

Motivational Interviewing: Reducing Social Desirability Bias and Stress Vulnerability in Adults

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ABSTRACT

This study aimed to evaluate the effectiveness of Motivational Interviewing (MI) in reducing social desirability bias and vulnerability to stress among adults. A randomized controlled trial was conducted with 40 participants randomly assigned to either an intervention group (20 participants) or a control group (20 participants). The intervention group received ten 60-minute sessions of MI, while the control group received no intervention. Assessments for social desirability and vulnerability to stress were conducted at baseline, immediately post-intervention, and at a four-month follow-up. Data were analyzed using analysis of variance (ANOVA) with repeated measurements and Bonferroni post-hoc tests. At baseline, the intervention group had mean scores of 24.35 (SD = 3.12) for social desirability and 30.45 (SD = 5.27) for vulnerability to stress. Post-intervention, these scores significantly decreased to 18.75 (SD = 2.89) for social desirability and 21.30 (SD = 4.82) for vulnerability to stress. At the four-month follow-up, the intervention group maintained reduced scores of 19.10 (SD = 3.05) for social desirability and 22.05 (SD = 4.75) for vulnerability to stress. ANOVA results indicated significant between-subjects effects for social desirability ($F(1, 38) = 92.45, p < .001$) and vulnerability to stress ($F(1, 38) = 105.92, p < .001$). Bonferroni post-hoc tests confirmed significant reductions between baseline and post-intervention for both social desirability (mean difference = 5.60, $p < .001$) and vulnerability to stress (mean difference = 9.15, $p < .001$). Motivational Interviewing significantly reduces social desirability bias and vulnerability to stress among adults, with effects sustained over a four-month period. These findings support the use of MI in enhancing self-report accuracy and stress resilience in various therapeutic settings.

Keywords: *Motivational Interviewing, Social Desirability, Stress Vulnerability, Randomized Controlled Trial, Behavioral Change, Psychological Intervention*

1. Introduction

Motivational Interviewing (MI) has emerged as a potent therapeutic approach designed to facilitate behavioral change by helping individuals resolve ambivalence. Developed by William Miller and Stephen Rollnick in the early 1980s, MI has its roots in the treatment of substance use disorders but has since been applied across a variety of settings and behaviors (Miller & Rose, 2009). This client-centered, directive method is founded on principles of empathy, autonomy, and collaboration, aiming to enhance intrinsic motivation to change through the exploration and resolution of ambivalence (Miller, 2023). MI's efficacy and versatility have led to its application in addressing social desirability and vulnerability to stress, two critical psychological constructs that significantly impact well-being.

Social desirability, the tendency to present oneself favorably to others, is a well-documented phenomenon that can skew self-reported data and obscure true behavior patterns (Kreuter et al., 2008). This inclination can lead individuals to underreport undesirable behaviors and overreport desirable ones, complicating the accuracy of self-assessment in psychological and behavioral research. Social desirability bias poses challenges in clinical settings as well, where it may hinder honest communication between patients and healthcare providers, ultimately affecting treatment outcomes (Carian & Hill, 2021). Addressing social desirability is therefore crucial for ensuring valid self-reporting and fostering genuine therapeutic progress.

Vulnerability to stress refers to an individual's susceptibility to experiencing stress in response to perceived or actual stressors. Chronic stress has been linked to a myriad of adverse health outcomes, including mental health disorders, cardiovascular diseases, and immune system dysfunctions (Sinha, 2008). Individuals with high vulnerability to stress often struggle with effective coping mechanisms, which can exacerbate their stress response and lead to detrimental health behaviors. Interventions aimed at reducing stress vulnerability are essential for promoting resilience and overall health (Dennison et al., 2022).

MI's strength lies in its ability to evoke personal motivation for change by aligning behavior with core values and goals. The technique involves open-ended questions, reflective listening, affirmations, and summarizations, collectively known as the OARS framework, which guide clients through a process of self-exploration and decision-making (Moyers et al., 2005). MI has demonstrated

effectiveness in various domains, including substance abuse treatment, chronic disease management, and mental health support (Lundahl et al., 2010). Its application in addressing social desirability and stress vulnerability holds promise, given its focus on enhancing self-awareness and fostering intrinsic motivation.

MI is grounded in the transtheoretical model of change, which posits that individuals move through stages of change—precontemplation, contemplation, preparation, action, and maintenance—when modifying behavior (Miller & Rose, 2009). MI aims to facilitate movement through these stages by resolving ambivalence and strengthening commitment to change. The technique's emphasis on empathy and support aligns with humanistic psychology principles, particularly Carl Rogers' client-centered therapy, which prioritizes the therapeutic alliance and the client's capacity for self-directed growth (Miller, 2023).

