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Ambivalence: Prerequisite for success in motivational interviewing with adolescents?

S. W. Feldstein Ewing[1], **T. R. Apodaca**[2,3], and **J. Gaume**[4]

[1]Oregon Health & Science University, Department of Child & Adolescent Psychiatry, Portland, OR USA [2]Children's Mercy Kansas City, Kansas City, MO USA [3]University of Missouri-Kansas City School of Medicine, Department of Pediatrics, Kansas City, MO USA [4]Lausanne University Hospital, Department of Community Health and Medicine, Alcohol Treatment Center, Lausanne, Switzerland

Abstract

Background and Aims—The exploration and resolution of ambivalence play an essential role in motivational interviewing (MI) theory. However, most adolescent MI studies have not examined ambivalence as a contributor to behaviour change. This paper reviewed research findings on the role of ambivalence in the adolescent change process.

Methods and results—We undertook a narrative review of the published empirical and theoretical literature on ambivalence and mechanisms of change in MI for adolescents and found that current MI evaluations appear not to have access to reliable and valid measures of ambivalence in adolescence or neuroimaging methods to evaluate the mechanisms of treatment response.

Conclusions—Improved instrumentation is needed to assess adolescents' ambivalence in clinical and research settings. Innovative methodology, including neuroimaging, may help identify factors mediating relationships between adolescents' ambivalence and treatment response.

Keywords

motivational interviewing; adolescents; ambivalence; substance use; developmental; measurement; innovative approaches; neuroimaging; brain

INTRODUCTION

Currently, there is great controversy regarding how motivational interviewing (MI) [1] generates positive behavior change [2,3]. Critically, most large-scale, multi-site addiction treatment research has been conducted with adults (e.g., COMBINE; MATCH; UKATT) [4–

Correspondence to: Sarah W. Feldstein Ewing, Oregon Health & Science University, Department of Child & Adolescent Psychiatry, 3314 SW US Veteran's Hospital Rd. M/C DC7P Portland, OR 97239 USA. feldstei@ohsu.edu.

Declarations of interests

None.

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6]. Despite the paucity of data on treatment mechanisms for adolescents, MI continues to be one of the strongest available evidence-based treatments for youth (SAMHSA; http://www.nrepp.samhsa.gov/). Yet, meta-analyses examining the efficacy of MI for substance use disorders (SUDs) indicate that MI's effect sizes are less robust for adolescents (mean d = 0.17) [7] than adults (mean d = 0.77) [8]. This has direct implications for provision of care, particularly with high-need and underserved youth [9]. Clinicians need practical guidance regarding how to make MI more effective for adolescents. Unfortunately, MI studies are much clearer regarding what therapists should *not* do rather than what they *should* [10]. Resolution of ambivalence plays an essential role in MI [1]. Despite the burgeoning field on this mechanism of change in adults, ambivalence has been largely overlooked in adolescent clinical research [11]. Thus, we use this forum to explore the role of ambivalence in the adolescent change process.

AMBIVALENCE IN MOTIVATIONAL INTERVIEWING

Contrasting with other adolescent treatment models [12], ambivalence is at the heart of the clinical framework of MI [1], 'a normal step on the road to change' (p.157). Ambivalence represents a client's experience of simultaneously feeling two ways about changing one's behavior; for example, concurrently wanting to make a change while also feeling reticent to do so. Concretely, within clinical exchanges and MI theory, ambivalence is subsequently operationalized as client expressions in favor of change (change talk), which often co-occur with client expressions in favor of staying the same (sustain talk) [1] (e.g., 'I know I should not drink, but I deserve to have fun!').

Originally, MI training focused on ensuring clinicians' acquisition of *technical* skills (e.g., the 'how' of MI, including use of open questions, complex reflections, affirmations). However, Miller and Rollnick observed that even among technically strong exchanges, to be effective, MI clinicians needed proficiency with an additional element - the 'spirit' of MI (p. 14) [1]. MI spirit includes therapists' degree of partnership, acceptance, compassion and evocation (p. 15) [1]. Thus, in MI practice, therapists' must negotiate this delicate balance of relational and technical skills to address the key challenge in MI: to help clients 'resolve' ambivalence in the direction of behavior change [13]. Therapists can measure their degree of success helping their clients move through ambivalence by observing clients' increased incidence of 'change talk' and decreased 'sustain talk' [1].

