Applications of Contact Intervention in Reducing Public Stigma of Mental Disorders

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Abstract

Contact intervention is one of the important methods for reducing public stigma of mental disorders. Different forms of contact have been widely applied in intervention studies aimed at reducing public stigma, and have been proven effective in reducing stigma across attitudes, emotions, behavioral intentions, and other dimensions. The effectiveness of contact interventions is influenced by two aspects: the implementation process of the intervention and the characteristics of the intervention targets. From the perspective of intervention implementation, effective contact interventions comprise three key components: individuals with mental disorders, information, and interaction; these components need to possess certain characteristics to be effective; simultaneously, the presence of components such as multi-form contact, continuous contact, and contact quality can further enhance the effects of contact interventions. From the perspective of intervention targets, the effects of contact interventions vary with individual differences among the targets. Future research needs to further improve the research design of contact interventions, enrich theoretical mechanism studies of contact interventions, and promote the development of evidence-based practice for contact interventions. Additionally, applying contact interventions to reduce public stigma toward specific groups, as well as intervening in public stigma toward specific types of mental disorders, represent further research directions, along with further examining the effectiveness of contact interventions within the context of Chinese culture.

Full Text

Application of Contact Intervention to Reduce Public Stigma of Mental Disorders

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Abstract

Contact intervention represents a crucial approach for reducing public stigma toward mental disorders. Various forms of contact have been extensively applied in intervention research aimed at reducing public stigma, demonstrating effectiveness across attitudinal, emotional, and behavioral dimensions. The efficacy of contact interventions is influenced by both implementation processes and characteristics of target populations. Regarding implementation, effective contact interventions comprise three key ingredients: individuals with mental disorders, information, and interaction—each requiring specific features to generate impact. Additionally, elements such as multi-modal contact, continuous engagement, and contact quality can further enhance intervention outcomes. From the perspective of intervention targets, the effectiveness of contact interventions varies according to individual differences. Future research should refine study designs, enrich theoretical mechanism investigations, and advance evidence-based practice development. Moreover, applying contact interventions to reduce stigma among specific populations and targeting particular mental disorder types represent important directions for further inquiry, with particular need to validate these effects within Chinese cultural contexts.

Keywords: public stigma of mental disorders; contact intervention; key ingredients; individual differences

Mental disorders refer to dysfunctions in cognition, emotion, behavior, and personality. According to World Health Organization surveys, approximately 450 million people worldwide suffer from mental disorders [**?**, **?**]. Treating mental disorders involves not merely symptom elimination but, more importantly, enabling individuals to fully participate in social life according to their roles, capabilities, and personal interests [**?**, **?**]. Public stigma of mental illness (hereinafter referred to as public stigma) constitutes one of the greatest obstacles to achieving these goals. Public stigma comprises public reactions toward individuals with mental disorders, consisting of three components: stereotypes, prejudice, and discrimination [**?**, **?**]. Stereotypes refer to negative beliefs about people with mental disorders—for instance, that they are dangerous, violent, and unpredictable. Prejudice emerges when individuals endorse these negative stereotypes and develop negative emotions and evaluations toward those with mental disorders. Discrimination represents behavioral responses stemming from prejudice [**?**, **?**, **?**, **?**]. Public stigma is not limited to specific mental disorders but targets a range of conditions, including schizophrenia, depression, anxiety disorders, and eating disorders [**?**, **?**, **?**, **?**, **?**, **?**].

Public stigma poses a tremendous challenge for individuals with mental disorders [**?**, **?**], with consequences often more severe than the disorders themselves [**?**, **?**]. Stigma causes people with mental disorders to lose numerous legitimate

opportunities and experience social exclusion [?, ?]. Beyond these life impacts, public stigma can become internalized as self-stigma [?, ?, ?, ?, ?]. When individuals with mental disorders direct stigmatizing attitudes toward themselves, their self-esteem and self-efficacy diminish, affecting their help-seeking, treatment, and recovery [?, ?, ?, ?, ?].