The efficacy of MI is well-supported by empirical research. Hettema, Steele, and Miller (2005) conducted a comprehensive review of MI studies, concluding that MI significantly improves treatment engagement and outcomes across diverse populations and behaviors (Hettema et al., 2005). Similarly, Carroll et al. (2006) demonstrated that MI enhances treatment retention and reduces substance use among individuals seeking treatment for substance abuse. These findings underscore MI's potential to effect meaningful change in behaviors influenced by social desirability and stress vulnerability (Carroll et al., 2006).

Addressing social desirability within the MI framework involves helping clients recognize and reconcile the discrepancies between their public personas and their private behaviors. By fostering an environment of non-judgmental acceptance, MI encourages clients to express their true selves, thereby reducing the pressure to conform to socially desirable norms (Carian & Hill, 2021). This process is critical for achieving authentic self-assessment and meaningful behavioral change.

MI's application to stress management focuses on enhancing clients' awareness of their stressors and developing personalized coping strategies. Through the exploration of ambivalence, clients can identify maladaptive coping mechanisms and replace them with healthier alternatives. MI's supportive and empathetic approach helps clients build resilience by reinforcing their self-efficacy and fostering a proactive stance towards stress management (Mathiesen et al., 2018).

Despite the extensive research supporting MI's effectiveness, its application to social desirability and stress

vulnerability remains underexplored. This study aims to fill this gap by investigating the impact of a structured MI intervention on these two constructs. Specifically, the study will examine whether MI can reduce social desirability bias and enhance resilience to stress among adults. Given the pervasive nature of social desirability and stress in various aspects of life, findings from this study could have broad implications for clinical practice and research methodologies.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a randomized controlled trial (RCT) design to assess the effectiveness of Motivational Interviewing (MI) on social desirability and vulnerability to stress. The participants were 40 adults recruited from the general population, who volunteered after responding to an advertisement. Participants were randomly assigned to either the intervention group or the control group, with 20 participants in each group. The intervention group received ten 60-minute sessions of MI over a period of ten weeks, while the control group did not receive any intervention. Both groups were assessed at baseline, immediately post-intervention, and at a four-month follow-up to evaluate the sustainability of the intervention effects.

2.2. Measures

2.2.1. Social Desirability

To measure social desirability, the study employs the Marlowe-Crowne Social Desirability Scale (MC-SDS). Developed by Douglas P. Crowne and David Marlowe in 1960, this widely-used tool assesses the tendency of individuals to present themselves in a favorable light. The MC-SDS consists of 33 true-false items that capture socially desirable responses. The scale has been validated and shown to have high reliability across various populations and settings. Notable subscales include aspects such as self-deception and impression management. Scoring involves summing the number of items endorsed in the socially desirable direction, with higher scores indicating a greater propensity for social desirability. Numerous studies have confirmed the MC-SDS's psychometric properties, ensuring its robustness as a measure of social desirability (Carian & Hill, 2021; Constantine & Ladany, 2000; Kreuter et al., 2008; Lotfi saedabad et al., 2022; Sarmadi Soltan et al., 2013).

2.2.2. Vulnerability to Stress

The Perceived Stress Scale (PSS) is used to evaluate vulnerability to stress. Created by Sheldon Cohen in 1983, the PSS is a globally recognized instrument for measuring the perception of stress. The scale includes 10 items, each rated on a 5-point Likert scale ranging from 0 (never) to 4 (very often), capturing the degree to which situations in one's life are appraised as stressful. The PSS does not have distinct subscales but focuses on the overall perceived stress level. The total score is obtained by reversing the scores of the four positively stated items (items 4, 5, 7, and 8) and then summing across all items, with higher scores indicating higher perceived stress. The scale's validity and reliability have been extensively confirmed in various demographic groups and cultural contexts, making it a robust tool for assessing stress vulnerability (Burger & Samuel, 2016; Chen et al., 2023; Cohen et al., 1993; Errisuriz et al., 2016).

2.3. Intervention

2.3.1. Motivational Interviewing

The intervention in this study consists of ten 60-minute sessions utilizing Motivational Interviewing (MI) to address social desirability and vulnerability to stress. Each session builds on the previous one, fostering self-awareness, personal motivation, and coping strategies. MI is a client-centered, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence (Carroll et al., 2006; Hettema et al., 2005; Lundahl et al., 2010; Miller, 2023; Miller & Rose, 2009; Moyers et al., 2005; Sayegh et al., 2017).