Predominantly examined with adults, most MI process research has focused on examining two predominant technical mechanisms of treatment response [3] [13]: the connection between therapist behaviors and client change talk, and the relationship between client change talk and post-treatment behavior change [14,15]. There are fewer studies evaluating the relationship between MI technical skills and behavior change among adolescents. In one study, Feldstein Ewing, Gaume, and colleagues [16] used process coding (via the Motivational Interviewing Treatment Integrity coding system; MITI) [17] to compare therapists' technical skills with Hispanic versus non-Hispanic adolescents. The authors found that therapists employed significantly fewer MI skills with Hispanic youth (MI spirit; support of autonomy; complex reflections; evocation). Yet, this difference in therapist behaviors was only significantly negatively associated with Hispanic youths' 3-month

alcohol-related problems outcomes. Both Hispanic and non-Hispanic youth showed equivalent treatment response across heavy drinking days, marijuana use days, and marijuana-related problems. Also using the MITI, McCambridge et al. [18] found that therapists' level of MI spirit and complex reflections significantly predicted adolescents' 3-month cannabis cessation. In their regression model, neither adding therapist empathy nor any other additional therapist variable predicted participant outcomes or improved the fit of the model. In their study, therapists showed a high degree of *variability* in their MI skills; meaning, as with recent adult studies, therapists' MI practice was not uniform across their clients [18,19].

Barnett and colleagues found that the type of therapist reflection impacted adolescents' response [20]. For instance, therapists' positive reflections (e.g., reflections favoring change) generated more adolescent change talk and less sustain talk, whereas therapists' negative reflections (e.g., reflections supporting the status quo) resulted in youth generating more sustain talk and less change talk. Therapist reframing (e.g., positive restatement of client sustain talk; negative restatement of change talk), appeared to generate youth responses in the direction of the therapist's statement. The authors suggest that therapist statements might operate as a 'prime' or 'model'. These outcomes have been mirrored and linked to substance use reductions in group MI with at-risk adolescents [21].

These emergent findings are encouraging. However, clinicians are still missing crucial details on *relational* factors within the therapist-adolescent patient interactions. While often overlooked in the broader clinical literature as common, non-specific variables, in MI relational factors are defined as facets of therapists' interpersonal exchanges including degree of empathy and therapeutic alliance; across addiction treatments including, but not limited to MI, relational factors play a significant role in client outcome [22,23]. Indeed, recent studies have begun to look closer at the impact of relational factors on behavior change in MI with adults [22,24–26].

Early studies of relational factors on adolescent treatment outcomes in MI have been mixed [27–29]. For instance, Feldstein Ewing and colleagues [29] did not find support for therapist empathy and alliance, as measured via standard working alliance inventories [30] and process coding (MITI) on treatment response with heavy drinking late adolescents [29]. In contrast, Baer and colleagues observed that therapist-rated estimates of youth engagement were associated with better MI treatment response in one of their evaluations, but not the other [27,28]. Ultimately, finer-grained, more precise tools are needed to deconstruct the extent to which the relationship between therapist technical and relational skills and ambivalence leads to adolescent behavior change [12].

AMBIVALENCE WITH ADOLESCENTS

One avenue where the adolescent MI relationship diverges from adult practice is around perceived negative consequences. For many adults, addiction is characterized by decades of substance use and serious, intractable symptoms, including loss of family and friends, disruption of employment, and severe negative health outcomes [31,32]. Although alcohol use is a strong contributor to accidents and injuries (the leading cause for morbidity and

mortality in this age group) [33], most substance-using adolescents do not perceive their substance use as problematic. Rather, many adolescents see no connection between their use and experienced problems with family, school, and/or friends [34–36]. More often, adolescents have strong *positive* experiences, associations, and expectations for substance use [37]. Further, as mass consumers of online and social media [38], adolescents post and view more *positive*, rather than negative, aspects of substance use, and have little exposure to real-world negative aspects of substance use [39]. Similarly, for many, substance use during adolescence is viewed as a normative, socially-indicated, time-limited behavior [40] that may even be *advantageous* in the short-term. For example, many youth report that substance use increases social currency, insulates against awkward or boring situations, increases confidence and facility in peer interactions, and provides symptom relief across sleep, depression, and attention issues [41].