Public stigma is universally prevalent across countries and regions. The World Health Organization has called upon member states to implement measures to reduce public stigma [?, ?]. Consequently, exploring effective interventions to reduce public stigma holds significant practical importance.

Protest, education, and contact represent the most commonly employed interventions for reducing public stigma. Protest involves reducing stigma by emphasizing the unfairness of various stigmatizing forms and blaming those who hold stereotypes and discriminatory behaviors toward stigmatized groups. However, research indicates that protest can cause individuals to suppress prejudices, leading to unconscious rebound effects that worsen rather than change stigmatizing attitudes [?, ?]. Therefore, few recent studies have utilized protest to reduce public stigma. In contrast, education and contact are more commonly used and effective approaches. Education reduces stigma by providing accurate information to correct public misconceptions about mental disorders. Contact reduces stigma through interaction between individuals with mental disorders and the public. Although debates persist regarding which approach is more effective [?, ?, ?, ?, ?], more research supports the superiority of contact interventions. For example, a meta-analysis of 72 studies revealed that contact interventions produced effect sizes more than three times larger than educational interventions [?, ?, ?, ?, ?, ?]. Furthermore, educational interventions can create an "expert bias" that undermines information credibility, whereas contact interventions convey information through patients' personal narratives, lending greater authenticity [?, ?]. Thus, compared to receiving expert education about mental disorders, contact with a patient sharing personal experiences may more effectively reduce public stigma [?, ?, ?].

Given the superiority of contact interventions in reducing public stigma, increasing numbers of intervention programs have adopted this approach. Through literature review, we find that current research on contact interventions for reducing public stigma primarily divides into two areas: first, studies on the application and effectiveness of different contact forms in reducing public stigma; and second, with the development of evidence-based practice, numerous studies have begun exploring key ingredients of contact interventions and factors influencing intervention effectiveness. Therefore, this review synthesizes research on contact interventions from these two perspectives and identifies future research directions.

1 Forms of Contact Intervention

Intergroup contact hypothesis posits that interaction between in-group and out-group members can effectively reduce prejudice, with optimal outcomes achieved under ideal contact conditions (equal status, cooperation, common goals, and institutional support) [?, ?, ?, ?, ?, ?]. Since its proposal, intergroup contact theory has expanded from primarily focusing on direct contact to encompassing multiple forms of both direct and indirect contact. Since the 1960s, numerous studies have applied contact to reduce public stigma [?, ?]. Today, various contact forms have been widely implemented in intervention programs targeting public stigma reduction. The following sections describe applications of different contact forms in reducing public stigma.

1.1 Direct Contact Intervention

Direct contact intervention involves arranging face-to-face interactions between individuals with mental disorders and target groups. The most common approach features patients sharing personal experiences with target audiences and engaging in discussion [?, ?, ?, ?, ?, ?]. For example, in Corrigan et al.' s (2001) intervention study, participants in the contact intervention group first watched a 10-minute self-presentation by an individual with mental disorders focusing on personal experiences, then engaged in a 5-minute discussion with the patient about mental disorder-related issues. Many intervention programs have adapted how patients present their experiences, such as having them share their illness journeys through theatrical performances [?, ?], poetry, prose (monologues), or music [?, ?]. Other studies have arranged for medical students to meet multiple times with individuals with mental disorders in one-on-one or group formats to understand their personal experiences [?, ?].

Beyond these relatively structured contact interventions, naturalistic direct contact has also been employed in stigma reduction efforts. In Couture and Penn' s (2006) study, peer volunteers willing to interact with individuals with mental disorders were matched with patients and asked to spend time together weekly for six months, examining whether this naturalistic direct contact could reduce public stigma. Additionally, engaging the public in volunteer activities related to mental disorders represents another direct contact intervention form. For instance, in Fung, Chan, Woo, Ma, & Mak' s (2016) intervention study, students provided half-day to full-day volunteer services for individuals with mental disorders in recovery.