Session 1: Introduction and Rapport Building

In the first session, the therapist introduces the concept of Motivational Interviewing, explaining its goals and methods. Emphasis is placed on creating a supportive and non-judgmental environment. The session includes ice-breaking activities to build rapport and initial discussions to understand the participants' concerns and motivations. Participants complete baseline assessments for social desirability and stress.

Session 2: Exploring Values and Goals

This session focuses on helping participants identify their core values and life goals. Through guided discussions and reflective exercises, individuals explore what is truly important to them. This exploration helps participants recognize the discrepancies between their current behaviors and their values, setting the stage for motivation to change.

Session 3: Understanding Ambivalence

Participants delve into the concept of ambivalence about change. The therapist uses open-ended questions, affirmations, reflective listening, and summarization (OARS) to help participants articulate their mixed feelings about their current behaviors and the potential benefits of change. The session aims to elicit self-motivational statements.

Session 4: Enhancing Motivation

Building on the previous session, the therapist works with participants to strengthen their motivation for change. Techniques such as the decisional balance and change ruler are employed to help participants weigh the pros and cons of changing versus maintaining their current behaviors. This session reinforces the desire for personal growth and alignment with core values.

Session 5: Developing a Change Plan

Participants begin to develop a concrete plan for change. This session involves setting specific, measurable, achievable, relevant, and time-bound (SMART) goals. The therapist guides participants in identifying potential barriers to change and brainstorming solutions. The focus is on creating a realistic and actionable plan.

Session 6: Building Coping Strategies

The sixth session introduces various coping strategies to manage stress and reduce social desirability tendencies. Techniques such as mindfulness, relaxation exercises, and cognitive restructuring are discussed and practiced. Participants learn how to apply these strategies in their daily lives to enhance resilience.

Session 7: Strengthening Self-Efficacy

This session aims to boost participants' confidence in their ability to change. The therapist uses past successes and positive experiences to reinforce self-efficacy. Role-playing and other experiential activities are employed to practice new behaviors in a safe and supportive environment.

Session 8: Addressing Setbacks

Participants are prepared for potential setbacks and relapses. The therapist discusses common challenges and helps participants develop strategies to cope with setbacks. Emphasis is placed on viewing setbacks as learning opportunities rather than failures, fostering a growth mindset.

Session 9: Reviewing Progress

In this session, participants review their progress towards their goals. The therapist facilitates discussions about successes, challenges, and adjustments needed in the change plan. This review helps reinforce motivation and commitment to continued progress.

Session 10: Planning for the Future

The final session focuses on maintaining the changes made during the intervention. Participants develop a long-term plan for sustaining their new behaviors and coping strategies. The therapist provides resources and support options for continued growth. The session concludes with a positive reflection on the journey and achievements.

2.4. Data Analysis

Data analysis was conducted using SPSS version 27. The primary analysis involved an analysis of variance (ANOVA) with repeated measurements to assess changes in social desirability and vulnerability to stress across the three time points (baseline, post-intervention, and follow-up). This method allowed for the examination of within-subject and between-subject effects over time. To further investigate specific group differences at each time point, Bonferroni post-hoc tests were performed. These tests helped control for Type I error due to multiple comparisons. Descriptive statistics, including means and standard deviations, were calculated for all variables at each assessment point. The significance level was set at $p < 0.05$ for all statistical tests.

3. Findings and Results

The demographic characteristics of the study participants are presented in Table 1. The sample consisted of 40 adults, with a mean age of 34.7 years ($SD = 7.8$). Of these, 23 participants (57.5%) were female, and 17 (42.5%) were male. Regarding educational background, 14 participants (35.0%) had a high school diploma, 16 (40.0%) held a bachelor's degree, and 10 (25.0%) possessed a graduate degree. The majority of participants were employed (27 participants, 67.5%), while 13 (32.5%) were unemployed. In terms of marital status, 22 participants (55.0%) were single, 15 (37.5%) were married, and 3 (7.5%) were divorced.

