-workshop training *U* = 244, *p* = .70. The non-significant difference in sustain talk produced a very small effect size (Cohen's *d* = 0.12). Therefore, it appears that training in MI resulted in a significant increase in the frequency of client change talk but not a decrease in the frequency of sustain talk.

At baseline, the mean ratio of change talk to sustain talk was 3:1. Following specific training in MI, the mean ratio of change talk to sustain talk increased to 4.66:1. The difference in the ratio of change talk to sustain talk between pre- and post-training approached significance *t* (33.23) = -2.04, *p* = .05 and yielded a medium to large effect size (*d* = 0.60). This suggests that there was a meaningful difference in the ratio of change talk to sustain talk before and after workshop training in MI.

3.3 Pattern of Change Talk Across Time Within Sessions

Baseline data were examined at the individual level to determine the pattern of change talk, in relation to sustain talk, across deciles within session. Scatterplots were created for each individual audio (see Appendix A). At baseline 42.11% of audios demonstrated a pattern of increasing change talk, in relation to sustain talk. It is noted however, that there was significant variability in the strength of this pattern. All but one staff member demonstrated some ability to elicit increasing change talk in relation to sustain talk across deciles within session. A summary of this analysis is provided below in Table 4.

Post-MI workshop training data were also examined at the individual level to determine the pattern of change talk, in relation to sustain talk, across deciles within session. Again, scatterplots were created for each individual audio (see Appendix B). At intervention,

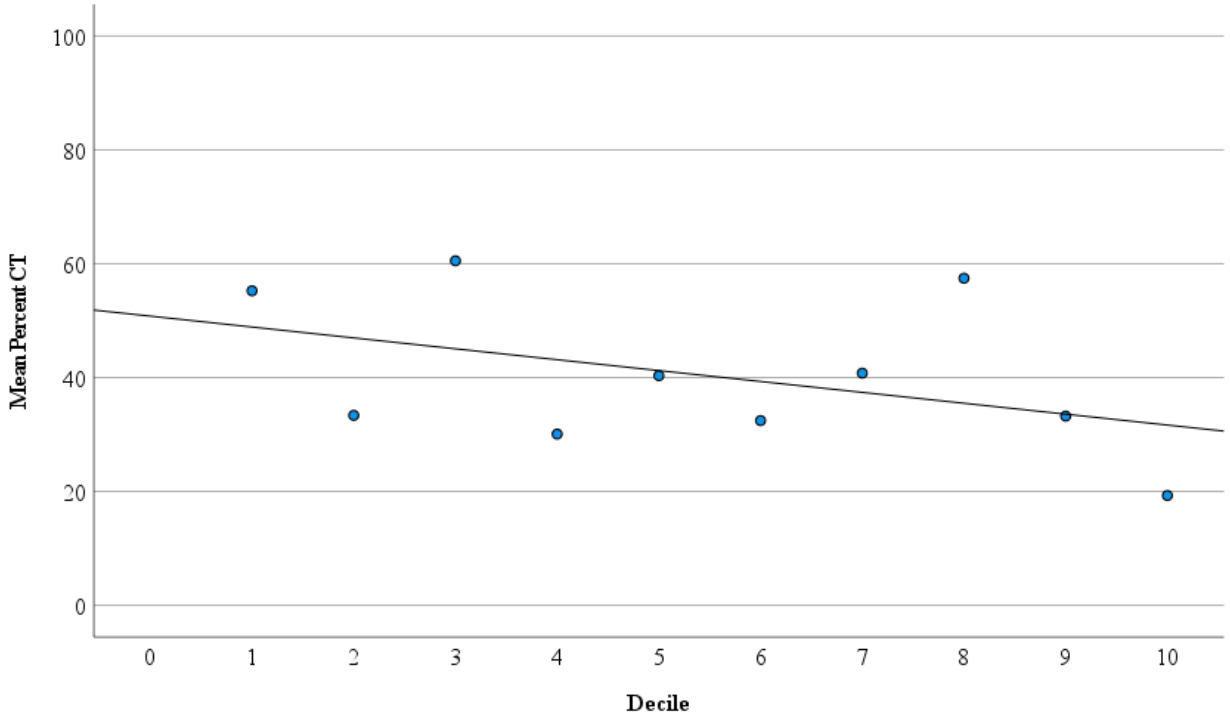
39.13% of audios demonstrated a pattern of increasing change talk, in relation to sustain talk, suggesting little difference in trends between pre- and post-MI workshop training. Again, all but one staff member demonstrated some ability to elicit increasing change talk, in relation to sustain talk across deciles within session. However, performance was inconsistent across all staff members. A summary of this analysis is provided below in Table 6.

Table 6. *Percentage of Audios Demonstrating a Pattern of Increasing Change Talk by Staff Member*

Practitioner ID	**Baseline**	**Post-Training**
A	66.67%	57.14%
B	25%	50%
C	66.67%	28.57%
D	0%	50%
E	25%	0%

Overall, the results from individual staff were quite variable. Two of the five staff elicited increased change talk from pre- to post-workshop training, and three elicited less change talk post-workshop training.

Figure 2. Baseline: Mean Percent Change Talk Within Sessions Across Deciles



Data were also analysed at the group level to determine the overall pattern of change talk, in relation to sustain talk, across deciles within session. Figure 2 indicates a weak, negative trend in the frequency of change talk spoken by clients at baseline, suggesting that the WINZ clients spoke less change talk as sessions progressed. This was expected given that staff members had not yet received specific training in MI.

Figure 3. Baseline: Mean Sustain Talk Frequency Within Sessions Across Deciles

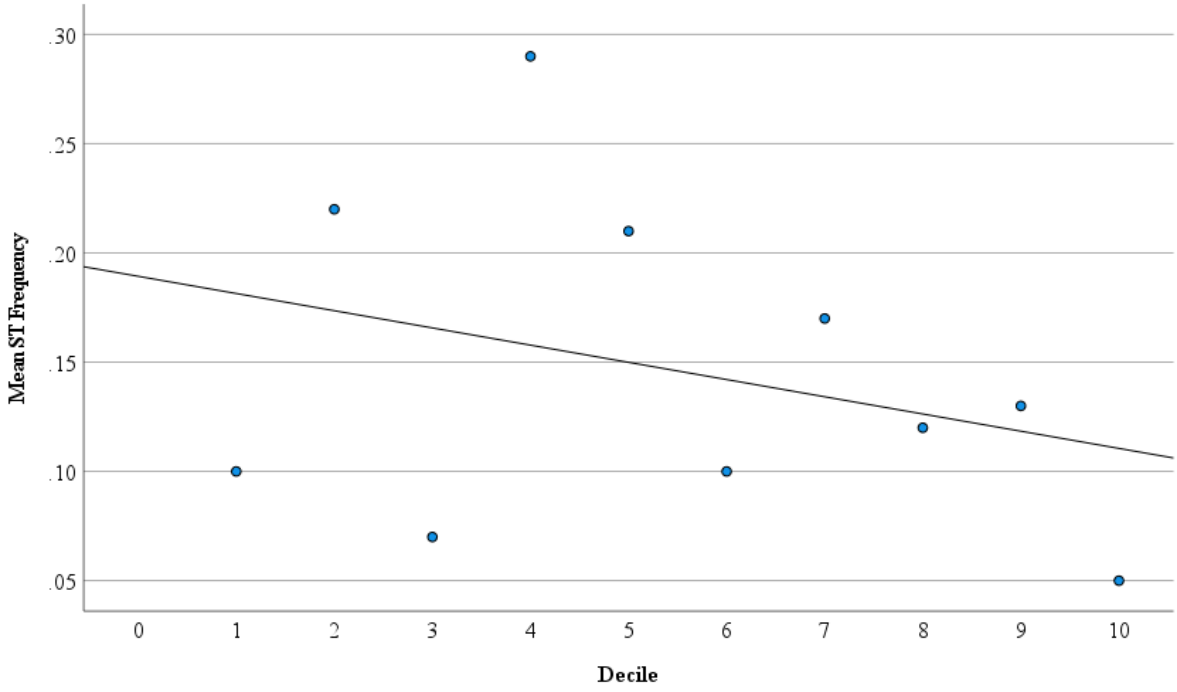
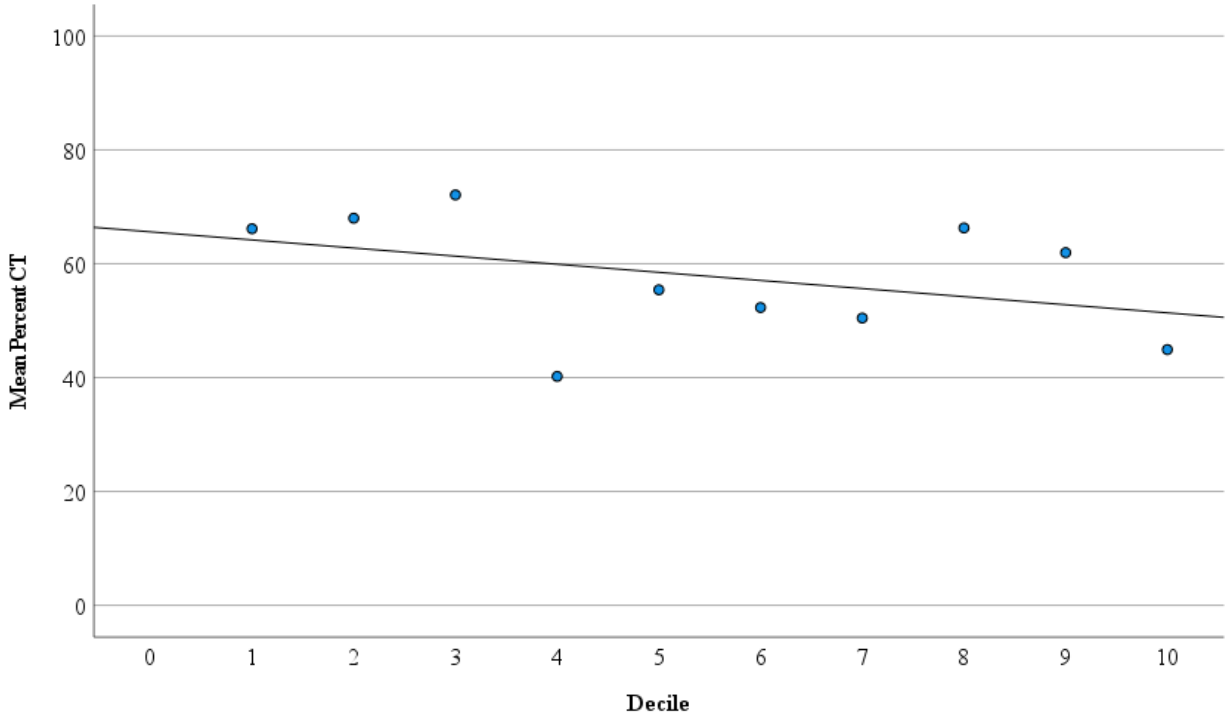


Figure 3 indicates a moderate, negative trend in the frequency of sustain talk uttered by clients at baseline, suggesting that the WINZ clients also spoke less sustain talk as sessions progressed.

Figure 4. Post-Training: Mean Percent Change Talk Within Sessions Across Deciles



Again, data were analysed at the group level to determine the overall pattern of change talk, in relation to sustain talk, across deciles within session. Figure 4 also indicates a weak, negative trend in the frequency of client change talk relative to sustain talk after staff had attended MI workshop training. This was contrary to what was expected given that staff attended MI workshop training.

Figure 5. Post-Training: Mean Sustain Talk Frequency Within Sessions Across Deciles

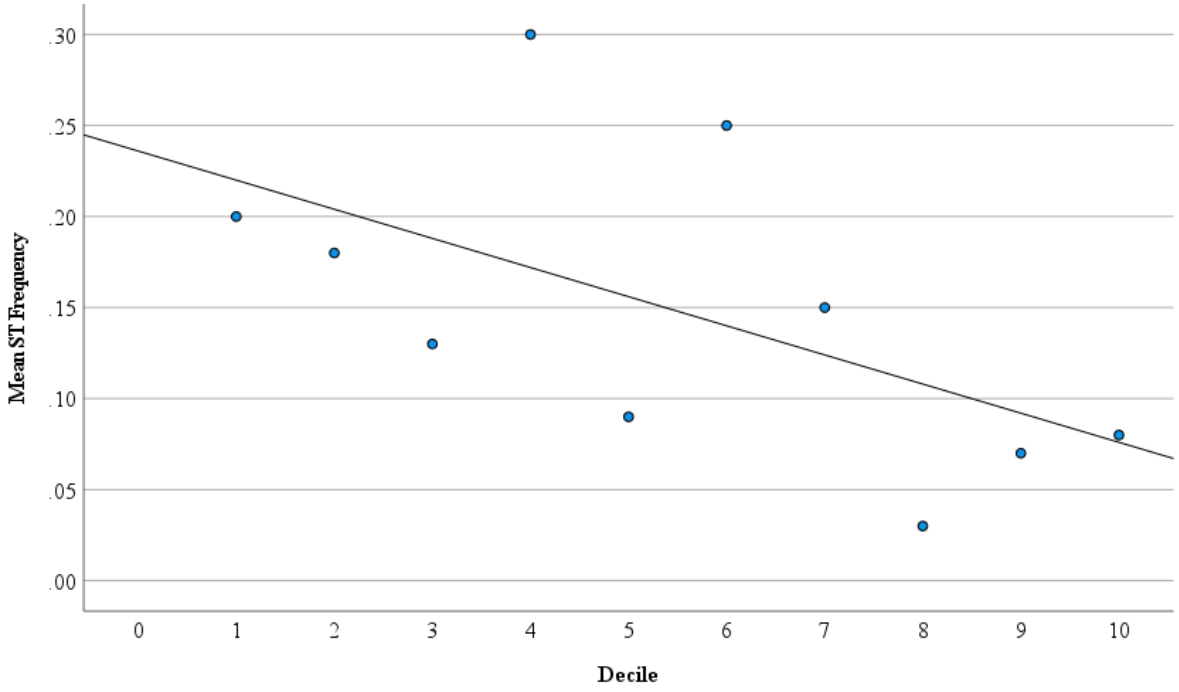


Figure 5 indicates a strong, negative trend in the frequency of sustain talk uttered by clients after staff had attended MI workshop training, suggesting that the WINZ clients also spoke less sustain talk as sessions progressed. This is the desired trend, given that greater sustain talk is known to be predictive of poorer clinical outcomes.

The results of the analysis of the group data are contrary to what was expected, with little to no improvement in staff members' ability to elicit increasing patterns of change talk, in relation to sustain talk, across deciles within session, between pre and post MI training. Taken together, results from this largely qualitative analysis suggest little to no improvement in staff members' ability to elicit an increasing pattern of change talk, in relation to sustain talk, across deciles within session. However, it is important to note the pattern of decreasing sustain talk across deciles within session, a trend which appeared to strengthen following workshop-based training in MI.

3.4 Differences in Client Change Talk Between the Three Levels of Proficiency in MI Post-MI Workshop Training

3.4.1 Global Technical Proficiency

Table 7 provides the means and standard deviations for each of the three groups for change talk frequency and percent change talk (a measure of change talk relative to sustain talk) according to their technical proficiency. Those staff members who were deemed to have reached a "Good" level of proficiency in MI the technical skills, achieved the highest mean change talk, including both frequency and percent change talk.

Table 7. *Means and Standard Deviations for Change Talk Frequency and Percent Change Talk According to Technical Proficiency*

Proficiency Rating	**N**	**Mean CT Frequency**	**SD**	**Mean Percent CT**	**SD**
Not MI	6	.62	.37	69.41	34.78
Fair	12	.66	.33	75.60	14.64
Good	5	.85	.39	92.41	9.61

The difference between the three groups (Not MI, Fair, Good) for the frequency of client change talk did not reach significance; F (2,20) = 0.70, p = .51, but produced a medium effect size (d = 0.53). The difference between the three groups (Not MI, Fair, Good), for the percent change talk also did not reach significance; F (2,20) = 1.76, p = .20, but produced a large effect size (d = 0.84).

Taken together, the results suggest that there was a meaningful difference (with a medium to large effect size) between the three groups in staff technical proficiency in both

frequency of change talk and the percent change talk, despite not meeting the threshold for statistical significance, with greater proficiency eliciting increased change talk.

3.4.2 Global Relational Proficiency

Table 8 provides the means and standard deviations for each of the three groups for change talk frequency and percent change talk, according to their relational skills. Those staff members who were deemed to have reached a "Fair" level of proficiency in MI for relational skills, achieved the highest mean change talk, including both frequency and percent change talk.

Table 8. *Means and Standard Deviations for Change Talk Frequency and Percent Change Talk According to Relational Proficiency*

Proficiency Rating	**N**	**Mean CT Frequency**	**SD**	**Mean Percent CT**	**SD**
Not MI	6	.70	.27	82.23	10.26
Fair	4	.75	.21	84.86	5.61
Good	13	.67	.42	77.64	27.57

There was no significant difference between the three groups for the frequency of client change talk elicited during sessions; F (2,20) = 0.07, p = .93. This analysis produced a small effect size (d = 0.17). The difference between the three groups (Not MI, Fair, Good for the percent change talk, also did not reach significance; F (2,20) = 0.60, p = .56, but produced a medium effect size (d = 0.49).