1.2 Indirect Contact Intervention

Direct contact interventions require face-to-face interaction between individuals with mental disorders and the public, placing high demands on patients and making implementation relatively difficult. Consequently, many scholars have employed indirect contact to reduce public stigma, with video-based contact being the most frequently used form. Typically, video contact involves individuals

with mental disorders sharing their experiences—including symptoms, treatment, and personal recovery—through video media [?, ?]. These videos may present one or more individuals with mental disorders narrating their experiences or feature interviews between mental health experts and patients \cite{Brown, Evans, Espenschade, & O' Connor, 2010; Hackler, Cornish, & Vogel, 2016; Nguyen, Chen, & O' Reilly, 2012}. Some video contact interventions have also utilized films or documentaries depicting the experiences of individuals with mental disorders to reduce public stigma [?, ?, ?, ?, ?, ?, ?]. Compared to face-to-face contact, video contact offers advantages including lower cost, convenient implementation, and broad dissemination potential [?, ?]. Therefore, when face-to-face contact is unfeasible, video contact represents a viable alternative for reducing public stigma.

Beyond video contact, recent research has explored other indirect contact forms, such as imagined contact and extended contact. Imagined contact involves mentally simulating social interaction with one or more out-group members [?, ?]. In public stigma reduction research, imagined contact typically involves instructing participants to imagine positive, relaxed, and comfortable interactions with an individual with mental disorders [?, ?, ?, ?, ?]. Extended contact posits that learning about friendships between in-group and out-group members can reduce prejudice and improve attitudes toward out-groups [?, ?]. Videos depicting close friendships or interactions between contact parties can be considered a form of extended contact [?, ?]. For example, in West and Turner' s (2014) study, participants watched a video showing two people interacting amicably; the extended contact group was informed that one person in the video had schizophrenia, after which participants' stigma changes were measured. Currently, imagined and extended contact have primarily been conducted in laboratory settings, with limited application in real-world intervention programs.

1.3 Contact Combined with Education

Contact can serve as an independent intervention or be combined with other approaches. Contact combined with education represents a commonly used intervention strategy. Implementation is flexible, incorporating lectures or workshops with video contact [?, ?, ?, ?, ?] or combining expert lectures with direct contact [?, ?, ?, ?, ?]. Additionally, some intervention projects feature individuals with mental disorders serving as both knowledge providers and personal experience presenters. For example, in Rubio-Valera's (2018) study, a trained individual with mental disorders first delivered a lecture on mental health, mental disorder diagnosis, and stigma, then shared personal experiences and discussed stigma' s impact.

In summary, various contact forms have been widely applied in interventions to reduce public stigma. Most existing contact-based intervention programs employ the format of individuals with mental disorders directly (or via video) sharing their personal experiences. Additionally, combining contact with education represents a commonly used intervention approach.

2 Effects of Contact Intervention

Numerous studies demonstrate that contact interventions effectively reduce public stigma and rank among the most effective approaches currently available [?, ?, ?, ?, ?].

The effectiveness of contact interventions in reducing public stigma has been validated across diverse populations. Contact interventions can be implemented at the national level to effectively reduce stigma among the general public. For example, England' s Time to Change represents a national contact-based intervention program. One initiative promoting direct contact involved setting up mobile houses in high-traffic urban areas, where trained individuals with mental disorders in recovery invited passersby to enter and share personal experiences [?, ?]. Evaluation of this program revealed that such direct contact significantly improved public attitudes toward individuals with mental disorders [?, ?]. Similarly, Sweden's Hjärnkoll campaign, another national contact-based intervention, features trained individuals with mental disorders presenting mental health content at national and regional forums based on personal experiences. Hansson, Stjernswärd, and Svensson' s (2016) evaluation found that contact interventions produced positive short-term effects on public knowledge, attitudes, and behaviors. These findings demonstrate that contact interventions can be successfully implemented in large-scale national programs to reduce public stigma among general populations.