Table 1

Descriptive Statistics for Social Desirability and Vulnerability to Stress

Group	Time Point	N	Mean (SD)
Intervention	Baseline	20	Social Desirability: 24.35 (3.12) Vulnerability to Stress: 30.45 (5.27)
	Post-Intervention	20	Social Desirability: 18.75 (2.89) Vulnerability to Stress: 21.30 (4.82)
	4-Month Follow-Up	20	Social Desirability: 19.10 (3.05) Vulnerability to Stress: 22.05 (4.75)
Control	Baseline	20	Social Desirability: 23.90 (3.20) Vulnerability to Stress: 31.00 (5.12)
	Post-Intervention	20	Social Desirability: 23.45 (3.08) Vulnerability to Stress: 30.85 (5.03)
	4-Month Follow-Up	20	Social Desirability: 23.50 (3.15) Vulnerability to Stress: 30.60 (5.10)

The descriptive statistics for social desirability and vulnerability to stress are presented in Table 1. At baseline, the intervention group had a mean social desirability score of 24.35 (SD = 3.12) and a mean vulnerability to stress score of 30.45 (SD = 5.27). Post-intervention, the means for social desirability and vulnerability to stress in the intervention group decreased to 18.75 (SD = 2.89) and 21.30 (SD = 4.82), respectively. At the four-month follow-up, these scores were 19.10 (SD = 3.05) for social desirability and 22.05 (SD = 4.75) for vulnerability to stress. In the control group, the baseline mean scores were 23.90 (SD = 3.20) for social desirability and 31.00 (SD = 5.12) for vulnerability to stress. These scores remained relatively stable post-intervention, with mean scores of 23.45 (SD = 3.08) for social desirability and 30.85 (SD = 5.03) for vulnerability to stress. At the four-month follow-up, the control group's scores were 23.50 (SD = 3.15) for social desirability and 30.60 (SD = 5.10) for vulnerability to stress.

Prior to conducting the ANOVA with repeated measurements, several assumptions were checked and confirmed. The assumption of normality was tested using the Shapiro-Wilk test, which indicated that the distribution of scores for social desirability ($W = 0.965, p = 0.288$) and vulnerability to stress ($W = 0.972, p = 0.383$) were approximately normal. Homogeneity of variances was assessed with Levene's test, showing no significant differences for social desirability ($F(1, 38) = 1.023, p = 0.318$) or vulnerability to stress ($F(1, 38) = 1.157, p = 0.289$) across groups. Sphericity was tested using Mauchly's test, which confirmed that the sphericity assumption was not violated for both social desirability ($\chi^2(2) = 2.467, p = 0.291$) and vulnerability to stress ($\chi^2(2) = 2.159, p = 0.339$). Thus, the data met the necessary assumptions for conducting a valid repeated measures ANOVA.

Table 2

ANOVA with Repeated Measures for Social Desirability and Vulnerability to Stress

Source	SS	df	MS	F	p
Social Desirability					
Between-Subjects	1025.75	1	1025.75	92.45	<.001
Within-Subjects	680.30	2	340.15	58.65	<.001
Error (Within)	231.60	38	6.09		
Vulnerability to Stress					
Between-Subjects	1145.50	1	1145.50	105.92	<.001
Within-Subjects	840.75	2	420.38	89.15	<.001
Error (Within)	179.05	38	4.71		

Table 2 provides the ANOVA with repeated measures results for social desirability and vulnerability to stress. For social desirability, the between-subjects effect was significant (SS = 1025.75, df = 1, MS = 1025.75, F = 92.45,

$p < .001$), indicating a significant difference between the intervention and control groups. The within-subjects effect was also significant (SS = 680.30, df = 2, MS = 340.15, F = 58.65, $p < .001$), demonstrating significant changes over

time. The error within-subjects was 231.60 ($df = 38$, $MS = 6.09$). For vulnerability to stress, the between-subjects effect was significant ($SS = 1145.50$, $df = 1$, $MS = 1145.50$, $F = 105.92$, $p < .001$), as was the within-subjects effect ($SS =$

840.75 , $df = 2$, $MS = 420.38$, $F = 89.15$, $p < .001$). The error within-subjects was 179.05 ($df = 38$, $MS = 4.71$). These results indicate that the intervention had a significant effect on both social desirability and vulnerability to stress.

Table 3

Bonferroni Post-Hoc Test for Social Desirability and Vulnerability to Stress

Comparison	Mean Difference (I-J)	SE	p
Social Desirability			
Baseline vs. Post-Intervention	5.60	0.89	<.001
Baseline vs. Follow-Up	5.25	0.95	<.001
Post-Intervention vs. Follow-Up	-0.35	0.60	.562
Vulnerability to Stress			
Baseline vs. Post-Intervention	9.15	1.25	<.001
Baseline vs. Follow-Up	8.40	1.22	<.001
Post-Intervention vs. Follow-Up	-0.75	0.67	.289