Taken together, the results suggest that there was a meaningful difference (with a medium effect size) between the three groups in staff relational proficiency for the percent

change talk, despite not meeting the threshold for statistical significance, with beginning proficiency eliciting increased change talk.

3.4.3 Percent Complex Reflections Proficiency

Table 9 provides the means and standard deviations for each of the three groups for change talk frequency and percent change talk, according to their percentage of complex reflections. Contrary to hypotheses, those staff members who did not reach proficiency in MI in terms of the percent complex reflections, achieved the highest mean change talk, including both frequency and percent change talk.

Table 9. *Means and Standard Deviations for Change Talk Frequency and Percent Change Talk According to Percent Complex Reflections Proficiency*

Proficiency Rating	**N**	**Mean CT Frequency**	**SD**	**Mean Percent CT**	**SD**
Not MI	4	.92	.17	80.99	6.67
Fair	2	.76	.40	75.31	1.25
Good	17	.63	.36	77.12	25.16

The difference between the three groups (Not MI, Fair, Good), for the frequency of client change talk elicited during sessions, did not reach significance; F (2,20) = 1.17, p = .33, but produced a medium to large effect size (d = 0.69). The difference between the three groups (Not MI, Fair, Good), for the percent change talk, also did not reach significance; F (2,20) = 0.06, p = .94, and produced a small effect size (d = 0.16).

Taken together, the results suggest that there was a meaningful difference (with a medium effect size) between the three levels of staff proficiency in the percent complex

reflections in the frequency of change talk (but not the percent change talk), despite not meeting the threshold for statistical significance, with a lack of proficiency eliciting increased change talk.

3.4.4 Reflection to Question Ratio Proficiency

Table 10 provides the means and standard deviations for each of the three groups change talk frequency and percent change talk, according to their reflection to question ratio. Those staff members who did not reach proficiency in MI in the reflection to question ratio, achieved the highest mean frequency of change talk. However, those who were deemed to have a reached a "Good" level of proficiency achieved the highest mean percent change talk.

Table 10. *Means and Standard Deviations for Change Talk Frequency and Percent Change Talk According to Reflection to Question Ratio Proficiency*

Proficiency Rating	**N**	**Mean CT Frequency**	**SD**	**Mean Percent CT**	**SD**
Not MI	11	.77	.25	81.69	8.64
Fair	7	.53	.49	68.14	36.55
Good	5	.75	.29	82.02	12.76

The difference between the three groups (Not MI, Fair, Good), in the frequency of client change talk elicited during sessions, did not reach significance; F (2,20) = 1.13, p = .34, but produced a medium to large effect size (d = 0.67). The difference between the three groups (Not MI, Fair, Good), in the percent change talk, also did not reach significance; F (2,20) = 0.97, p = .40, but produced a medium to large effect size (d = 0.62).

Taken together, the results suggest that there was a meaningful difference (with a medium-large and medium effect size, respectively) between the three levels of staff proficiency in the reflection to question ratio, in both frequency of change talk and the percent change talk, despite not meeting the threshold for statistical significance.

3.5 Relationship Between MI Skilfulness and Client Change Talk Post-MI Workshop Training

The following results are based on a dimensional analysis of staff skilfulness, as opposed to the categorical analyses based on proficiency data described above.

3.5.1 Global Technical Skills and Client Change Talk

There was a small, non-significant relationship between staff members' level of technical skilfulness and the frequency of client change talk; ρ (21) = .12, p = .60. There was also a small, non-significant relationship when using the percent change talk; ρ (21) = .22, p = .32. Based on these results, a higher level of staff technical skilfulness was not related to an increase in client change talk.

3.5.2 Global Relational Skills and Client Change Talk

There was a small, non-significant relationship between staff members' level of skilfulness in the global relational skills and the frequency of client change talk; ρ (21) = .08, p = .73. There was a small, negative, non-significant relationship when using the percent change talk; ρ (21) = -.11, p = .61. Based on these results, a higher level of staff relational skilfulness was not related to an increase in client change talk.

3.5.3 Percent Complex Reflections and Client Change Talk

There was a moderate, negative, significant relationship between staff members' level of skilfulness in the percent complex reflections and the frequency of client change talk; r (21) = -.42, p = .045. In this case, higher levels of staff skilfulness was related to a lower

frequency of client change talk. The direction of the effect differed from what was expected. However, there was a small, positive, non-significant relationship when using the percent change talk, which considers the frequency of change talk in relation to sustain talk; ρ (21) = .24, *p* = .27.

3.5.4 Reflection to Question Ratio and Client Change Talk

There was a small, negative, non-significant relationship between staff members' level of skilfulness in the reflection to question ratio and the frequency of client change talk; ρ (21) = -.07, *p* = .76. There was also a small, negative, non-significant relationship when using the percent change talk; ρ (21) = -.10, *p* = .66. Higher levels of staff skilfulness in the ratio of reflections to questions was not related to an increase in client change talk. Although not significant, the direction of the effect differed from what was expected.

3.6 Summary of Key Findings

Consistent with hypothesis one, there was a significant difference in the frequency of client change talk utterances between pre- and post-MI workshop training. Staff demonstrated a greater ability to elicit change talk from their clients following MI workshop training. Although there was no significant difference in the frequency of sustain talk utterances, there did appear to be a meaningful difference (medium to large effect size) in the ratio of change talk to sustain talk, which approached significance. This suggests that the frequency of change talk relative to sustain talk was greater post-MI workshop training.

Contrary to hypothesis two, there was a pattern of decreasing change talk, in relation to sustain talk, across deciles within session. Results were fairly consistent between pre- and post-workshop training, indicating little to no improvement across the two conditions. It was anticipated that as staff developed proficiency in MI, this would be reflected in the pattern of change talk uttered by clients. It is noted however, that overall sustain talk steadily decreased

within sessions. Whilst this pattern was observed at both pre-and-post-training, there was a stronger trend following MI workshop training. In examining data at the individual level, several audios across pre- and post-workshop training, did demonstrate a pattern of increasing change talk. This indicates some capacity to achieve the desired trend, however, was inconsistent across staff and conditions.

Hypothesis three examined the difference between the three levels of staff proficiency (Not MI, Fair, Good) on the MITI 4.2.1. across four discrete MI skills (technical, relational, percent complex reflections, and the ratio of reflections to questions), and client change talk, both independent of (i.e., frequency of change talk), and in relation to (i.e., percent change talk), sustain talk. Several medium-large effect sizes were obtained from this categorical analysis of proficiency data, indicating that the three groups did differ in such a way as to bear some practical relevance. Although the exact nature of the differences is unclear, the means and standard deviations for each of the three proficiency groups across the four discrete MI skills suggest where the differences lie. In terms of technical proficiency, the highest mean change talk frequency and percent change talk was observed among those deemed to have reached a "Good" level of proficiency in MI, which was expected. For relational proficiency, the highest mean change talk frequency and percent change talk was observed among those deemed to have reached a "Fair" level of proficiency in MI. However, the large standard deviations indicate greater variability among those with a "Good" level of proficiency, compared to "Not MI" and "Fair." In terms of the percentage of complex reflections, the highest mean change talk frequency and percent change talk was observed among those who did not reach proficiency in MI, which was contrary to predictions. For the reflection to question ratio, the highest mean change talk frequency was observed among those who did not reach proficiency in MI, however, the highest mean percent change talk was observed among those deemed to have reached a "Good" level of proficiency in MI.

Hypothesis four examined the relationship between staff skilfulness in the same four discrete MI skills (technical, relational, percent complex reflections, and the ratio of reflections to questions), and client change talk, both independent of (i.e., frequency of change talk), and in relation to sustain talk (i.e., percent change talk), using a dimensional approach. Overall, higher levels of practitioner skilfulness was not related to an increase in client change talk, and in the case of one outcome measure (percent complex reflections), greater skilfulness was associated with a decrease in the frequency of client change talk.

4. DISCUSSION

The purpose of the current study was to examine the relationship between MI workshop training and client change talk, in the employment context in NZ. The frequency of change talk and sustain talk were examined, as well as the pattern of change talk in relation to sustain talk, across time within sessions. The difference between the three proficiency groups (Not MI, Fair, Good) across four key MI skills in terms of client change talk, and the relationship between MI skilfulness across the same four key MI skills and client change talk was explored. This was to determine whether client language changed as a function of training in MI, and to what extent this was impacted by staff skilfulness.

4.1 Reliability

Reliability results obtained in the current study were in line with, if not exceeding, comparable studies (e.g. Campbell, 2007; Neame, 2012). Reliability estimates for the CLEAR were found to be in the excellent range, which gives a high degree of confidence that the data provided an accurate measure of client change language. Inter-rater agreement regarding staff skilfulness ranged from moderate to perfect agreement (Britt et al., in press).

4.2 Mean Frequency of Change Talk and Sustain Talk

After staff participated in MI workshop training, WINZ clients uttered significantly more change talk, compared to clients seen during baseline (pre-training). This was as hypothesised and was consistent with the results of previous research in relation to other target behaviours, such as substance abuse (Miller et al., 2004) and adherence/engagement with mental health treatment (Schoener et al., 2006). The large effect size suggests a meaningful difference; one which is likely to have practical significance in terms of the work undertaken by WINZ.

There was no significant difference in the frequency of sustain talk uttered by WINZ clients following staff workshop training in MI. However, it was not hypothesised that sustain talk would reduce as a function of MI workshop training. Previous research (e.g. Magill et al., 2014; Magill et al., 2018; Miller et al., 2004; Schoener et al., 2006) has reported only on the impact of training on client change talk, with no reference to sustain talk. Neame (2012) found that overall change talk *and* sustain talk frequency was higher in those who achieved more favourable outcomes. This suggests that sustain talk frequency in itself does not necessarily preclude behaviour change, but rather its occurrence relative to change talk is what is important for behaviour change, as discussed below.

Although there was no significant decrease in sustain talk between baseline and post-workshop training in MI, there was an increase in the ratio of change talk to sustain talk. Although not significant, the medium to large effect size suggests an important difference. This is pertinent, given that the ratio of change talk to sustain talk is known to be predictive of behaviour change (Miller & Rollnick, 2013). Miller & Rollnick (2013) note that over the course of a skilful MI session, sustain talk will continue to occur, but become less frequent, relative to change talk.

Taken together, these findings offer additional support for the positive impact of MI workshop training on staff MI skills and in turn on client change language. This provides support for the causal chain model (specifically link 10 see p.16) proposed by Miller and Rose (2009). The implications of this in terms of increasing employment among WINZ clients, warrants further attention.

4.3 Pattern of Change Talk Within Sessions

Overall, hypothesis two, relating to a pattern of increasing change talk across time within sessions following MI workshop training, was not met. Contrary to what was expected, overall change talk (relative to sustain talk), steadily decreased over time within sessions, which was also the pattern at baseline. This is in contrast to previous research in the areas of substance use and diabetes management (Amrhein et al., 2003; Neame, 2012) which has demonstrated an increasing pattern of total change talk over time within sessions; however, it is noted that these studies looked at change talk frequency, as opposed to percent change talk.

As highlighted by Miller and Rollnick (2013), it is the frequency of change talk, relative to sustain talk, that is of most importance in predicting behaviour change, as opposed to the frequency of change talk alone. In the current study overall sustain talk also steadily decreased within sessions. Whilst this pattern was observed at both pre-and-post-training, it is important to note that staff members demonstrated a stronger trend following MI workshop training. This finding is pertinent given the link between increased sustain talk and poorer clinical outcomes (Magill et al., 2014). For example, although Neame (2012) observed an increasing pattern of change talk among those who demonstrated subsequent behaviour change, as well as those who did not, those in the change condition also demonstrated a decreasing pattern of sustain talk within sessions. It is recommended that future research

further explore the pattern of change talk, relative to sustain talk, over time within session, as well as the impact of MI training on this.

At the individual level visual plots demonstrated a variable pattern of results. A number of audios pre- and post- MI workshop training demonstrated an increasing pattern of change talk, relative to sustain talk, across the ten deciles within sessions, but to varying degrees. Some showed a very weak trend, whereas others showed a moderate increase. However, there was a lack of any observable difference between pre- and post-workshop training, suggesting that the pattern of change talk within sessions did not alter as a function of the MI workshop training. It may be that this requires a higher level of skill that is developed with ongoing coaching post-MI workshop training. The current findings also reflect variability in the quality and fidelity of MI being delivered by the WINZ staff. A large degree of variability in MI integrity within providers has been reported previously (Dunn et al., 2015). Given that the slope of client change language, in addition to the mean, has been found to predict behaviour change (Amrhein et al., 2003), further study in this area appears warranted. More research is needed to determine the factors that contribute to an increasing pattern of change talk within sessions, including the extent of training and/or further coaching and feedback required to achieve this, as well as the influence of this on subsequent behaviour change, particularly in the area of employment.

4.4 Level of Proficiency in MI and Client Change Talk

4.4.1 Global Technical

The global technical component is the only measure of skilfulness that relates specifically to client change talk. It measures a practitioner's ability to both cultivate change talk (elicit language in favour of change and confidence in making that change) and soften sustain talk (avoids focusing on reasons not to change). Overall, the three groups did appear to differ in the frequency of change talk (both frequency and percent change talk), uttered by

WINZ clients pre- and post-MI workshop training. Although not statistically significant, the medium to large effects sizes indicate a meaningful difference that warrants further investigation. The means for both change talk frequency and percent change talk (change talk relative to sustain talk) were highest among those staff members deemed to have reached a "Good" level of proficiency in MI, which suggests that the differences may have been in line with predictions, that staff members showing greater technical proficiency in MI would elicit increased change talk from clients.

The three levels of proficiency were based on the thresholds recommended by Moyers et al. (2014). The authors noted that these thresholds were based on expert opinion, as opposed to being supported by normative or other validity data. Therefore, future research in this area, using larger sample sizes, may help to further clarify the validity and clinical utility of these proficiency thresholds.

4.4.2 Global Relational

The global relational component is comprised of partnership and empathy. It provides a measure of a practitioner's ability to convey confidence in the client's knowledge and wisdom, as well their attempts to understand the client's unique experience and perspective. Therefore, it is not specifically related to client change language, however, is important in cultivating a relationship in which meaningful conversations about change can occur. Overall, the three groups did appear to differ in the frequency of change talk, relative to sustain talk, uttered by WINZ clients. Although not statistically significant, the medium effect size indicates a meaningful difference that would warrant further investigation, particularly in order to understand where the differences lie. The means for both change talk frequency and percent change talk were highest among those staff members deemed to have reached a "Fair" level of proficiency in MI, as opposed to those demonstrating the highest level of MI skill. Whilst not in line with predictions, these results suggest that staff members

who elicited the highest frequency of client change talk, relative to sustain talk, demonstrated a reasonable level of skill in the relational aspect of MI, which is encouraging. Future research might also examine additional practitioner variables that might help to account for these findings.

4.4.3 Percent Complex Reflections

Reflections are a key component of all client-centred counselling approaches. In MI, reflections are classified in one of two ways, based on their overall complexity. Simple reflections involve repeating or paraphrasing what the client has said. Complex reflections on the other hand attempt to uncover the underlying meaning in what the client has said (Miller & Rollnick, 2013). Complex reflections therefore involve a greater level of skilfulness.

Overall, the three groups did appear to differ in the frequency of change talk, uttered by WINZ clients. Although not statistically significant, the medium to large effect size indicates a meaningful difference that would warrant further investigation, particularly in order to understand where the differences lie. Of note is that the means for both change talk frequency and percent change talk were highest among those staff members who did not reach proficiency in MI. Reflections, both simple and complex, serve the function of encouraging the client to speak more, providing the opportunity for change talk to emerge naturally, regardless of the intentionality of the reflection. Therefore, staff who had not yet reached proficiency in MI may have elicited greater change talk from clients through their use of simple reflections, as opposed to complex. Complex reflections serve to demonstrate a deeper understanding of the client and are more likely to elicit longer responses in which clients talk more extensively and more deeply, than is the case for simple reflections. When using complex reflections, the staff may have encouraged longer responses from the clients which may not necessarily have had more change talk within them. Additionally, complex reflections can be used to soften sustain talk as well as elicit and strengthen change talk. It

may be that more extensive coaching and feedback post-workshop training is required to achieve skilfulness in complex reflections that elicits more change talk and softens sustain talk.

4.4.4 Reflection to Question Ratio

Overall, the three groups did appear to differ in the frequency of change talk (both frequency and percent change talk) uttered by WINZ clients. Although not statistically significant, the medium to large effect sizes indicates a meaningful difference that would warrant further investigation, particularly in order to understand the nature of these differences. The mean change talk frequency was highest among those staff members who did not reach proficiency in MI. It is possible that by simply asking questions, as opposed to reflecting, as seen in the typical "Not MI" question and answer style, there is more opportunity for change talk to occur compared to a more skilful MI conversation where the pace would be slower.

However, when considering the frequency of change talk relative to sustain talk, the mean was highest (albeit marginally) among those who had achieved a "good" level of proficiency. This lends some support for the suggestion that in skilful MI practice, sustain talk will continue to occur, but become less frequent, relative to change talk. For example, in their most recent meta-analysis, Magill et al., (2018) found that staff proficiency in using key MI skills (e.g. open questions, complex reflections, and affirmations) was positively associated with both change talk and sustain talk, but that the proportion of change talk was predictive of outcome.