Importantly, much of the MI knowledge base was generated with treatment-seeking adults who were acutely aware of their substance-related problems, and actively trying to reduce their use (e.g., COMBINE; MATCH; UKATT) [4–6]. In contrast, most youth in clinical research and treatment settings are non-treatment-seeking, 'opportunistic' clients [21,42], who arrive at the clinician's office because addiction treatment is either an integrated component of their medical [42,43] or service system care [44,45], and/or because their parents, courts, or other external entities forced them to attend treatment [10].

Consequently, many adolescent clients receive addiction treatment *despite* their lack of interest in changing their substance use. Prominent MI theorists have contended that this may contribute to adolescents' absence of ambivalence and related minimal expression of in-session change talk during MI sessions. In the field of MI, it has been argued that it this very *absence* of ambivalence, which may occur for youth in their context of limited negative consequences, abundant positive experiences, and non-treatment seeking status [10], that operates *against* the likelihood of behavior change in MI [11]. Related, some argue that this may even contribute to the relatively lower effect sizes of MI observed with adolescents. However, we do not see this as a problem of 'ambivalence' [11]. Instead, we suggest that ambivalence may neither be a critical, nor necessary, ingredient in adolescents' successful MI treatment response. In other words, in contrast to the position that ambivalence is requisite to MI success [11], what we find most provocative is that this position is not borne out by the adolescent meta-analytic data within substance use and other health behavior [(Cohen's d = 0.17, 95% CI [.09, .25], $n = 21$) [7] [1]; (Hedge's $g = .16$; 95% CI [.05,f27], $n = 8$) [46]; (Hedge's $g = 0.28$; 95% CI [0.242, 0.323], $n = 37$)] [47]. Not as robust as the outcomes with adults, these data support that among non-treatment seeking youth who likely are *not* ambivalent about their use (and who have limited interest in changing) *do* show positive behavior change in MI, and across a range of behaviors. Consequently, the more apt question is how treating clinicians can best utilize MI relational and technical skills to maximize adolescent behavior change.

[1]Per study authors, Cohen's d was calculated against the error MS and Hedge's g was calculated using the square root of the mean square error in the denominator. Study authors report that while with large samples, Hedge's g and Cohen's d are often equivalent, Hedge's g performs better with small samples.

CAPTURING AMBIVALENCE WITH DECISIONAL BALANCE

Decisional balance is a classic clinical tool used to investigate ambivalence [48]. Conceptualized by Janis and Mann [49], decisional balance played a key role in the transtheoretical model of behavior change [50]. While some believe that use of decisional balance is sufficient to generate behavior change and/or confound decisional balance with MI [51], leaders of MI are increasingly discouraging clinicians from using decisional balance when the goal is behavior change [48].

In fact, this is an area of active discussion in the broader MI field. In the latest iteration of the MI text [1], Miller & Rollnick report a fairly open position on decisional balance, supporting its use to explore 'pros and cons' in a 'neutral' and 'balanced way' (p. 238). Concomitantly, Miller (48; personnel communication, July 13, 2015), contends that decisional balance is contraindicated in clinical exchanges with ambivalent individuals who have a low interest in changing, such as adolescents. Miller's position is that decisional balance decreases motivation to change (operationalized by greater expression of sustain talk), which in turn, and maintains post-treatment sustain behavior [48]. Miller states that decisional balance is appropriate when a client has moved *beyond* ambivalence in the direction of change, at which point it can be used to address sustain talk, therapeutic discord, and/or concrete planning barriers toward change [48].

Although many have used decisional balance in MI with adolescents both in research trials [52–54] and direct patient care, we could find no targeted empirical examination isolating the impact of decisional balance on addiction treatment outcome for this age group. Thus, it might be the case that Miller's position is supported, as sustain talk has been a robust predictor of poor post-treatment outcomes in adult [3] and the smaller body of adolescent studies [21,55]. However, we suggest that the MI therapeutic relationship is likely more nuanced with adolescents. For example, it is possible that for adolescents, decisional balance might help *create* ambivalence by giving a 'head start' when change talk is not yet present. This may be where relational component of effective MI interacts with adolescent intra-individual factors, including ambivalence, to yield positive behavior change. Following adult studies [56], process research with younger samples might uncover that typically MI-inconsistent therapist behaviors (e.g., confrontation) can lead to positive treatment outcomes when delivered with high empathy, therapeutic alliance and MI spirit. Empirical studies are needed to understand our metrics of ambivalence for adolescents, the efficacy and impact of our clinical approaches to enhance ambivalence (including whether or not decisional balance should be proscribed for adolescents), and how therapist relational factors interact with adolescents' degree of ambivalence to facilitate or obstruct treatment gains.