Furthermore, contact interventions effectively reduce public stigma among specific groups, including secondary school students [?, ?], university students [?, ?], media professionals [?, ?], and healthcare workers [?, ?]. For instance, Yamaguchi et al.' s (2013) systematic review of 35 interventions targeting university students found that direct or video contact most effectively improved attitudes and behavioral intentions toward individuals with mental disorders. Contact interventions also effectively reduce stigma among healthcare workers who frequently interact with this population. Patten et al. (2012) demonstrated through a randomized controlled trial that incorporating contact interventions into curriculum education effectively reduced stigma among medical students. A recent randomized controlled study similarly confirmed the effectiveness of integrating contact interventions into workplace training for reducing stigma among healthcare professionals [?, ?, ?, ?, ?, ?].

Specifically, contact interventions reduce public stigma through several mechanisms. First, they effectively modify negative attributions and cognitions while fostering positive attitudes. Research shows that following contact interventions, participants alter their causal attributions, reducing blame toward individuals with mental disorders, decreasing perceptions of dangerousness, increasing beliefs about recovery potential, promoting empowerment, and reducing perceptions of incompetence [?, ?, ?, ?]. Second, contact interventions elicit more positive emotional responses and reduce negative reactions, such as increasing compassion and empathy while decreasing anxiety, fear, and apprehension

[?, ?, ?, ?, ?, ?, ?, ?]. Finally, contact interventions modify behavioral intentions toward individuals with mental disorders. Studies demonstrate that contact interventions effectively reduce desired social distance and increase willingness for future contact [?, ?, ?, ?, ?, ?, ?, ?, ?, ?], decrease support for segregation and restriction [?, ?], and increase helping behaviors [?, ?].

To further validate contact intervention effectiveness, numerous studies have compared it with other approaches. Beyond demonstrating superiority over educational and protest interventions, contact interventions have proven more effective than alternative methods. For example, one study compared contact-based interventions with Acceptance and Commitment Training in reducing public stigma [?, ?]. Randomly assigning 111 nurses to contact intervention, acceptance and commitment training, or control groups, results indicated that both interventions effectively reduced social distance, but contact intervention was more effective in strengthening beliefs about patient recovery.

Overall, research supports the role of contact in reducing public stigma. However, several considerations warrant attention when interpreting these effects. First, stigma reduction involves not only knowledge and attitudinal changes but, more importantly, behavioral changes. Current evaluations primarily focus on attitude and emotion changes, with behavioral assessments typically relying on social distance scales rather than actual behavior. Since social distance measures may not reflect real behavioral changes, these findings cannot be generalized to real-world contexts. Whether contact interventions alter actual behaviors toward individuals with mental disorders in natural settings requires further investigation. Second, existing research only demonstrates short-term effectiveness; insufficient evidence supports long-term effects. Finally, a recent meta-analysis found that both contact and educational interventions produce only "small to medium" effect sizes in reducing public stigma [?, ?, ?, ?, ?, ?], indicating that expanding contact intervention effects remains an important future research direction.

3 Key Ingredients of Contact Intervention

Given contact interventions' effectiveness in reducing public stigma, increasing numbers of countries and regions have implemented contact-based programs, including England' s Time To Change, Sweden' s Hjärnkoll, the United States' In Our Voice, and Canada' s Open Minds [?, ?, ?, ?, ?]. These programs exhibit distinct characteristics. Research reveals that not all contact interventions effectively reduce public stigma [?, ?], with effective programs showing varying effect sizes [?, ?]. Even highly effective programs differ in duration and content [?, ?]. With growing emphasis on evidence-based practice, scholars have increasingly focused on identifying ingredients that make contact interventions effective. Recent studies have explored key ingredients in contact-based programs targeting adults, adolescents, and healthcare populations [?, ?, ?, ?, ?, ?, ?]. These investigations have preliminary identified essential components, including elements that can amplify intervention effects.

Synthesizing existing research, we find that individuals with mental disorders, information, and interaction constitute the three most critical ingredients. These components require specific characteristics to promote effectiveness. Additionally, multi-modal contact patterns, continuous engagement, and contact quality can enhance intervention outcomes.