4.5 Staff Skilfulness in MI and Client Change Talk

4.5.1 Global Technical

The findings regarding the dimensional relationship between technical skilfulness and client change talk, were not in line with predictions. Higher levels of staff skilfulness on the global technical component, did not relate to an increase in the frequency of change talk uttered by WINZ clients. This was true for both change talk frequency and percent change talk. Such findings are especially surprising given the explicit link between global technical skills and client change language, and the differences in means between the three proficiency groups described above. Given the link between practitioner technical skilfulness and client behaviour change (e.g. Wewiorski et al., 2021) it is recommended that future research explore this relationship using a larger sample size, given the likely issues with reduced power occurring in the current study.

4.5.2 Global Relational

The findings regarding the relationship between relational skilfulness and client change talk were not in line with predictions. Higher levels of staff skilfulness on the global relational component did not relate to an increase in the frequency of change talk uttered by WINZ clients. This was true for both change talk frequency and percent change talk. Furthermore, although not significant, the direction of the effect for the percent change talk, differed from what was expected (negative relationship). Given the differences in means between the three levels of proficiency, when considered categorically, in terms of the percent change talk, it is possible that higher levels of relational skilfulness may in fact relate to a decrease in the frequency of change talk (relative to sustain talk) uttered by clients. However, these findings were not statistically significant, and conclusions cannot be drawn. The lack of significant findings may relate to the fact that the relational component provides a measure of clinical skills that are not necessarily unique to MI, and that are independent of

client change language. Again, it is recommended that future research explore this relationship using a larger sample size, given the likely issues with reduced power occurring in the current study (discussed further below).

4.5.3 Percent Complex Reflections

Higher levels of staff skilfulness in percent complex reflections (greater use of complex reflections relative to simple reflections), was related to a decrease in the frequency of change talk uttered by WINZ clients. Such findings were not in line with predictions. Although not statistically significant, the direction of the effect reversed for the percent change talk. That is, greater proficiency in the use of complex reflections relative to simple reflections was associated with a higher frequency of change talk, relative to sustain talk. However, the lack of statistical significance means that conclusions cannot be drawn.

One potential explanation for these findings is that the MITI4.2.1 does not differentiate between the types of change language being reflected (i.e. change talk and sustain talk) when counting reflections. A practitioner may score highly in their proficiency in making complex reflections, however, they may reflect in such a way as to elicit sustain talk as opposed to change talk. Additionally, perhaps it is only with ongoing post-workshop coaching and feedback, and top-level proficiency, particularly in terms of technical skill (cultivating change talk and softening sustain talk), that we might expect to find a relationship between percent complex reflections and client change talk. Further research is recommended in order to explore this hypothesis.

4.5.4 Reflection to Question Ratio

Higher staff skilfulness in the reflection to question ratio did not relate to an increase in the frequency of change talk uttered by WINZ clients. This was true for both change talk frequency and percent change talk. Such findings were not in line with predictions.

Furthermore, although not significant, the direction of the effect differed from what was expected. These results suggest that a higher reflection to question ratio may in fact relate to a decrease in the frequency of change talk uttered by clients. Again, this may relate to the inability to differentiate between reflections in favour of change, and those in favour of maintaining the status quo as described above, as well as the opportunity for change talk to emerge through questioning as opposed to reflecting. However, these findings were not statistically significant and conclusions cannot be drawn.

4.6 Limitations

The greatest limitation of the current study was the small sample size (baseline audios n = 19 and intervention audios n = 23). The small sample size likely contributed to reduced power, which in relation to hypothesis three, would have been further exacerbated by the splitting of data into three distinct groups. Power refers to the ability of a test to detect an effect that genuinely exists, therefore increasing the probability of type two error and compromising tests of statistical significance (Field, 2013). Furthermore, the small sample size also limits the generalisability of the findings. It was intended that data collection would be ongoing and extend to other WINZ offices, contributing to a much larger sample size both in terms of the staff and clients, however the data collection was halted due to the impacts of Covid-19.

Most of the results in the current study were statistically insignificant, which may be attributed to the small sample size. Post hoc tests were not conducted due to the non-significant results, resulting in a lack of clarity regarding the nature of any hypothesised differences.

One of the criticisms of null hypothesis significance testing, is that statistical significance does not provide us with an indication of the importance of any effect (Field,

2013). The recommended solution is to report on effect sizes, which provide a measure of the magnitude of difference between groups and are independent of sample size (Sullivan & Feinn, 2012). Several moderate to large effect sizes were found in the current study, which may be an important indicator of the true differences between groups. Further studies with larger sample sizes, that also report on effect sizes are recommended.

The current study evaluated overall change talk, both in terms of frequency and the percent change talk. However, previous research (e.g. Amrhein et al., 2003) has demonstrated that the type of change talk, as well as the strength of utterances, may be more important for positive outcome, than the overall frequency of change language. It is therefore recommended that future research looks more specifically at the type and strength of change language being uttered.

4.7 Conclusions

The current study set out to explore the impact of workshop-based training in MI on change talk among clients of WINZ who had been identified as being capable of taking up employment. This research also attempted to provide some insight into the relationship between practitioner skilfulness in MI and two outcome measures of client change talk: frequency and the percent change talk. The study provides preliminary evidence that MI training for WINZ staff resulted in a statistically significant increase in the frequency of change talk uttered by WINZ clients. Furthermore, training in MI appears to contribute to an increase in the ratio of change talk to sustain talk, which is known to be important in predicting subsequent behaviour change.

However, the main findings regarding the pattern of change talk across deciles within session was inconsistent with previous research, with an overall decrease in the frequency of change talk (relative to sustain talk) uttered by clients over the course of sessions, both prior

to and following training in MI. The findings regarding the pattern of sustain talk across deciles within session, however, were consistent with previous research, with an overall decrease in the frequency of sustain talk uttered by clients over the course of sessions, in particular following MI workshop training.

There appeared to be a difference in the frequency of change talk uttered by clients according to the proficiency thresholds achieved by staff, as indicated by several medium to large effect sizes. However, the exact nature of these differences was unclear. Overall, change talk did not appear to reliably increase as a function of proficiency in specific MI skills. Furthermore, proficiency in the percent complex reflections was related to a decrease in the frequency of change talk uttered by client. A more detailed analysis of the types of client language being reflected is recommended in order to better understand this relationship.

To our knowledge, this study was the first to explicitly examine the impact of training in MI on client change talk with a general unemployed population in NZ. Therefore, research with which to compare and contrast findings was limited. However, the main findings regarding the overall increase in client change talk following training in MI was consistent with previous research in other areas of behaviour change. Further research needs to be undertaken in order to support and expand the current findings, so that the impact of training in MI, particularly among those who are under or unemployed, may be better understood. This should include attention to the impact of training on subsequent behaviour change (e.g., engagement in training or paid employment). With further knowledge and understanding, changes may be implemented with a view to enhancing standard practice among frontline WINZ staff.

5. REFERENCES

Amrhein, P. C., Miller, W. R., Yahne, C. E., Palmer, M. l., & Fulcher, L. (2003). Client Commitment Language During Motivational Interviewing Predicts Drug Use Outcomes. *Journal of Consulting and Clinical Psychology, 71*(5), 862-878.

Anstiss, B., Polaschek, D. L. L., & Wilson, M. (2011). A brief motivational interviewing intervention with prisoners: When you lead a horse to water, can it drink for itself? *Psychology, Crime & Law, 17*(8), 689-710.

Apodaca, T. R., & Longabaugh, R. (2009). Mechanisms of change in motivational interviewing: A review and preliminary evaluation of the evidence. *Addiction, 104*(5), 705-715.

Apodaca, T., Manuel, J. K., Moyers, T., & Amrehin, P. (2007). Motivational Interviewing with Significant Others (MISO) Coding Manual. Retrived from https://casaa.unm.edu/download/miso.pdf

Austin, K. P., Williams, M. W. M., & Kilgour, G. (2011). The effectiveness of motivational interviewing with offenders: An outcome evaluation. *New Zealand Journal of Psychology (Christchurch. 1983), 40*(1), 55-67.

Baer, J. S., Rosengren, D. B., Dunn, C. W., Wells, E. A., Ogle, R. L., & Hartzler, B. (2004). An evaluation of workshop training in motivational interviewing for addiction and mental health clinicians. *Drug and Alcohol Dependence, 73*(1), 99-106.

Bem, D.J. (1972). Self-perception theory. Advances in Experimental Social Psychology, 6, 1-62.

Blampied, N.M. (2013). Single-case research designs and the scientist-practitioner ideal in applied psychology. In G. Madden (Editor-in-Chief). *APA Handbook of Behaviour Analysis, Vol 1. Methods and Principles* (pp. 177-197). Washington, DC: American Psychological Association.

Britt, E., Sawatzky, R., & Swibaker, K. (2018). Motivational Interviewing to Promote Employment. *Journal of Employment Counseling, 55*(4), 176-189.

Britt, E., Soleymani, S. & Wallace-Bell, M. (2020a). Motivational Interviewing within Work and Income: Interim Report Analysis of Group Data from the Lower South Island. Report for the Ministry of Social Development, New Zealand.

Britt, E., Soleymani, S. & Wallace-Bell, M. (2020b). Motivational Interviewing within Work and Income: Interim Report Analysis of Single Case Data from the Lower South Island. Report for the Ministry of Social Development, New Zealand.

Britt, E., Soleymani, S., Wallace-Bell, M & Garland, A. (in press). Motivational Interviewing for Employment: An exploration of practitioner skill and client change talk. *Journal of Employment Counselling*.

Burke, B. L., Arkowitz, H., & Menchola, M. (2003). The efficacy of motivational interviewing: A meta-analysis of controlled clinical trials. *Journal of Consulting and Clinical Psychology, 71*(5), 843-861.

Campbell, S. (2007). Process of Motivational Enhancement Therapy: Relationships between therapist and client behaviours, and alcohol use outcome. Masters thesis; University of Canterbury.

Campbell, M. K., Carr, C., DeVellis, B., Switzer, B., Biddle, A., Amamoo, M. A., Walsh, J., Zhou, B., & Sandler, R. (2009). A randomized trial of tailoring and motivational

interviewing to promote fruit and vegetable consumption for cancer prevention and control. *Annals of Behavioral Medicine, 38*(2), 71-85.

Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment, 6*(4), 284-290.

Cohen, J. (1962). The statistical power of abnormal social psychological research: A Review. The Journal of Abnormal Social Psychology, 65, 145-153.118

Cohen, J. (1988). Statistical power analysis for the behavioural sciences (2nd ed.). Hillsdale, NJ: Erlbaum.

Copeland, L., McNamara, R., Kelson, M., & Simpson, S. (2014). Mechanisms of change within motivational interviewing in relation to health behaviors outcomes: A systematic review. *Patient Education and Counselling, 98*(4), 401-411.

Dean, S., Britt, E., Bell, E., Stanley, J., & Collings, S. (2016). Motivational interviewing to enhance adolescent mental health treatment engagement: A randomized clinical trial. *Psychological Medicine, 46*(9), 1961-1969.

de Roten, Y., Zimmermann, G., Ortega, D., & Despland, J. (2013). Meta-analysis of the effects of MI training on clinicians' behavior. *Journal of Substance Abuse Treatment, 45*(2), 155-162.

Doherty, Y., & Roberts, S. (2002). Motivational interviewing in diabetes practice. *Diabetic Medicine, 19*(3), 1-6.

Dunn, C. P. D., Darnell, D. P. D., Atkins, D. C. P. D., Hallgren, K. A. P. D., Imel, Z. E. P. D., Bumgardner, K. B. S., . . . Roy-Byrne, P. M. D. (2015). Within-Provider Variability in Motivational Interviewing Integrity for Three Years after MI Training: Does Time Heal? *Journal of Substance Abuse Treatment, 65*, 74-82.

Dunn, E. C., Neighbors, C., & Larimer, M. E. (2006). Motivational enhancement therapy and self-help treatment for binge eaters. *Psychology of Addictive Behaviors, 20*(1), 44-52.

Evolution Research (2014). *Motivational Interviewing Project.* Department of Social Services, Australia.

Field, A. P. (2013). *Discovering statistics using IBM SPSS statistics: And sex and drugs and rock 'n' roll* (4th ed.). Sage.

Glynn, L. H., & Moyers, T. B. (2010). Chasing change talk: The clinician's role in evoking client language about change. *Journal of Substance Abuse Treatment, 39*(1), 65-70.

Glynn, L. H., & Moyers, T. B. (2012). Manual for the Client Language Easy Rating (CLEAR) Coding System. Retrieved from https://casaa.unm.edu/download/CLEAR.pdf

Hall, K., Staiger, P. K., Simpson, A., Best, D., & Lubman, D. I. (2016). After 30 years of dissemination, have we achieved sustained practice change in motivational interviewing? *Addiction (Abingdon, England), 111*(7), 1144-1150.

Hampson, M. E., Hicks, R. E., & Watt, B. D. (2015). Exploring the Effectiveness of Motivational Interviewing in Re-engaging People Diagnosed with Severe Psychiatric Conditions in Work, Study, or Community Participation. *American Journal of Psychiatric Rehabilitation, 18*(3), 265-279.

Hettema, J., Steele, J., & Miller, W. R. (2005). Motivational interviewing. *Annual Review of Clinical Psychology, 1*(1), 91-111.

Kazdin, A.E. (1982). *Single-Case Research Design: Methods for Clinical and Applied Settings.* Oxford, UK: University Press.

Lloyd, C., Tse, S., Waghorn, G., & Hennessy, N. (2008). Motivational interviewing in vocational rehabilitation for people living with mental ill health. *International Journal of Therapy & Rehabilitation, 15*(12), 572-579.

Lundahl, B. W., Kunz, C., Brownell, C., Tollefson, D., & Burke, B. L. (2010). A meta-analysis of motivational interviewing: Twenty-five years of empirical studies. *Research on Social Work Practice, 20*(2), 137-160.

Lundahl, B., & Burke, B. L. (2009). The effectiveness and applicability of motivational interviewing: a practice-friendly review of four meta-analyses. *Journal of Clinical Psychology, 65*(11), 1232-1245.

Madson, M. B. P. D., Loignon, A. C. B. A., & Lane, C. P. D. (2009). Training in motivational interviewing: A systematic review. *Journal of Substance Abuse Treatment, 36*(1), 101-109.

Madson, M. B., & Campbell, T. C. (2006). Measures of fidelity in motivational enhancement: A systematic review. *Journal of Substance Abuse Treatment, 31*(1), 67-73.

Madson, M. B., Campbell, T. C., Barrett, D. E., Brondino, M. J., & Melchert, T. P. (2005). Development of the motivational interviewing supervision and training scale. *Psychology of Addictive Behaviors, 19*(3), 303-310.

Madson, M. B., Villarosa-Hurlocker, M. C., Schumacher, J. A., Williams, D. C., & Gauthier, J. M. (2018). Motivational interviewing training of substance use treatment professionals: A systematic review. *Substance Abuse*.

Magill, M., Apodaca, T. R., Borsari, B., Gaume, J., Hoadley, A., Gordon, R. E. F., . . . Moyers, T. (2018). A meta-analysis of motivational interviewing process: Technical, relational, and conditional process models of change. *Journal of Consulting and Clinical Psychology, 86*(2), 140-157.

Magill, M., Gaume, J., Apodaca, T. R., Walthers, J., Mastroleo, N. R., Borsari, B., & Longabaugh, R. (2014). The technical hypothesis of motivational interviewing: A meta-analysis of MI's key causal model. *Journal of Consulting and Clinical Psychology, 82*(6), 973-983.

Manthey, T. (2009). Training MI in a vocational rehabilitation context. *MINT Bulletin, 15*(1), 9-13.

Manthey, T., Jackson, C., & Evans-Brown, P. (2011). Motivational interviewing and vocational rehabilitation: A review with recommendations for administrators and counselors. *Journal of Applied Rehabilitation Counseling, 42*(1), 3-14.

Martin, T., Moyers, T. B., Houck, J., Christopher, P., & Miller, W. R. Motivational Interviewing Sequential Code for Observing Process Exchanges (MI-SCOPE) Coder's Manual. Retrieved from https://casaa.unm.edu/download/scope.pdf

Martino, S., Ball, S. A., Nich, C., Frankforter, T. L., & Carroll, K. M. (2008a). Community program therapist adherence and competence in motivational enhancement therapy. *Drug and Alcohol Dependence, 96*(1), 37-48.

Martino, S., Gallon, S., Ball, S. A., & Carroll, K. M. (2008b). A step forward in teaching addiction counselors how to supervise motivational interviewing using a clinical trials training approach. *Journal of Teaching in the Addictions, 6*(2), 39-67.

McCambridge, J., Day, M., Thomas, B. A., & Strang, J. (2011). Fidelity to motivational interviewing and subsequent cannabis cessation among adolescents. *Addictive Behaviors, 36*(7), 749-754.

McConnaughy, E. A., Prochaska, J. O., & Velicer, W. F. (1983). Stages of change in psychotherapy: measurement and sample profiles. *Psychotherapy Theory Research and Practice, 20,* 368-375.