RECONCILING CLINICAL RESEARCH AND PRACTICE: STEPS TOWARD INTEGRATION

The field of adolescent addiction is still very much in its infancy, with few large, multi-site studies examining this population (e.g., Cannabis Youth Trials) [57]. The field needs a series of studies that emphasize internal validity, establish the parametric boundaries of treatment (e.g., with what substances MI treatment is effective), and engage in dismantling projects to

determine the driving mechanisms of adolescent MI treatment response. Until then, we encourage clinicians and scientists to follow the guiding tenet of MI (1): to allow our clients to inform and guide our practice. We also offer these recommendations.

(1) *Improve instrumentation for assessing adolescents' ambivalence*. In adolescent addiction treatment, it is common practice to adopt adult measures, and directly apply them with adolescents. We recommend caution with this approach; in some instances, adult measures operate well with youth. Yet, others suggest that the underlying processes of brain and behavioral response are quite different, and thus, direct translation might not be indicated [58,59].

We advocate for the development and empirical assessment of reliable and valid measures of ambivalence in adolescence, as operationalized from an MI viewpoint. This would allow us to move from speculation to data regarding the degree to which ambivalence is required in MI with adolescents. In the interim, one avenue to begin to deconstruct the degree of impact of ambivalence on adolescent behavior change is to work with process researchers to directly *code* for ambivalence statements. Some are already undertaking qualitative and linguistic analysis of transcripts around ambivalence themes [60]. This cutting-edge work will reveal critical advances in conceptualizations of ambivalence with adolescents, and guidance regarding how to manage it clinically.

(2) *Utilize innovative methods to deconstruct these relationships*. Another approach to determine what role ambivalence has in adolescent MI treatment response is through the unconventional application of neuroimaging. Neuroimaging allows fine-grained access to process variables that have been historically difficult to isolate and examine [61]. For example, Feldstein Ewing and colleagues have begun to illuminate critical developmental differences in adolescent neurocognitive processing of salient mechanisms of change (e.g., brain response during change talk in contemplation/self-reflection regions) [59]. This work has also highlighted the importance of relational factors, including genuine clinical MI relationships, in young brain response. For instance, young heavy drinkers showed greater brain activation to their own client language in the left inferior frontal gyrus/anterior insula and superior temporal gyri after working with a live MI clinician. In terms of youth brain response, there seems to be something particularly important about those statements originating in the context of therapy [62].

In the broader adult literature, in a subgroup comparison of adults with AUDs, LaBerre and colleagues [63] operationally defined ambivalence using self-report responses to Rollnick's Readiness to Change questionnaire, completed upon treatment entry [64]. Individuals were categorized by their highest subscale scores, yielding two subgroups: 'Pre-action' (total n = 10; n = 1 precontemplation, n = 9 contemplation) and 'Action' (n = 21). Compared with the Action group, the Preaction group showed significant differences in brain structure via MRI, including decreased gray matter volume across the right cerebellum (Crus I), bilateral fusiform gyri and frontal cortex (e.g., lateral orbitofrontal cortex, right ventromedial prefrontal cortex) and rostral cingulate areas (e.g., supplementary motor area, mid-cingulate gyrus; dorsolateral/ dorsomedial prefrontal cortex; caudate nucleus), brain areas that

underlie cognitive, social, and emotional functioning. When compared with the Action group, the Preaction group showed 13% smaller brain volume.

Paralleling these structural findings, with a sample of adult, treatment-seeking cigarette smokers who were planning to quit, Wilson and colleagues [65] evaluated ambivalence using a 6-item scale by Lipkus [66]. Total scores for ambivalence were generated by averaging responses across items. Wilson utilized an fMRI-based cigarette cue exposure paradigm to evaluate the link between ambivalence and cigarette cue response. This study found a negative correlation between ambivalence about smoking and functional activation in brain regions responsible for reward-processing, motivation, and attention (rostral anterior cingulate/medial frontal gyrus, caudate nucleus/thalamus, cuneus/lingual gyrus) during the cigarette cue.