3.1 Individuals with Mental Disorders

As a key ingredient, individuals with mental disorders must possess certain features to enhance intervention effectiveness. First, they need to be in recovery and demonstrate this status through their behavior and demeanor. Being "in recovery" means that, despite past or current symptoms, individuals can effectively manage their conditions and participate normally in work and daily life [?, ?, ?]. This is crucial because contact with individuals not in recovery may reinforce existing stereotypes about mental disorders, hindering attitude change. Second, individuals with mental disorders require pre-intervention support and guidance to share their stories safely while prompting reflection on mental illness stigma [?, ?, ?]. Based on interview and observational data, Chen et al. (2014) identified six training activities that help develop presentation skills: observation, psychological preparation (including confidence building and support), enhancing presentation knowledge and skills, question rehearsal, personal story development, and extensive practice. Third, individuals with mental disorders should reflect intervention targets' characteristics to increase credibility. Research indicates that presenters should demonstrate diversity, reflecting audiences' religion, language, beliefs, gender, age, sexual orientation, and similar social roles [?, ?, ?, ?]. Finally, individuals with mental disorders should engage with audiences as equals—as educators, speakers, facilitators, or leaders rather than as patients [?, ?]. For example, when intervening with medical students, the relationship should not be "doctor-patient" but rather position the individual as a "teacher" or "expert" [?, ?]. Numerous studies confirm that this equal-status contact model effectively improves healthcare students' attitudes and behavioral intentions toward individuals with mental disorders (e.g., Knaak, Karpa, Robinson, & Bradley, 2016).

3.2 Information Conveyed by Individuals with Mental Disorders

The information conveyed by individuals with mental disorders forms the core of contact interventions. Most programs employ personal narrative sharing, which has proven effective in reducing public stigma. Therefore, self-disclosure of personal experiences constitutes a key ingredient [?, ?]. Research shows that narrative content significantly impacts intervention effectiveness: comprehensive stories covering the journey from illness onset through recovery reduce stigma more effectively than presentations focusing solely on symptoms or post-recovery life [?, ?]. Corrigan et al. (2013) interviewed individuals with mental disorders who had participated in contact interventions and concluded that personal narratives should include both "the way down"(illness experience) and "the

way up" (successful recovery). Many intervention programs provide frameworks to help individuals present their experiences effectively. For healthcare workers, Knaak and Patten (2015) recommend that narratives include personal background, illness experience, treatment and healthcare encounters, turning points toward recovery, experiences with stigma, and recovery experiences (including symptom management and current normal or successful life). Presenters should emphasize recovery experiences to demonstrate that recovery is real and possible. Studies exploring key ingredients consistently identify recovery-focused messaging as the most important content [?, ?, ?, ?]. Knaak et al. (2014) found that interventions emphasizing recovery produced stronger effects than those that did not.

Beyond personal narratives, educational information correcting misconceptions about patients represents another crucial content area. Chen et al. (2015) and Knaak et al. (2014) identified correcting misinformation about mental disorders (e.g., that individuals are dangerous, violent, or unpredictable) as a key ingredient for reducing stigma among adolescents and healthcare populations. Corrigan and Fong (2014) further note that delivering educational information enhances contact intervention effectiveness, possibly because individuals with mental disorders can personalize and support this information with their own experiences [?, ?, ?, ?], thereby helping audiences better understand patients' personal journeys [?, ?].

It is important to note that information should be tailored to target populations and intervention goals. For employer-focused interventions, content should emphasize recovery and post-recovery work capacity. If increasing help-seeking behavior is the goal, individuals with mental disorders should highlight help-seeking-related information.

3.3 Interaction

Positive interaction between contact parties promotes intervention effectiveness [?, ?]. This may occur because superficial contact does not effectively reduce prejudice, whereas opportunities for deeper interaction enable target audiences to better understand individuals with mental disorders, facilitating stronger contact effects [?, ?]. Ashton et al. (2017) advocate for open dialogue in direct contact interventions, allowing non-judgmental discussion, interaction, and Q&A. Similarly, open, divergent discussion is essential in video contact interventions [?, ?]. Corrigan et al.' s (2012) meta-analysis found larger effect sizes for direct versus video contact interventions, possibly due to the lack of interaction in video-based approaches. Additionally, pre-intervention knowledge about mental disorders may further facilitate interaction [?, ?]. Common interaction components include audience questions to individuals with mental disorders followed by responses, and mutual discussion of topics of interest.