Miller, W. R. (2019). *Why does motivational interviewing cross cultures?* [PowerPoint slides]. Emita. https://www.emita.ee/wp-content/uploads/2019/09/1.-Crossing-Cultures.pdf

Miller, W. R., & Mount, K. A. (2001). A small study of training in motivational interviewing: Does one workshop change clinician and client behavior? *Behavioural and Cognitive Psychotherapy, 29*(4), 457-471.

Miller, W. R., & Moyers, T. B. (2015). Simulating a Learning Community. *Motivational Interviewing Training New Trainers Manual,* 190-191. Retrived from https://www.motivationalinterviewing.org/sites/default/files/tnt_manual_2014_d10_20150205.pdf

Miller, W. R., & Rollnick, S. (2013). *Motivational interviewing: helping people change* (3rd ed.). New York, NY: Guilford Press.

Miller, W. R., & Rose, G. S. (2009). Toward a theory of motivational interviewing. *American Psychologist, 64*(6), 527-537.

Miller, W. R., Benefield, R. G., & Tonigan, J. S. (1993). Enhancing motivation for change in problem drinking: A controlled comparison of two therapist styles. *Journal of Consulting and Clinical Psychology, 61*(3), 455-461.

Miller, W. R., Moyers, T. B., Ernst, D., & Amrhein, P. (2008). Manual for the Motivational Interviewing Skill Code (MISC) Version 2.1. Retrived from https://casaa.unm.edu/download/misc.pdf

Miller, W. R., Yahne, C. E., Moyers, T. B., Martinez, J., & Pirritano, M. (2004). A Randomized Trial of Methods to Help Clinicians Learn Motivational Interviewing. *Journal of Consulting and Clinical Psychology, 72*(6), 1050-1062.

Morgenstern, J., Kuerbis, A., Amrhein, P., Hail, L., Lynch, K., & McKay, J. R. (2012). Motivational interviewing: A pilot test of active ingredients and mechanisms of change. *Psychology of Addictive Behaviors, 26*(4), 859-869.

Moyers, T. B. (2004). History and happenstance: How motivational interviewing got its start. *Journal of Cognitive Psychotherapy, 18*(4), 291-298.

Moyers, T. B., & Martin, T. (2006). Therapist influence on client language during motivational interviewing sessions. *Journal of Substance Abuse Treatment, 30*(3), 245-251.

Moyers, T. B., Manuel, J. K., & Ernst, D. (2014). Motivational Interviewing Treatment Integrity Coding Manual 4.2.1. Retrived from https://casaa.unm.edu/download/MITI4_2.pdf

Moyers, T. B., Martin, T., Christopher, P. J., Houck, J. M., Tonigan, J. S., & Amrhein, P. C. (2007). Client language as a mediator of motivational interviewing efficacy: Where is the evidence? *Alcoholism: Clinical and Experimental Research, 31*(Suppl 3), 40S-47S.

Moyers, T. B., Martin, T., Houck, J. M., Christopher, P. J., & Tonigan, J. S. (2009). From In-Session Behaviors to Drinking Outcomes: A Causal Chain for Motivational Interviewing. *Journal of Consulting and Clinical Psychology, 77*(6), 1113-1124.

Moyers, T. B., Martin, T., Manuel, J. K., Hendrickson, S. M. L., & Miller, W. R. (2005). Assessing competence in the use of motivational interviewing. *Journal of Substance Abuse Treatment, 28*(1), 19-26.

Moyers, T. B., Martin, T., Manuel, J. K., Miller, W. R., & Ernst, D. (2010). *Revised global scales: Motivational Interviewing Treatment Integrity 3.1.1 (MITI 3.1.1).* Retrieved from http://casaa.unm.edu/download/miti3_1.pdf

Moyers, T. B., Rowell, L. N., Manuel, J. K., Ernst, D., & Houck, J. M. (2016). The motivational interviewing treatment integrity code (MITI 4): rationale, preliminary reliability and validity. Journal of Substance Abuse Treatment, 65(June 2016), 36-42.

Moyers, T., Martin, T., Catley, D., Harris, K. J., & Ahluwalia, J. S. (2003). Assessing the integrity of motivational interviewing interventions: Reliability of the motivational interviewing skills code. *Behavioural and Cognitive Psychotherapy, 31*(2), 177-184.

Muscat, A. C. (2005). Ready, Set, Go: The Transtheoretical Model of Change and Motivational Interviewing for “Fringe” Clients. *Journal of Employment Counseling, 42*(4), 179-191.

Neame, M. E. E. (2012). *Process of health behaviour change: Is change talk associated with diabetes outcome? A pilot study of motivational interviewing* [Master's thesis, The University of Canterbury].

Owens, M. D., Rowell, L. N., & Moyers, T. (2017). Psychometric properties of the motivational interviewing treatment integrity coding system 4.2 with jail inmates. *Addictive Behaviors, 73*, 48-52.

Pace, B. T., Dembe, A., Soma, C. S., Baldwin, S. A., Atkins, D. C., & Imel, Z. E. (2017). A multivariate meta-analysis of motivational interviewing process and outcome. *Psychology of Addictive Behaviors, 31*(5), 524-533.

Page, K. M., & Tchernitskaia, I. (2014). Use of Motivational Interviewing to Improve Return-to-work and Work-related Outcomes: A Review. *The Australian Journal of Rehabilitation Counselling, 20*(1), 38-49.

Parsons, J. T., Golub, S. A., Rosof, E., & Holder, C. (2007). Motivational interviewing and cognitive-behavioral intervention to improve HIV medication adherence among hazardous drinkers: A randomized controlled trial. *Journal of Acquired Immune Deficiency Syndromes (1999), 46*(4), 443-450.

Pierson, H. M., M.A, Hayes, S. C., Ph.D, Gifford, E. V., Ph.D, Roget, N., M.S, Padilla, M., M.A, Bissett, R., Ph.D, Berry, K., M.A, Kohlenberg, B., Ph.D, Rhode, R., Ph.D, & Fisher, G., Ph.D. (2007). An examination of the motivational interviewing treatment integrity code. *Journal of Substance Abuse Treatment, 32*(1), 11-17.

Romano, M., & Peters, L. (2015). Evaluating the mechanisms of change in motivational interviewing in the treatment of mental health problems: A review and meta-analysis. *Clinical Psychology Review, 38*, 1-12.

Schoener, E. P., Madeja, C. L., Henderson, M. J., Ondersma, S. J., & Janisse, J. J. (2006). Effects of motivational interviewing training on mental health therapist behavior. *Drug and Alcohol Dependence, 82*(3), 269-275.

Schwalbe, C. S., Oh, H. Y., & Zweben, A. (2014). Sustaining motivational interviewing: a meta-analysis of training studies. *Addiction, 109*(8), 1287-1294.

Secker, J., & Margrove, K. L. (2014). Employment support workers' experiences of motivational interviewing: Results from an exploratory study. *Psychiatric Rehabilitation Journal, 37*(1), 65-67.

Söderlund, L. L., Madson, M. B., Rubak, S., & Nilsen, P. (2011). A systematic review of motivational interviewing training for general health care practitioners. *Patient Education and Counseling, 84*(1), 16-26.

Soleymani, S. (2019). *Motivational interviewing for enhancing engagement in intimate partner violence intervention* [Doctoral thesis, The University of Canterbury].

Stoltz, K. B., & Young, T. L. (2013). Applications of Motivational Interviewing in Career Counseling: Facilitating Career Transition. *Journal of Career Development, 40*(4), 329-346.

Sullivan, G. M., & Feinn, R. (2012). Using effect size-or why the P value is not enough. *Journal of Graduate Medical Education, 4*(3), 279-282.

Swanson, A. J., Pantalon, M. V., & Cohen, K. R. (1999). Motivational interviewing and treatment adherence among psychiatric and dually diagnosed patients. *The Journal of Nervous and Mental Disease, 187*(10), 630-635.

Tappin, D. M., McKay, C., McIntyre, D., Gilmour, W. H., Cowan, S., Crawford, F., Currie, F., & Lumsden, M. A. (2000). a practical instrument to document the process of motivational interviewing. *Behavioural and Cognitive Psychotherapy, 28*(1), 17-32.

Torres, A., Frain, M., & Tansey, T. N. (2019). The impact of motivational interviewing training on rehabilitation counselors: Assessing working alliance and client engagement. A randomized controlled trial. *Rehabilitation Psychology, 64*(3), 328-338.

Turrisi, R., Larimer, M. E., Mallett, K. A., Kilmer, J. R., Ray, A. E., Mastroleo, N. R., Geisner, I. M., Grossbard, J., Tollison, S., Lostutter, T. W., & Montoya, H. (2009). A randomized clinical trial evaluating a combined alcohol intervention for high-risk college students. *Journal of Studies on Alcohol and Drugs, 70*(4), 555-567.

Wagner, C. C., & McMahon, B. T. (2004). Motivational Interviewing and Rehabilitation Counseling Practice. *Rehabilitation Counseling Bulletin, 47*(3), 152-161.

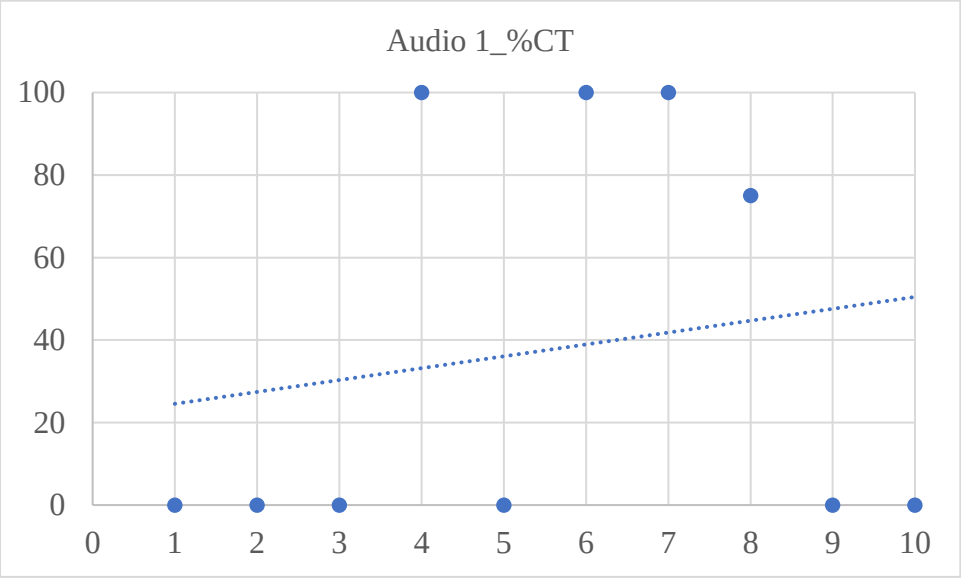
Westra, H. A., & Aviram, A. (2013). Core skills in motivational interviewing. *Psychotherapy, 50*(3), 273-278.

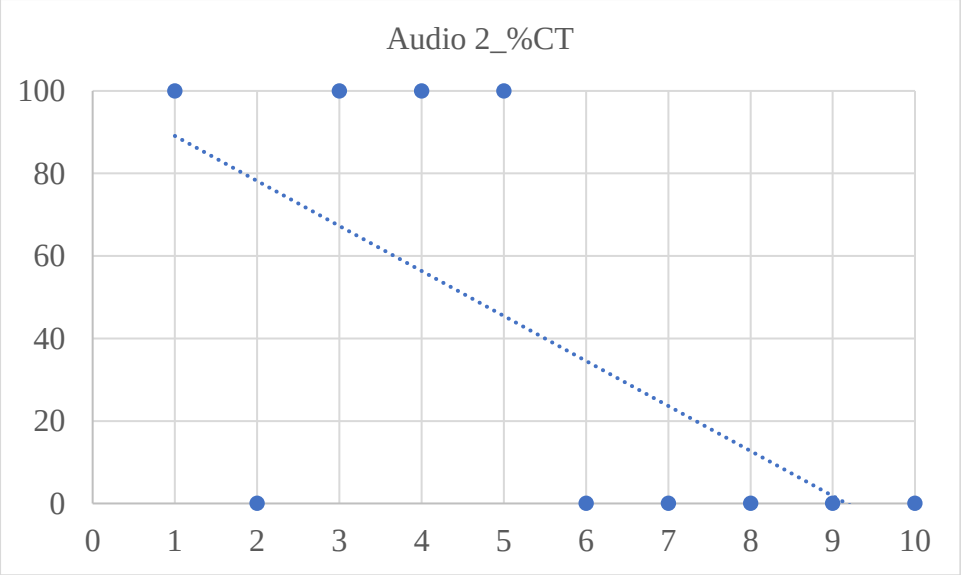
Wewiorski, N. J., Rose, G. S., Wang, S., Dreifuss, R., Mueller, L., Shirk, S. D., Resnick, S. G., Siegel, M. J., & Drebing, C. E. (2021). Motivational interviewing: Key ingredients associated with taking a step toward employment. *Psychiatric Rehabilitation Journal, 44*(3), 266-274.

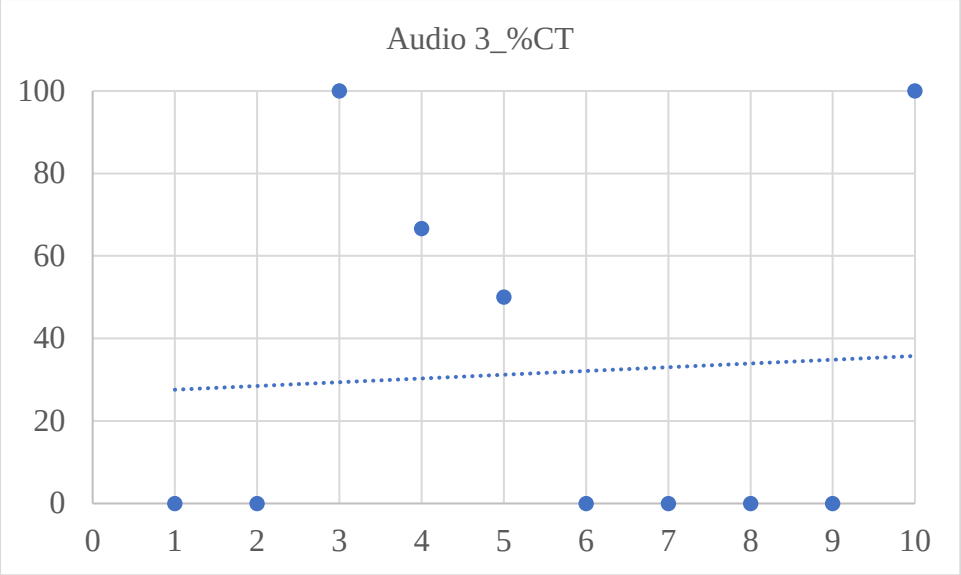
Woodin, E. M., Sotskova, A., & O'Leary, K. D. (2012). Do motivational interviewing behaviors predict reductions in partner aggression for men and women? *Behaviour Research and Therapy, 50*(1), 79-84.