Additional work in social and cognitive affective neuroscience has converged with these studies, indicating the role of key brain areas in error detection, conflict monitoring, reward processing, and introspection/contemplation in processing ambivalence, including the anterior cingulate cortex and the posterior cingulate cortex/precuneus [59,67–69]. Together, one perspective is that what we interpret as ‘ambivalence’ may in fact be a proxy of underlying differences in brain structure and function which contribute to the behavioral manifestation of lower interest in and ability to choose to and complete behavior change.

Given these findings, we recommend the use of neuroimaging as a vehicle to understand the mechanisms of treatment response, rather than as an indicator for precision medicine. A prominent topic in the US (www.whitehouse.gov/precision-medicine), precision medicine revolves around finding and utilizing treatment strategies that take individual variability into account [70]. In this respect, we are not advocating for all addiction clients to receive MRI/fMRI prior to entry into treatment. Rather, it is our position that neuroimaging offers one tool to help us understand what ambivalence *is* in the adolescent brain, in order to give us a more sophisticated and sensitive measure of what the correlates and consequences of ambivalence *might be.*

In terms of what brain mechanisms of change might be (e.g., enduring change processes, markers of change, individual differences in responsiveness to interventions), neural substrates activated in response to ambivalence may be an active ingredient and/or they may be epiphenomenal [23,71]. Similarly, it might be the case that ambivalence processes represent a *marker* of an underlying neurocognitive process, rather than an enduring process of change. Using neuroimaging to examine these questions will allow us to eventually get closer to understanding the interplay between basic biological and behavioral factors within the process of change for youth [72] by offering one foundational research step that is needed prior to providing guidance to clinicians.

(3) *Explore other theoretical models of adolescent MI change processes*. One theoretical framework that may be useful with adolescents is the ‘conflict resolution’ hypothesis [73]. This proposes that MI is effective because it raises a client’s awareness of the conflict between their current behavior and short- or long-term goals and values. In this framework, the MI therapist aims to help the client examine and discuss both the benefits and costs of their substance

use to identify and elicit ambivalence about substance use. This is the first step, prior to clinical efforts to resolving ambivalence in the direction of change. This framework has received preliminary empirical support among heavy drinking college students [74]. While anecdotally consonant with our adolescent MI clinical experiences, empirical studies are requisite to determine the fit of this clinical framework.

(4) *Developmental considerations for clinical steps*. Here we cautiously step away from the empirical evidence. Until we have robust metrics of ambivalence that are accessible for clinicians working with adolescents, we encourage MI clinicians *not to be fearful of ambivalence – or its absence* - with their adolescent clients. Rather, both are well within the norm in the MI process, and within youths' own journey towards change. We also encourage clinical and research teams to look more closely to the empirically more elusive relational factors, particularly the role of highly skilled and experienced therapists in clinical interactions. For example, one promising candidate is high-level therapeutic skill, which may help access adolescents' clinical content, including ambivalence. Critically, the metric for this therapeutic active ingredient is reflective listening, which can, and has been measured [22,23,75]. In line with recent neurocognitive work with adolescents [62], this therapeutic active ingredient may be critical in producing adolescents' MI treatment response [16,27].

LIMITATIONS AND CONCLUSIONS

It is our goal to administer the most powerful treatment agents, to give our adolescent clients the best chance at behavior change [9]. However, due to the relative absence of empirical studies on ambivalence with adolescents, we are still operating without sufficient data to implement the most effective interventions. While we have reviewed current data and theory in the adolescent MI change process, and suggested areas in need of further exploration, it is important to note that the relatively shorter substance use histories of adolescents also reflect a natural artifact of time. A critical direction for future work in this area must address the perceived importance of negative consequences and how that relates to readiness to change and treatment outcomes [76,77].

Together, the reviewed elements support that adolescents are not 'little adults.' Instead, MI practice needs to be articulated so that it addresses the treatment needs of adolescents to generate positive behavior change. It is our position that MI is a promising treatment for adolescents, but ambivalence may not be the central tenet underlying its success. We must make an effort to determine how and why MI works for this age group, in order to generate a treatment approach that is maximally effective. Concretely, conceptualizations and investigations of MI's mechanisms of change will need to be updated accordingly.

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