3.4.1 Multi-Modal Contact Intervention

Multi-modal contact intervention patterns produce stronger effects. Multi-modal contact combines direct and video contact, multiple presenters, and other variations. While most studies employ single contact modalities, research indicates that multi-modal approaches outperform single-mode interventions. For example, Knaak et al. (2014) found that combining direct and video contact produced better outcomes than either modality alone, and that multiple presenters were more effective than a single presenter. The In Our Voice program implemented by the U.S. Federal Mental Health Commission exemplifies a multi-modal approach incorporating video contact (with multiple presenters) and direct contact, demonstrating strong intervention effects [**?**, **?**].

3.4.2 Continuous Intervention

Effective long-term contact interventions require continuity. While single-session interventions produce short-term effects, these diminish over time [**?**, **?**]. Research indicates that single contact interventions show effects only in immediate assessments [**?**, **?**, **?**, **?**, **?**], with non-significant effects over time. This occurs because single, inconsistent messages may produce only weak, temporary stereotype change, whereas gradual, cumulative inconsistent information generates more substantial change [**?**, **?**]. Therefore, Corrigan (2011) argues that continuous contact interventions amplify effects. Koike et al. (2016) supported this in a randomized controlled trial, finding that repeated video contact maximally changed stigma attitudes compared to control groups. Frías et al. (2017) similarly found that sustained direct contact reduced public stigma across more dimensions than sporadic contact. A systematic review further demonstrated that repeated direct contact maintained positive effects long-term [**?**, **?**, **?**, **?**, **?**]. These findings indicate that public stigma change is difficult to achieve, requiring ongoing contact interventions and continuous outcome tracking.

3.4.3 Contact Quality

Notably, the key ingredients discussed above do not address Allport' s (1954) optimal contact conditions (equal status, common goals, cooperation, and institutional support). While these conditions are not necessary for stigma reduction [**?**, **?**], their presence enhances contact effects. Early research demonstrated that contact under conditions of equality, cooperation, and common goals reduced mental illness stigma [**?**, **?**]. Similarly, studies show these conditions promote intervention effectiveness [**?**, **?**]. Ashton et al. (2017) contend that when intervention targets and individuals with mental disorders share common goals, cooperate, and receive support from authorities, laws, and culture, intervention effects strengthen. Cerully, Collins, Wong, Seelam, and Yu (2017) assessed perceived contact quality by measuring participants' post-intervention perceptions of positivity, voluntariness, equality, common goals, and intimacy. Results indicated that intervention effects varied according to perceived contact quality,

with more positive perceptions producing greater stigma reduction.

In summary, effective contact interventions require individuals with mental disorders in recovery who share comprehensive personal narratives, deliver tailored educational information, and engage in interactive dialogue with audiences. Additionally, multi-modal contact patterns, continuous engagement, and optimal contact conditions can further amplify intervention effects. This synthesis of key ingredients clarifies the mechanisms through which contact interventions achieve effectiveness, addressing "how contact works" and providing guidance for implementation.

4 Influence of Individual Differences in Intervention Targets

Beyond key ingredients, individual differences among intervention targets also affect contact intervention outcomes. Examining these differences enhances understanding of outcome variations and enables researchers to tailor intervention content or select more appropriate approaches for specific populations. Literature review reveals that prior contact experience, age, and gender influence intervention effectiveness.

4.1 Prior Contact Experience

Individuals' previous contact with people with mental disorders moderates intervention effects. Ramiah and Hewstone (2013) found that contact is more effective in reducing prejudice when people have minimal prior out-group contact. This has been validated in stigma reduction research, with studies showing that contact interventions are more effective for individuals without prior contact experience compared to those with extensive contact [**?**, **?**]. This may occur because prior contact has already reduced stigma for some individuals, limiting additional intervention impact, whereas those without prior contact have fewer pre-existing attitudes, making intervention effects more pronounced. Notably, prior contact does not necessarily reduce stigma and may even worsen it [**?**, **?**], meaning some individuals with prior contact hold high levels of public stigma. For these individuals, contact interventions may have greater room for improvement, as they can experience something different from previous encounters, significantly reducing their stigma.