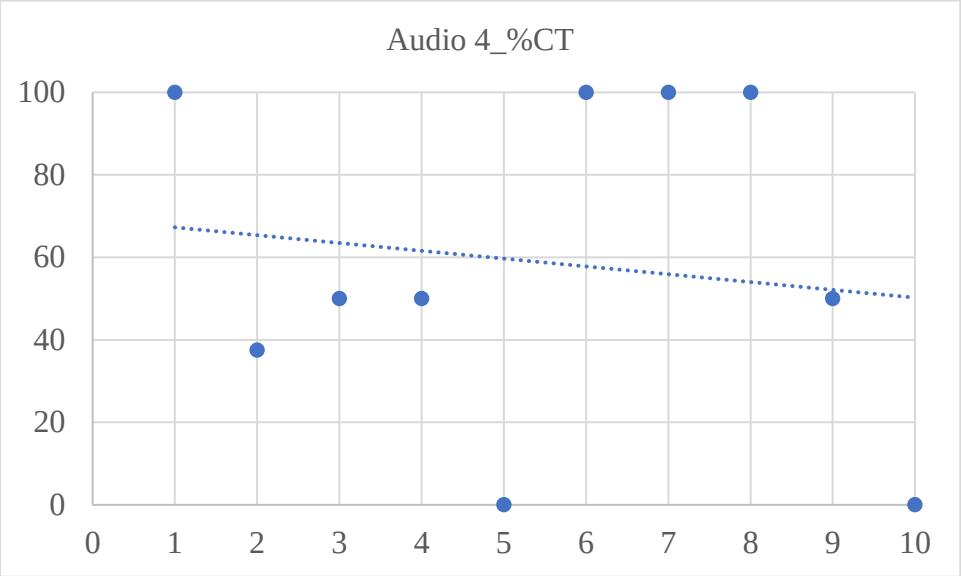
6. APPENDICES

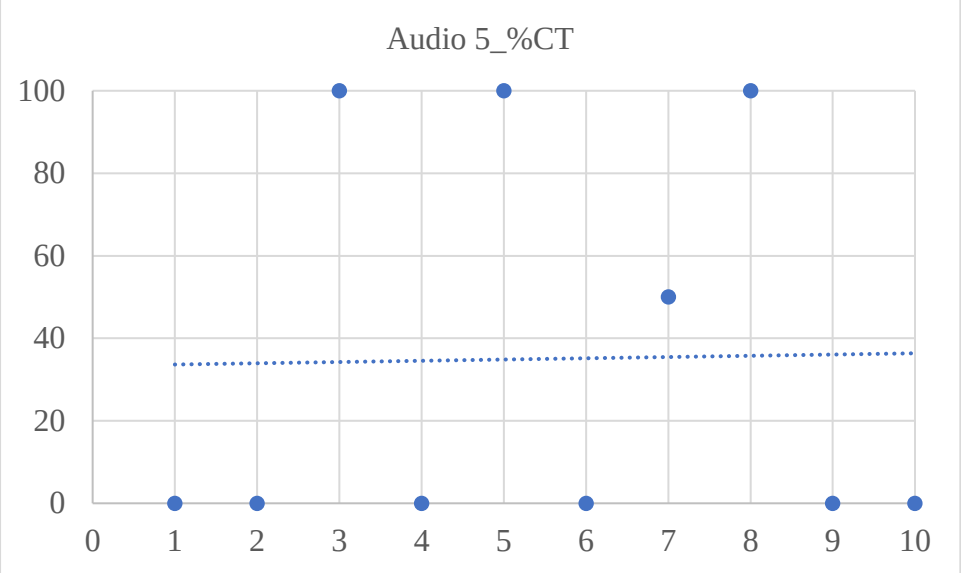
6.1 Appendix A Baseline Percent Change Talk Across Deciles Within Session