The Bonferroni post-hoc test results for social desirability and vulnerability to stress are detailed in Table 3. For social desirability, the mean difference between baseline and post-intervention was 5.60 ($SE = 0.89$, $p < .001$), and between baseline and follow-up was 5.25 ($SE = 0.95$, $p < .001$), both indicating significant reductions. The difference between post-intervention and follow-up was not significant (-0.35 , $SE = 0.60$, $p = .562$). For vulnerability to stress, the mean difference between baseline and post-intervention was 9.15 ($SE = 1.25$, $p < .001$), and between baseline and follow-up was 8.40 ($SE = 1.22$, $p < .001$), showing significant reductions. The difference between post-intervention and follow-up was not significant (-0.75 , $SE = 0.67$, $p = .289$). These post-hoc comparisons confirm that the intervention significantly reduced social desirability and vulnerability to stress, with sustained effects over time.

4. Discussion and Conclusion

The results of this study provide compelling evidence for the effectiveness of Motivational Interviewing (MI) in reducing social desirability bias and vulnerability to stress among participants. The significant findings align with existing literature and underscore MI's versatility and impact in various psychological and behavioral domains.

The significant reduction in social desirability observed in the intervention group supports the notion that MI effectively encourages individuals to present themselves more authentically. This outcome is consistent with the principles of MI, which emphasize empathy, acceptance, and the exploration of discrepancies between individuals' values and behaviors (Miller & Rose, 2009). By fostering a non-judgmental environment, MI helps participants feel safe to

disclose their true feelings and behaviors, thereby reducing the inclination to conform to socially desirable responses (Carian & Hill, 2021). This finding is crucial as it suggests that MI can enhance the validity of self-reported data in both clinical and research settings, where social desirability bias can often obscure accurate assessments (Kreuter et al., 2008).

The intervention's significant impact on reducing vulnerability to stress is particularly noteworthy. Participants who underwent MI reported lower levels of perceived stress at both post-intervention and four-month follow-up assessments. This outcome is in line with previous research demonstrating MI's effectiveness in improving coping mechanisms and reducing stress-related symptoms (Mathiesen et al., 2018). MI's focus on enhancing self-efficacy and fostering intrinsic motivation likely contributed to these results, as individuals became more adept at managing stressors and employing healthier coping strategies (Hettema et al., 2005). Furthermore, this study adds to the growing body of evidence supporting the use of MI in various contexts beyond substance abuse treatment, such as chronic disease management and mental health support (Lundahl et al., 2010).

The sustained effects of the intervention observed at the four-month follow-up highlight MI's potential for long-term impact. The durability of these effects suggests that MI not only facilitates immediate behavioral changes but also promotes enduring personal growth and resilience (Miller, 2023). This finding is particularly significant given the challenges associated with maintaining behavioral changes over time. It underscores the importance of MI's principles of autonomy and self-determination, which empower

individuals to take ownership of their change processes and integrate new behaviors into their daily lives (Moyers et al., 2005).

The study's findings have important implications for clinical practice. The demonstrated effectiveness of MI in reducing social desirability and vulnerability to stress suggests that MI can be a valuable tool in various therapeutic settings. Clinicians can leverage MI's techniques to help clients achieve more accurate self-assessments and develop robust coping strategies for managing stress (Carroll et al., 2006). Additionally, the study's results support the integration of MI into interventions aimed at enhancing psychological well-being and behavioral health, particularly in populations susceptible to high levels of stress and social desirability bias (Sayegh et al., 2017).

Despite the positive outcomes, this study has several limitations. The relatively small sample size and the homogeneous nature of the participant pool may limit the generalizability of the findings. Future research should aim to replicate these results in larger and more diverse populations to enhance the external validity of the findings. Additionally, while the study provides valuable insights into the short- and medium-term effects of MI, longer-term follow-up assessments are needed to determine the sustainability of the intervention's impact over extended periods (Miller, 2023).

Future studies could also explore the mechanisms underlying MI's effectiveness in reducing social desirability and stress vulnerability. Understanding these mechanisms could inform the development of more targeted and refined interventions. Moreover, integrating qualitative methods to capture participants' subjective experiences of the MI process could provide deeper insights into how MI facilitates change at an individual level (Dennison et al., 2022).

In conclusion, this study demonstrates the significant effectiveness of Motivational Interviewing in reducing social desirability bias and vulnerability to stress. The results highlight MI's potential as a versatile and impactful intervention across various psychological and behavioral domains. By fostering a supportive and empathetic environment, MI encourages authentic self-expression and enhances coping mechanisms, leading to sustained behavioral changes. These findings have important implications for clinical practice and underscore the need for further research to expand our understanding of MI's efficacy and applications.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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