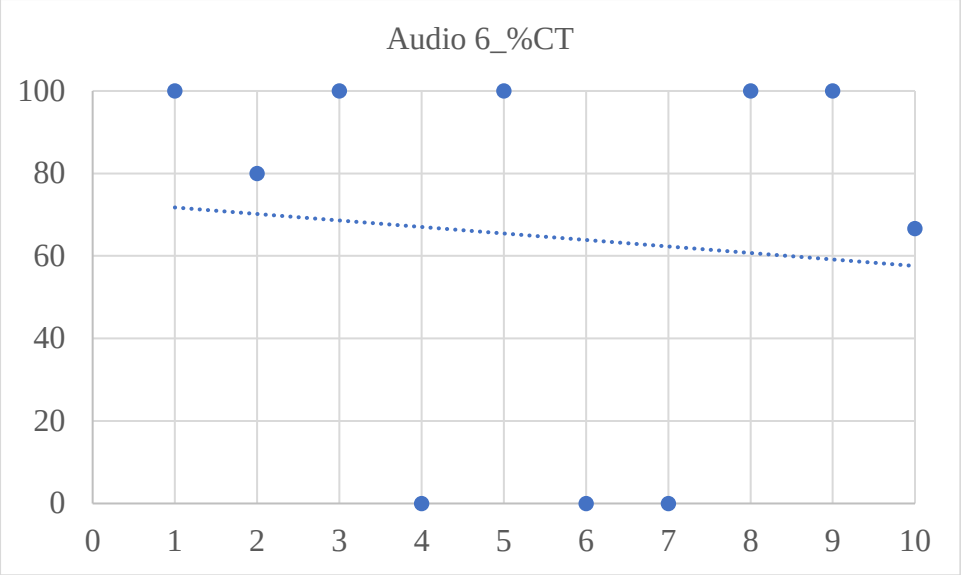


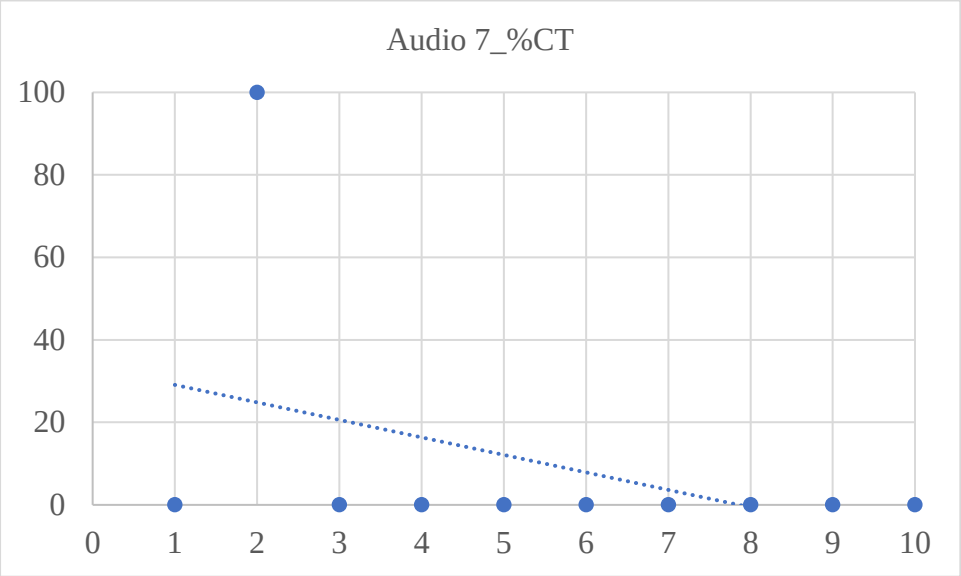


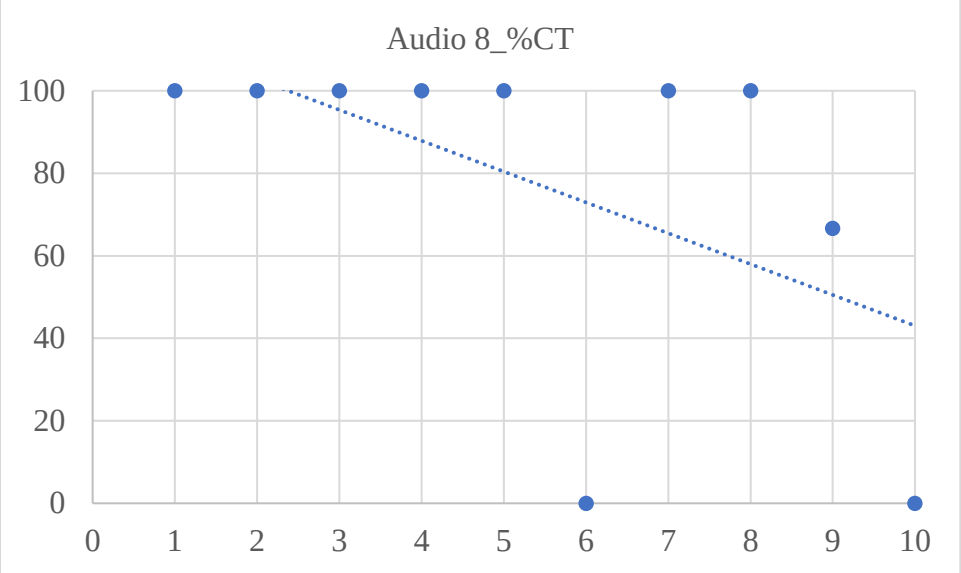

Audio 3_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

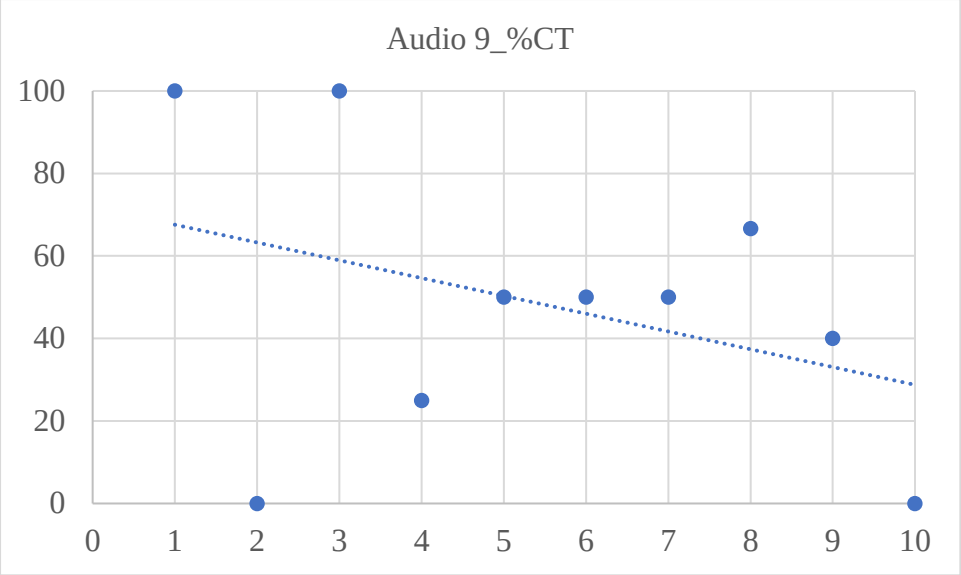

Audio 4_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

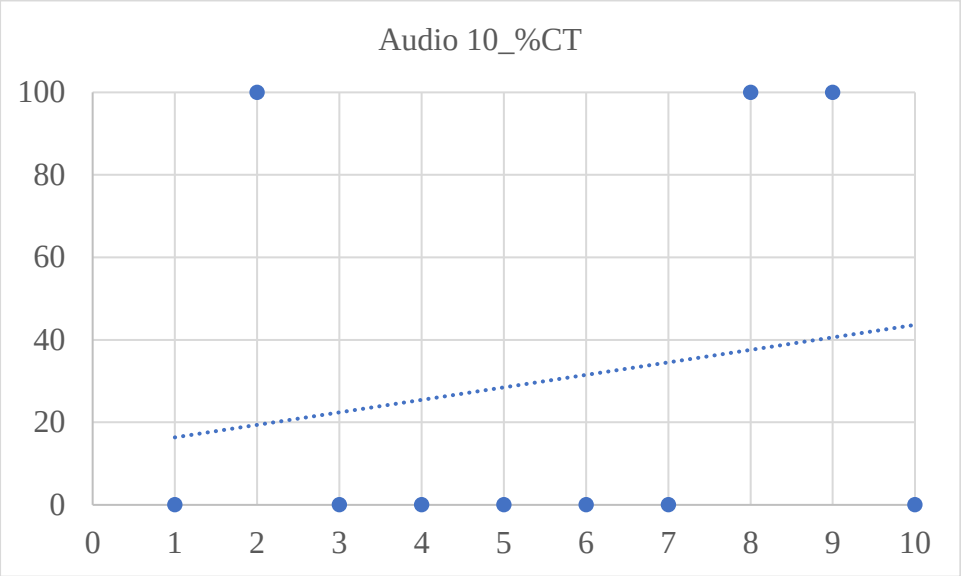

Audio 5_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

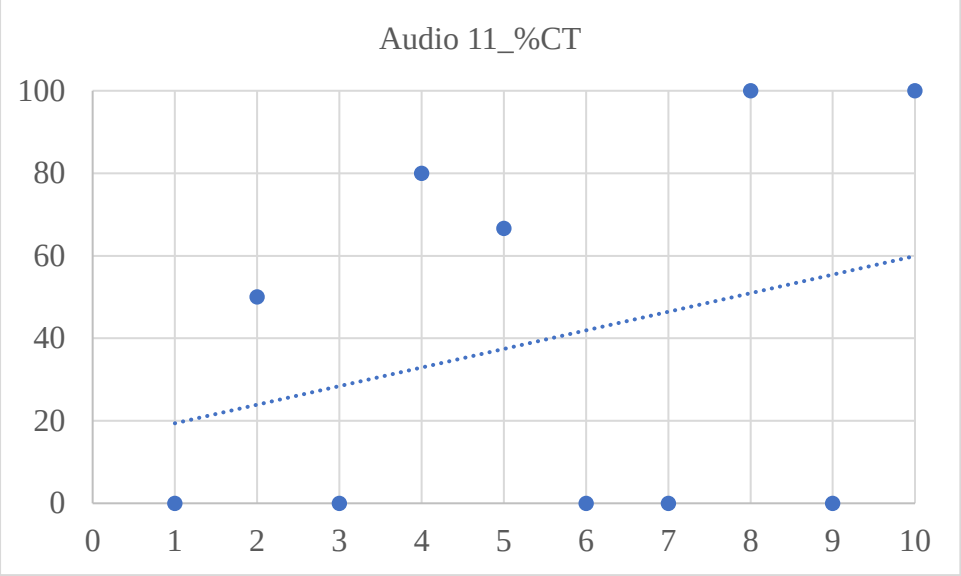

Audio 6_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

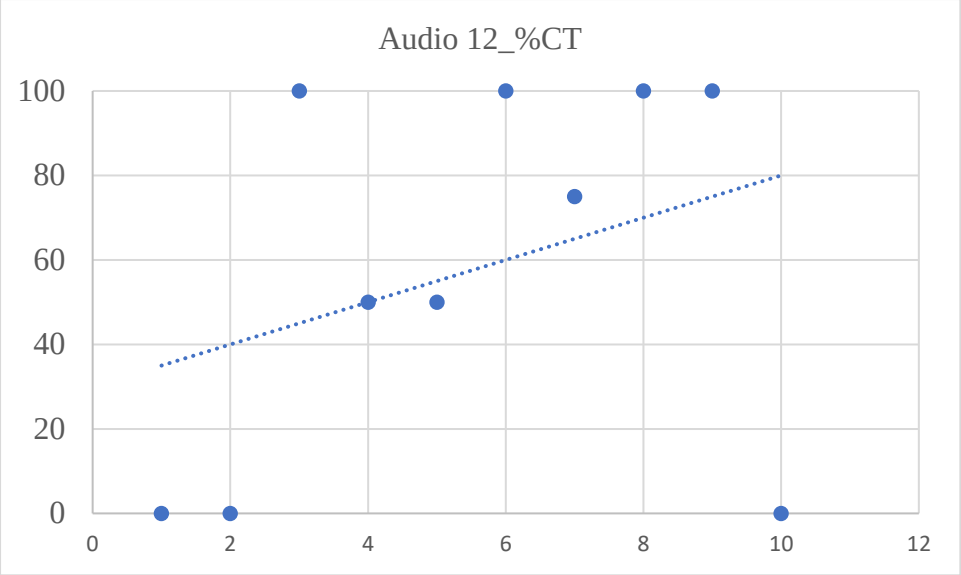

Audio 7_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

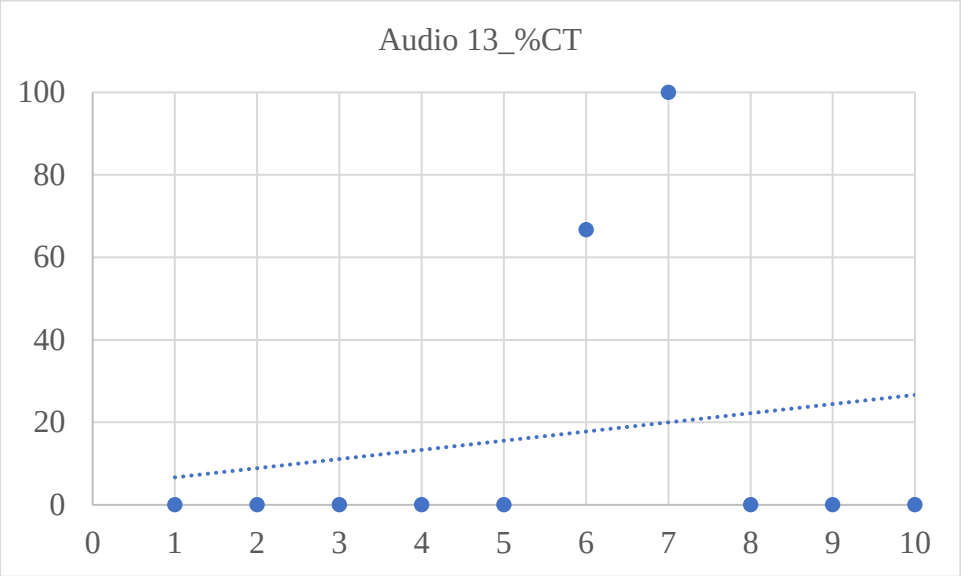

Audio 8_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

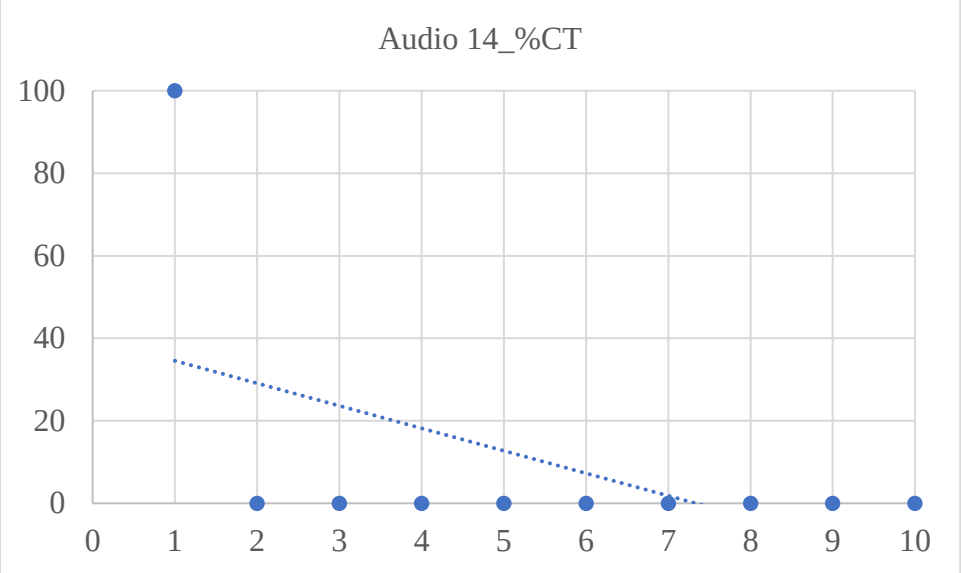

Audio 9_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

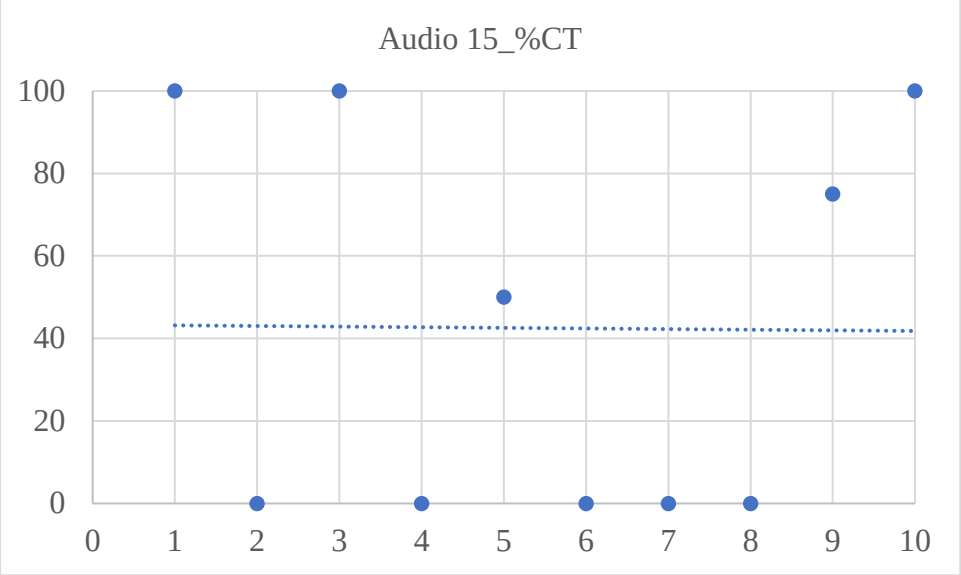

Audio 10_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

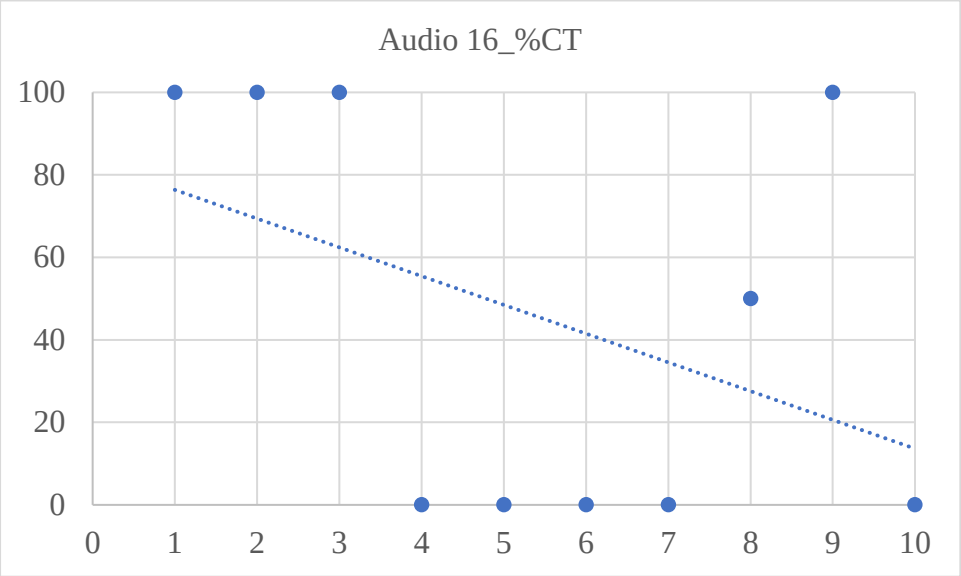

Audio 11_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

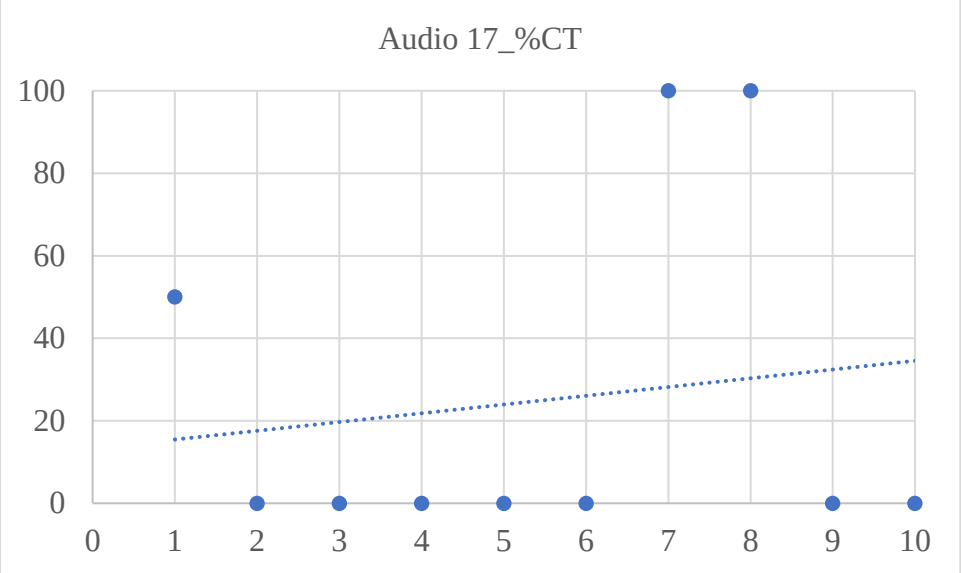

Audio 12_%CT
100
80
60
40
20
0
0
2
4
6
8
10
12

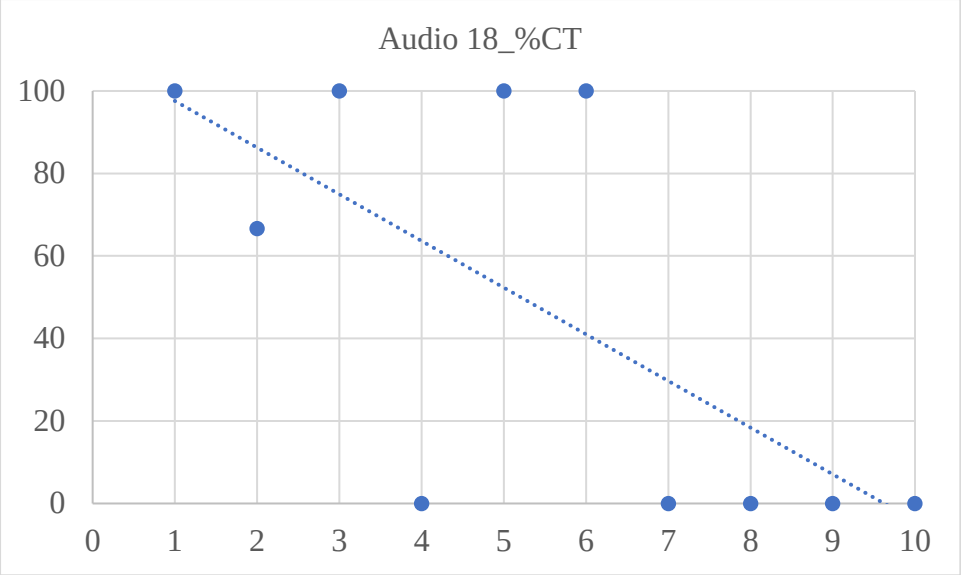

Audio 13_%CT
100
80
60
40
20
0
0
1
2
3
4
5
6
7
8
9
10

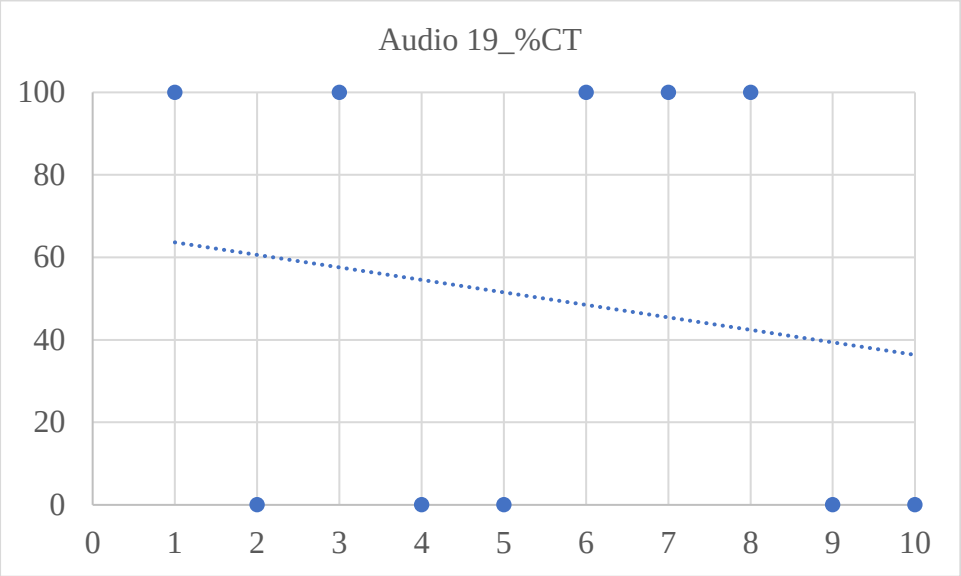

Audio 14_%CT
100
80
60
40
20
0
0
1
2
3
4
5
6
7
8
9
10


Audio 15_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

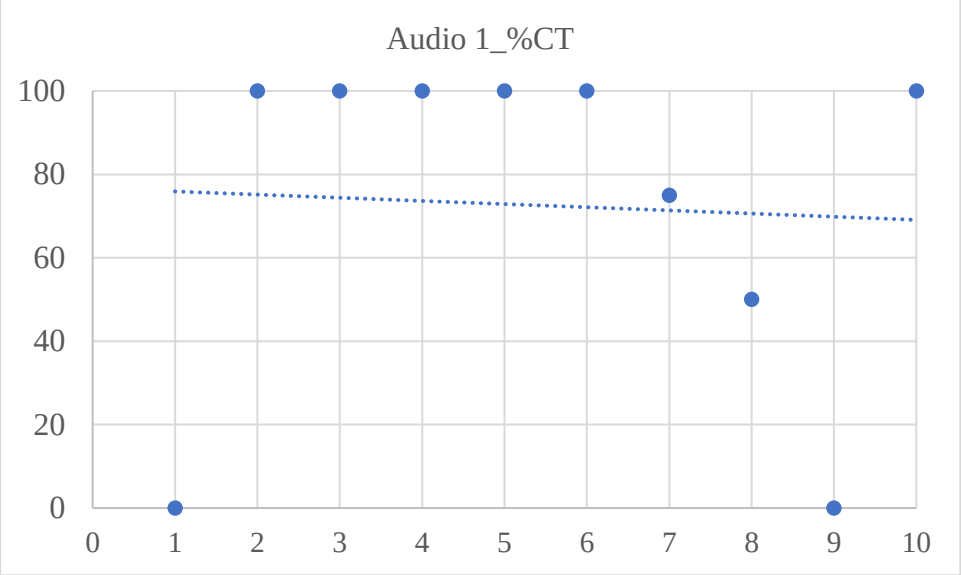

Audio 16_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

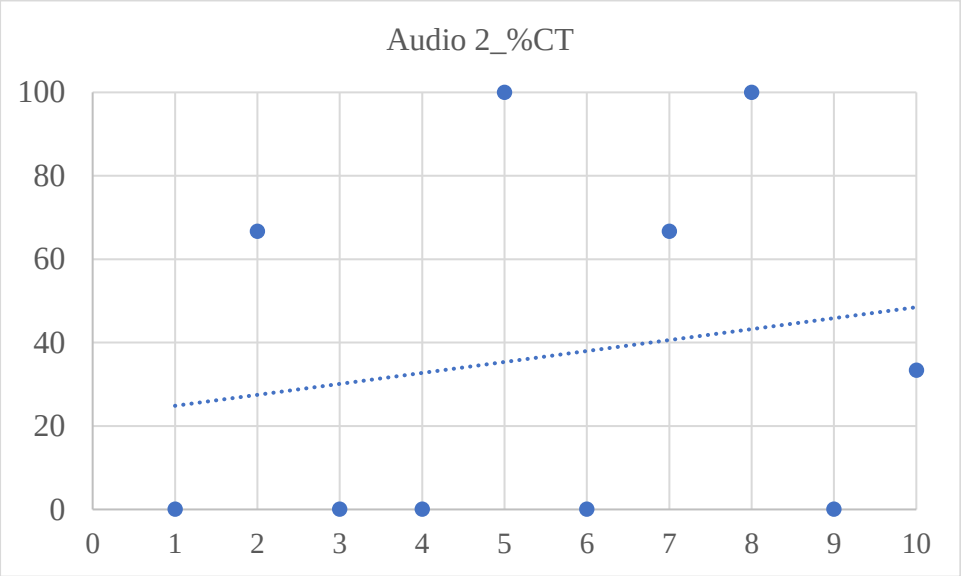

Audio 17_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

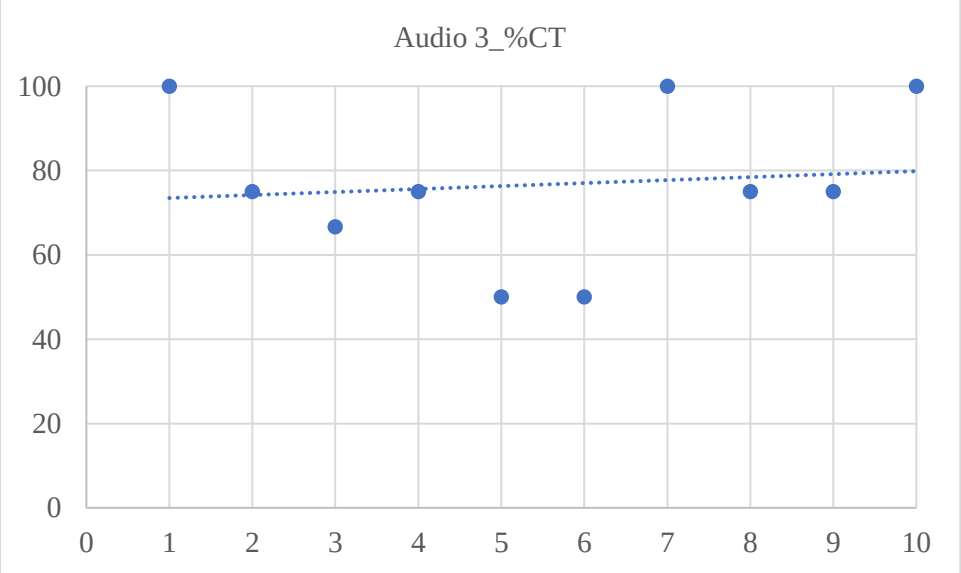


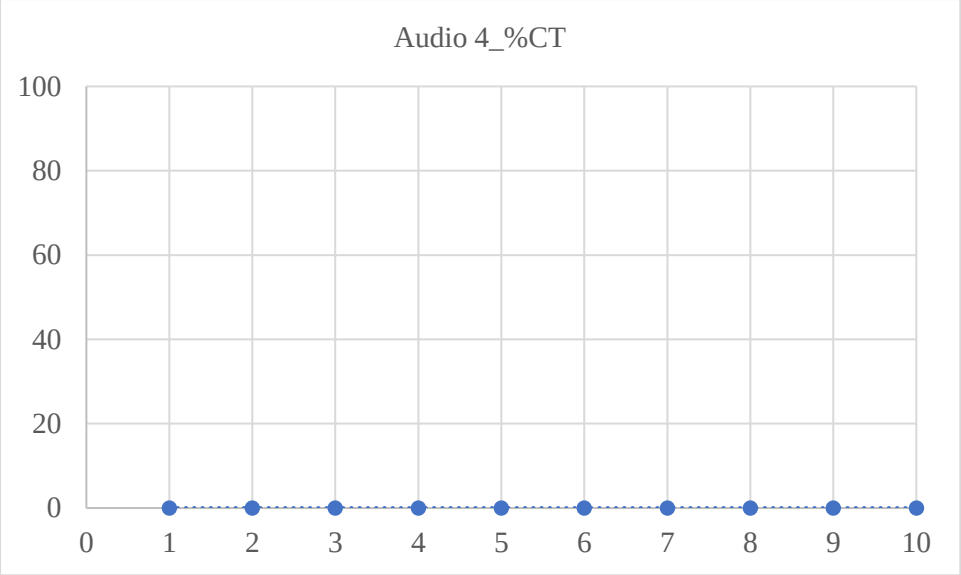


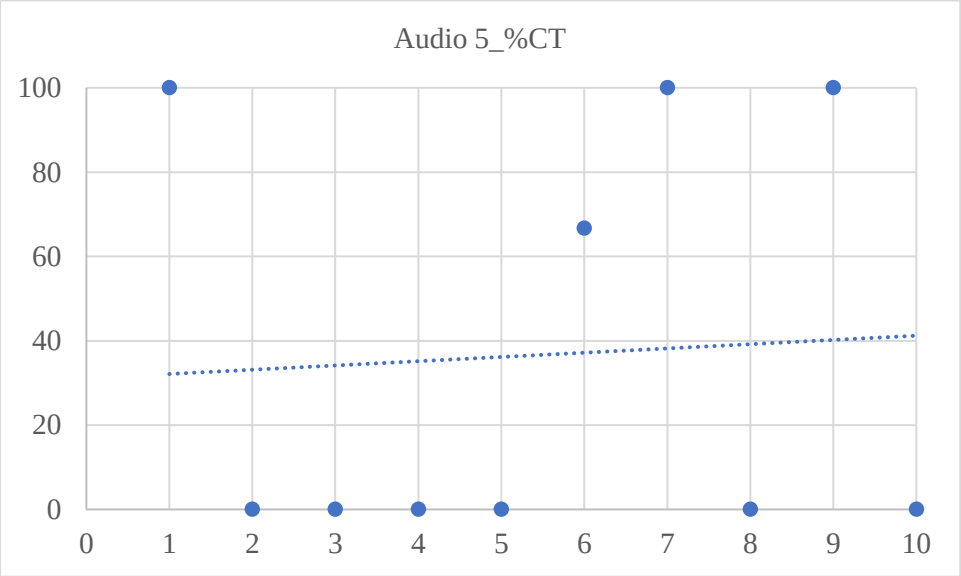
6.2 Appendix B Post-Training Percent Change Talk Across Deciles Within Session

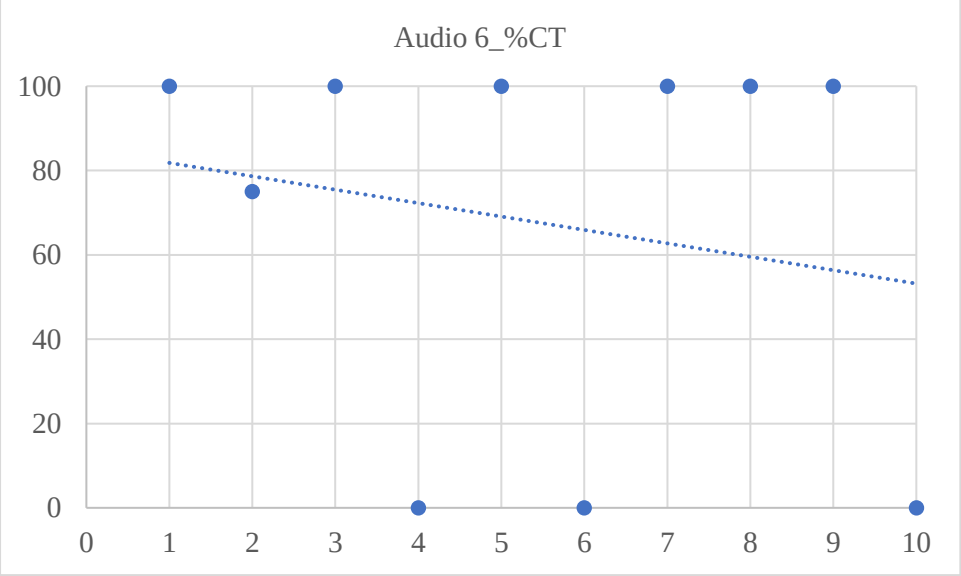

Audio 1_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

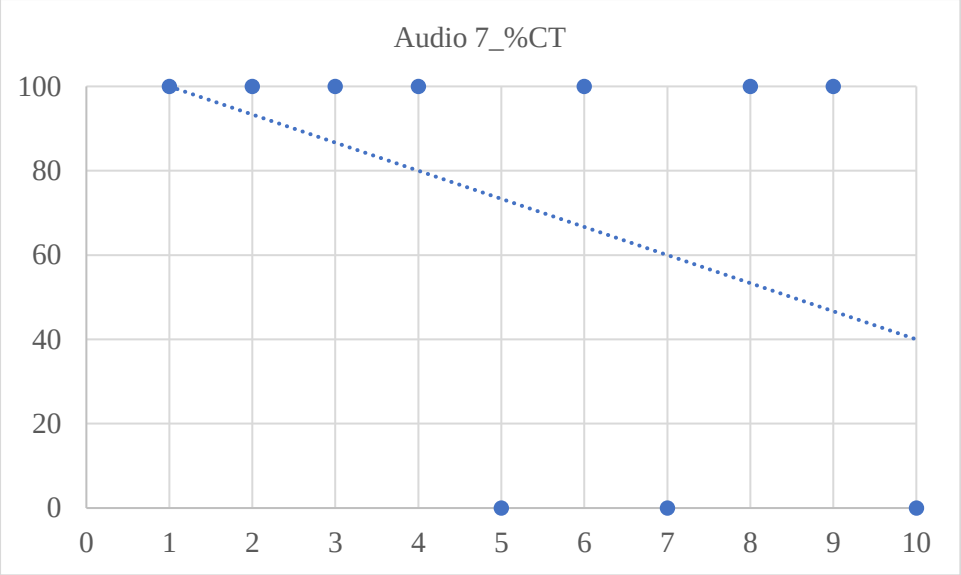

Audio 2_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

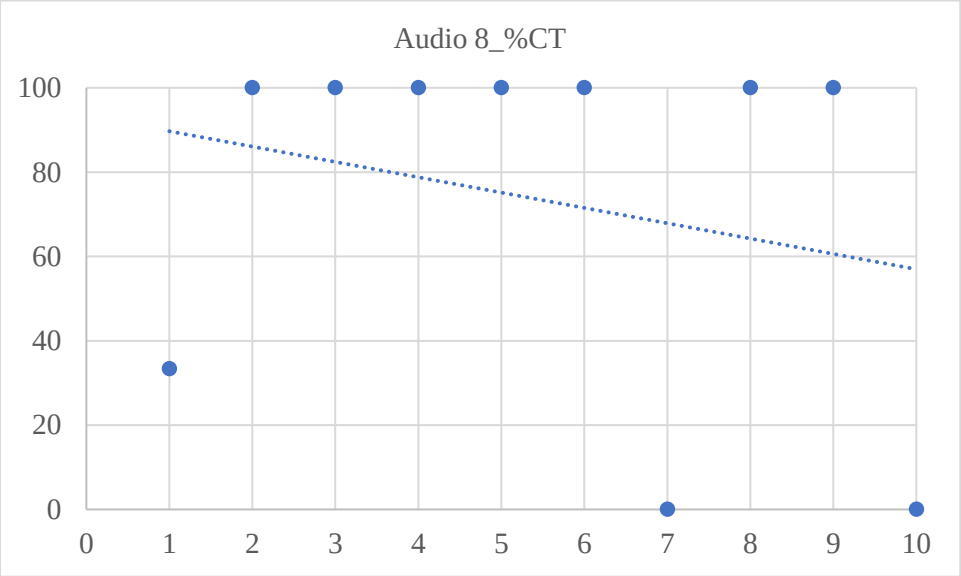

Audio 3_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

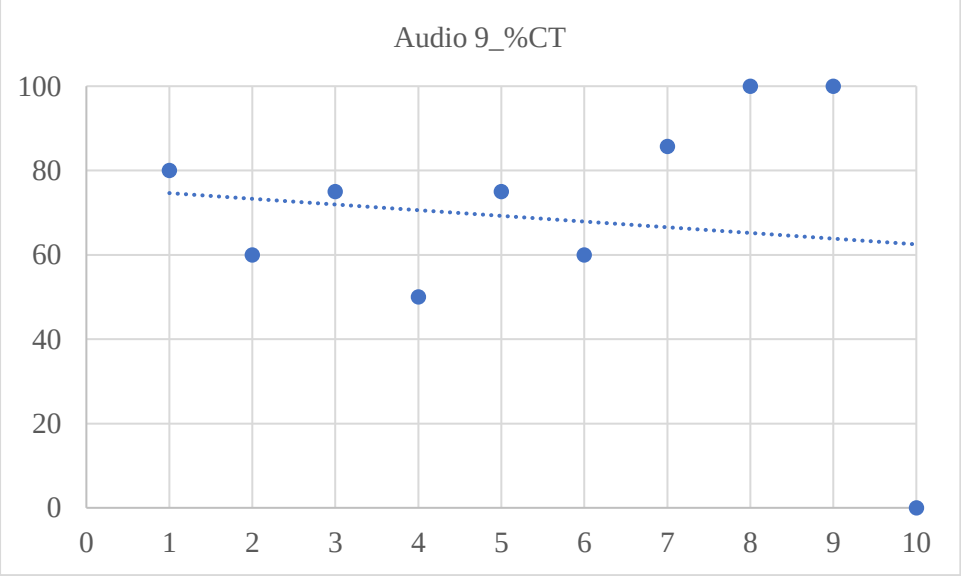

Audio 4_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

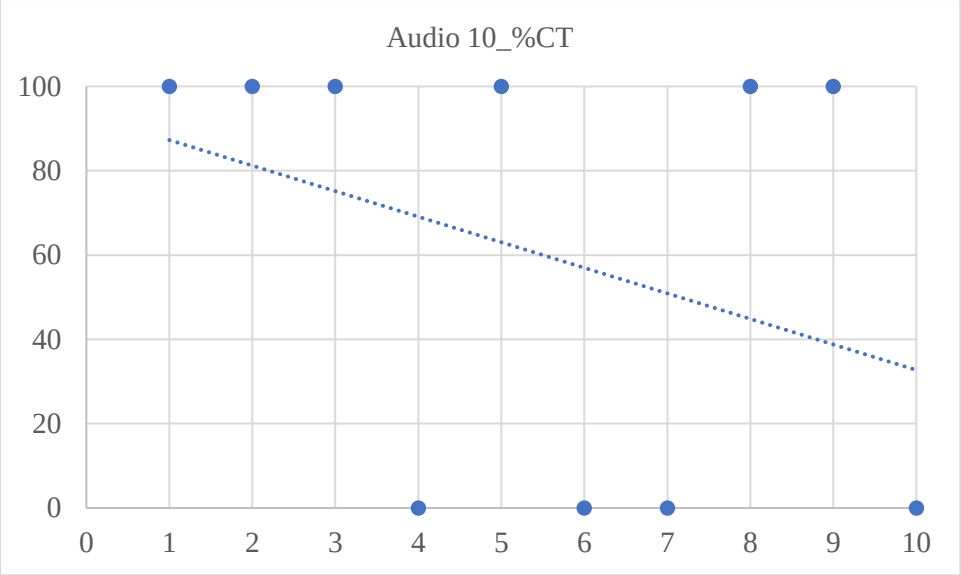

Audio 5_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

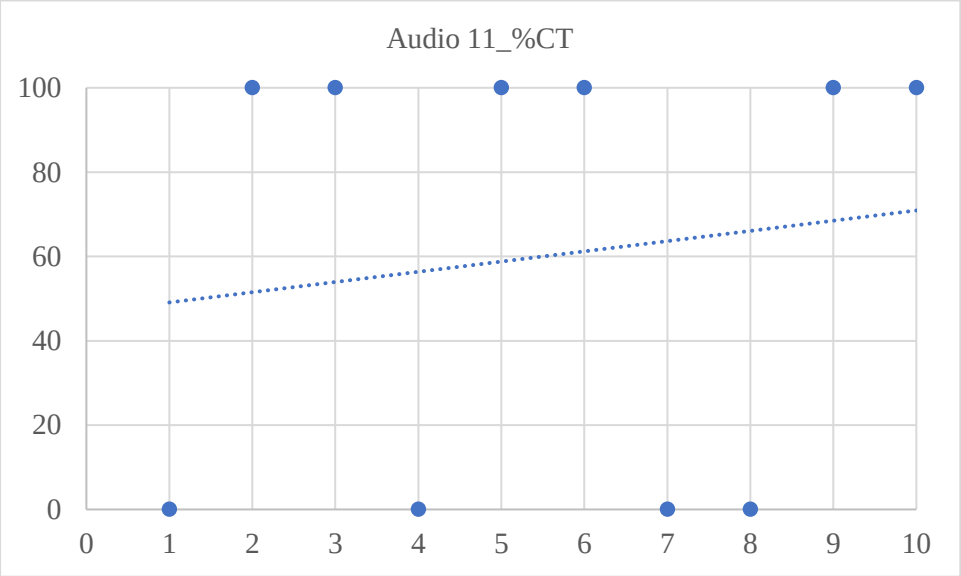

Audio 6_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

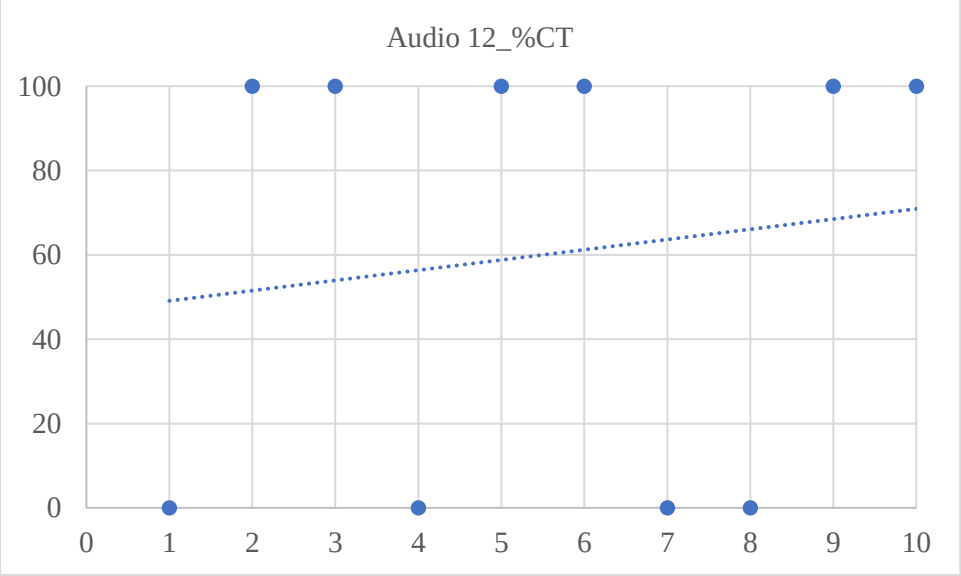

Audio 7_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

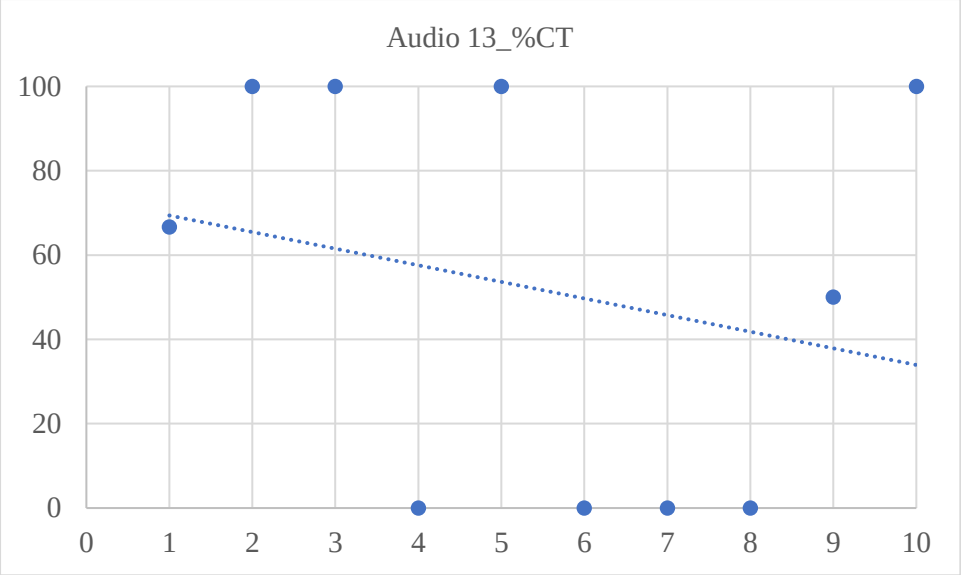

Audio 8_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

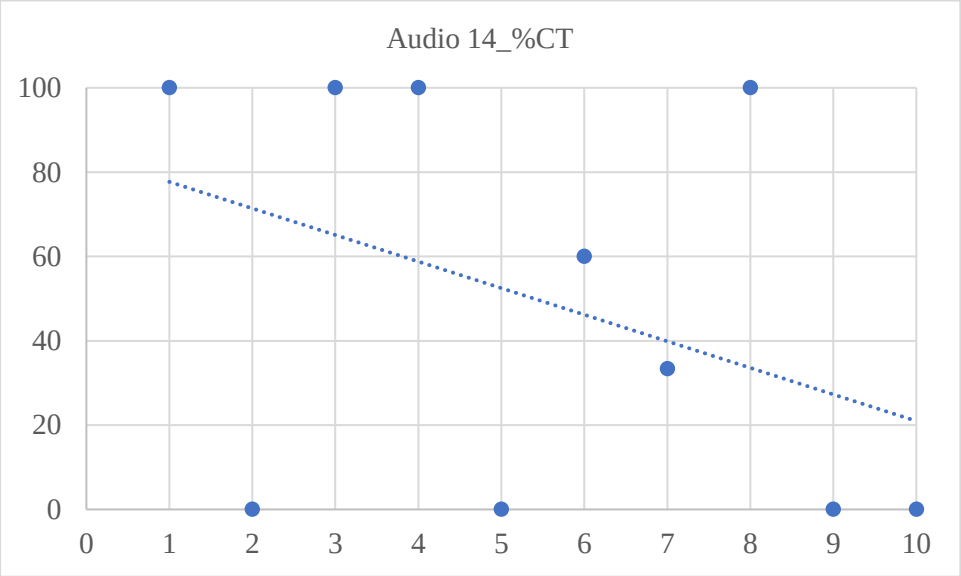

Audio 9_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

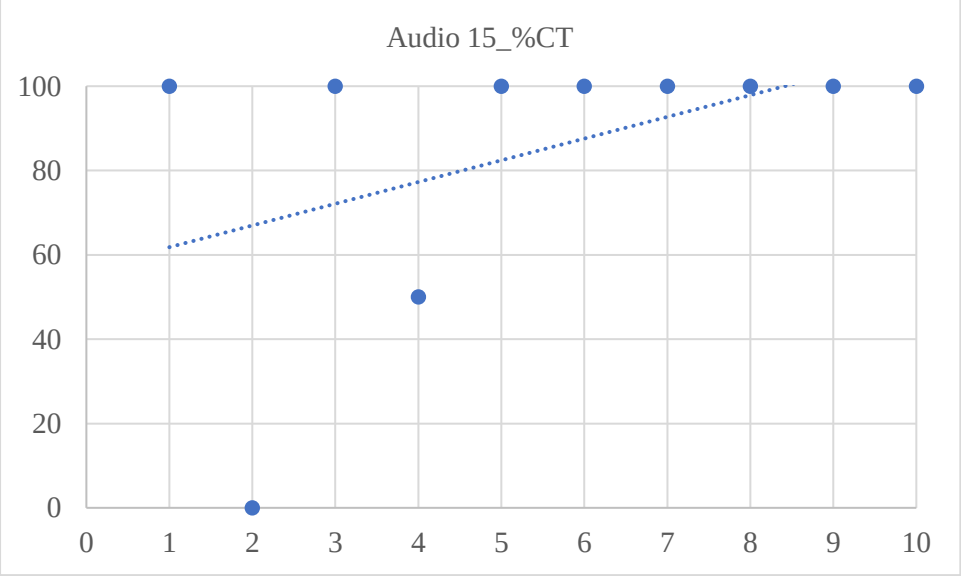

Audio 10_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

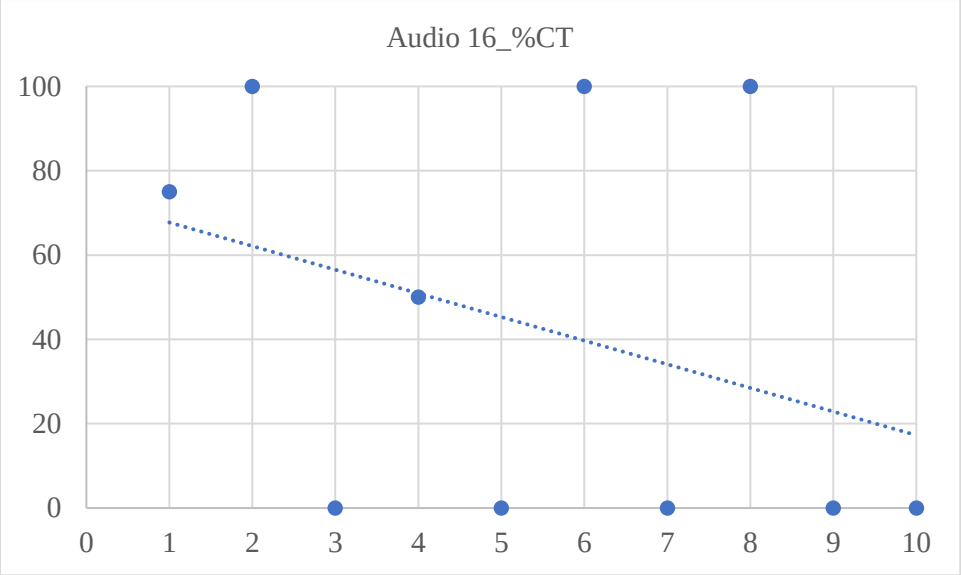

Audio 11_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

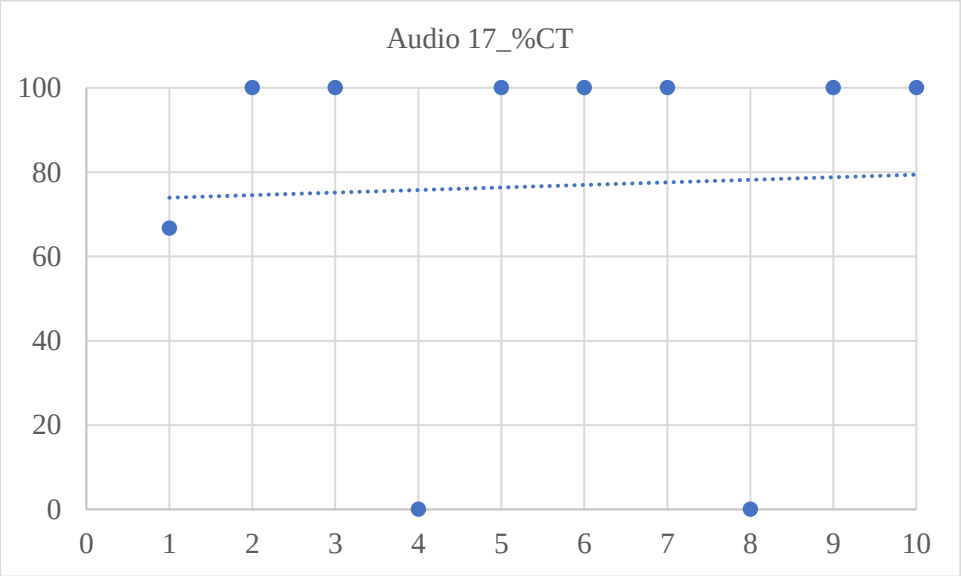

Audio 12_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

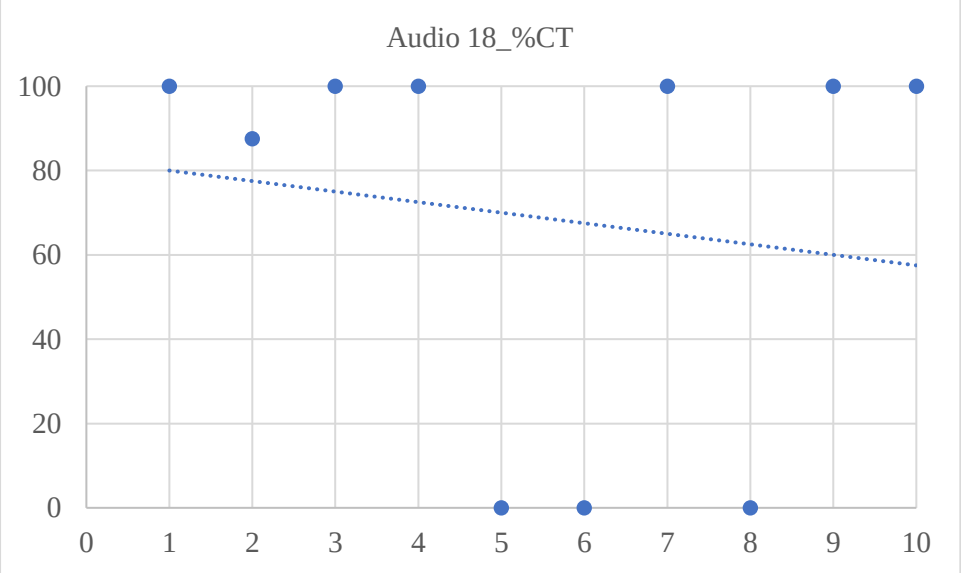

Audio 13_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

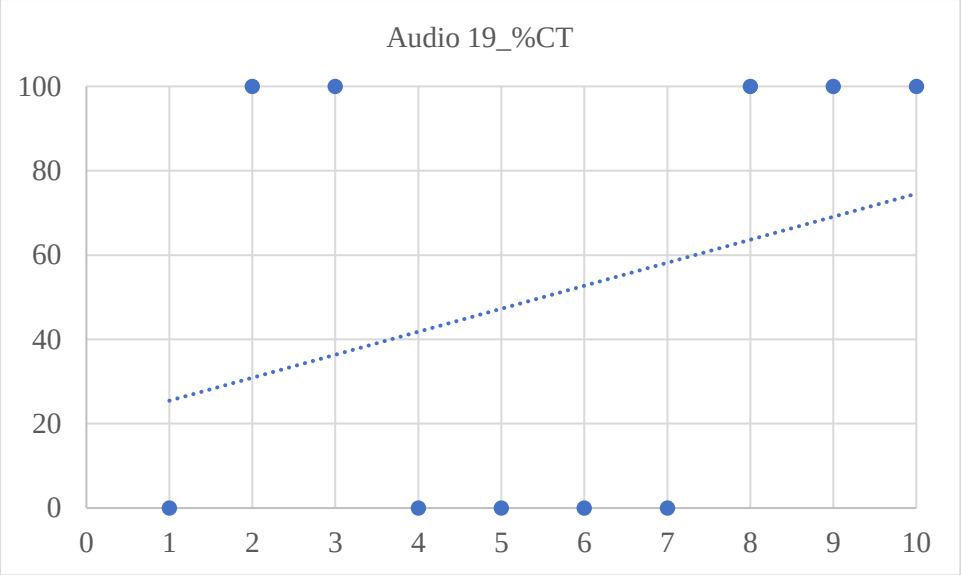

Audio 14_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

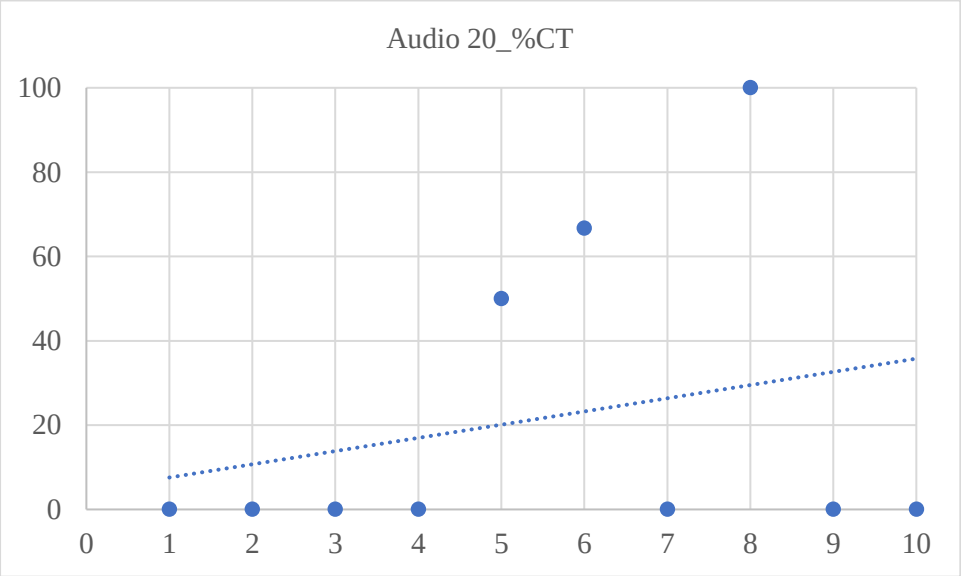

Audio 15_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

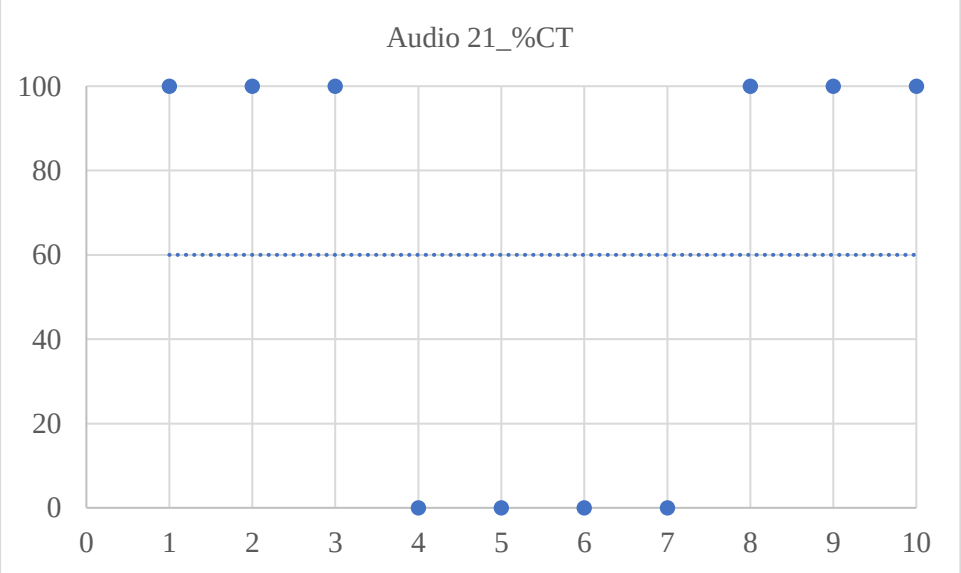

Audio 16_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

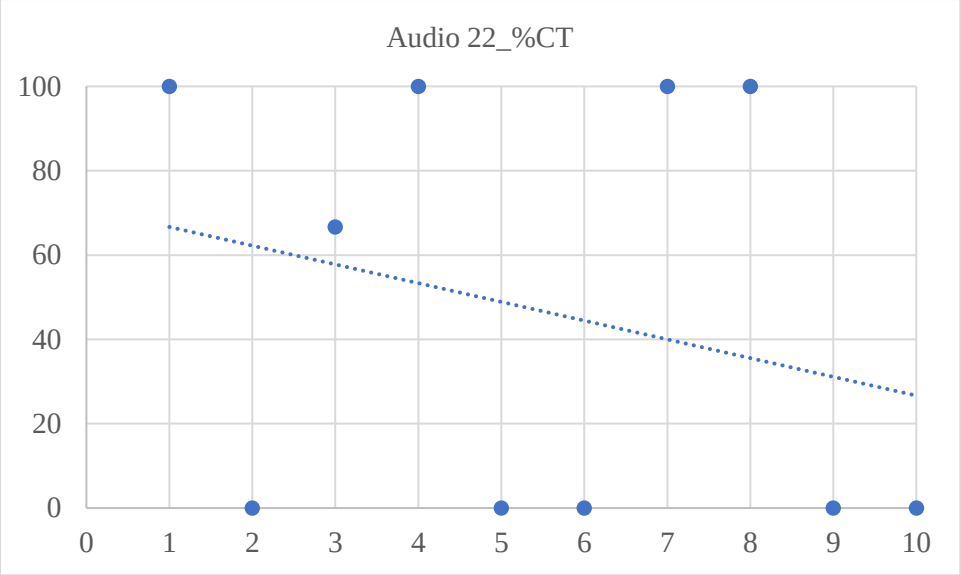

Audio 17_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10

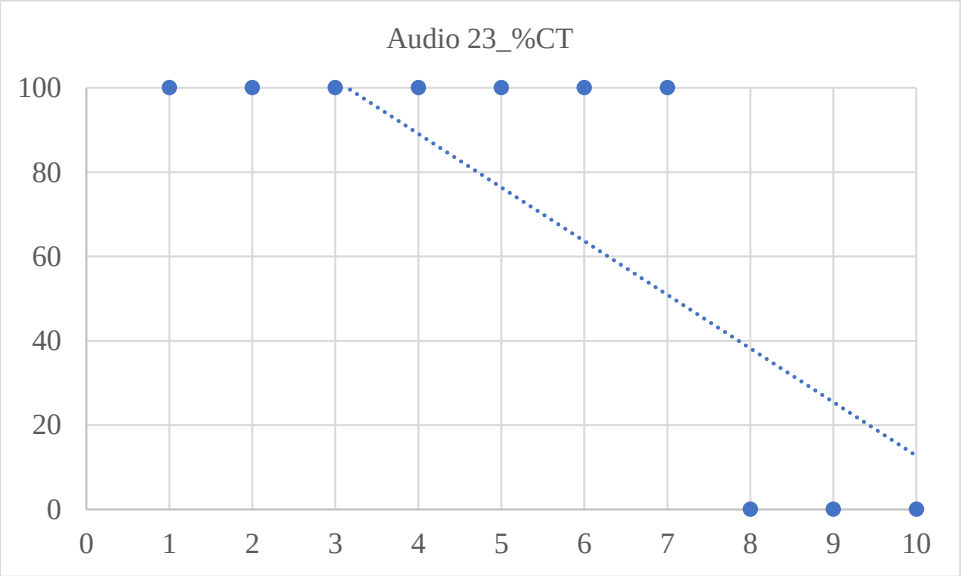

Audio 18_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10


Audio 19_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10


Audio 20_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10


Audio 21_%CT
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10


Audio 22_%CT
100
80
60
40
20
0
0
1
2
3
4
5
6
7
8
9
10


Audio 23_%CT
100
80
60
40
20
0
0
1
2
3
4
5
6
7
8
9
10