4.2 Age

Intervention target age also moderates contact intervention effectiveness. Contact interventions are more effective for young adults than for adolescents or elderly populations. Corrigan et al.' s (2012) meta-analysis revealed that contact is more effective for adults, while education works better for adolescents. Among adolescents, even small age differences substantially impact effectiveness. For primary and middle school students aged 6-13, contact interventions may be no more effective than curriculum-based education [**?**, **?**] and may even

reduce effectiveness [?, ?]. However, research shows contact interventions effectively reduce stigma among older adolescents (13-18) and high school students [?, ?, ?]. These differences may stem from substantial developmental variations in adolescent brains, even across one- or two-year age spans, leading to different responses to contact [?, ?]. Additionally, contact interventions show varying effects across adult age groups, with stronger effects for 18-24-year-olds than for older adults [?, ?, ?, ?, ?, ?]. In summary, anti-stigma interventions should appropriately employ contact methods according to target age characteristics.

4.3 Gender

Gender represents another important moderating variable. Contact interventions are more effective for women than men. Numerous studies find that across adult and adolescent populations, men show smaller reductions in negative attitudes and social distance following contact interventions compared to women [?, ?, ?]. Gender differences may arise because personal narratives from individuals with mental disorders elicit more empathy in women than in men, and empathy serves as a mechanism through which contact reduces prejudice [?, ?]. Consequently, many researchers advocate for gender-specific intervention strategies [?, ?, ?].

5 Future Directions

5.1 Improving Research Design

Many contact intervention studies employ weak designs lacking control or comparison groups, with outcome evaluations often based solely on pre-post assessments. Sufficient randomized evidence supporting contact intervention effectiveness is lacking [?, ?]. Future research should test contact intervention effects through more rigorous designs such as randomized controlled trials. Notably, randomized controlled designs are difficult to implement for national-level programs, which typically use pre-post designs vulnerable to confounding variables. To better verify that stigma changes result from contact interventions, future studies could employ time-series designs and dose-response analyses. Furthermore, most contact interventions lack follow-up assessments, providing insufficient evidence for long-term effects [?, ?, ?]. Mehta et al. (2015) emphasize that evaluating whether stigma changes persist over time is as important as assessing immediate effects. Therefore, contact interventions' long-term effects require further testing through longitudinal designs. Finally, determining intervention mechanisms also benefits from longitudinal designs. Current mediation studies typically collect mediator and outcome data post-intervention, whereas ideal approaches involve temporal separation of independent variables, mediators, and dependent variables to establish causality. Future research should employ longitudinal methods to test mediation pathways, such as measuring anxiety at time 2 following contact intervention at time 1, then assessing stigma at time 3 to validate anxiety' s mediating role.

5.2 Enriching Theoretical Mechanism Research

Literature review reveals that research on theoretical mechanisms underlying contact interventions is relatively scarce compared to outcome studies, representing a significant gap. Investigating these mechanisms would enhance understanding of how contact interventions work.

5.2.1 Strengthening Theoretical Foundation Validation Theoretical evidence for contact intervention effectiveness requires further development. Scholars have attempted to explain contact mechanisms through cognitive dissonance theory, attribution theory, and recategorization theory [**?**, **?**]. Recent work has proposed narrative theory as a supplementary explanation, based on findings that direct and video contact show similar stigma reduction effects [**?**, **?**]. While individual studies have tested cognitive dissonance and attribution theories [**?**, **?**, **?**], empirical research remains limited, particularly regarding recategorization and narrative theories, which remain at the theoretical speculation level. Importantly, it remains unclear whether any single theory or combination of theories adequately explains how contact reduces public stigma, necessitating extensive empirical clarification.

5.2.2 Clarifying Mediating Mechanisms Identifying mediators of contact intervention effects is crucial for program design. Limited research suggests mediation pathways primarily follow Pettigrew and Tropp's (2008) findings that contact reduces prejudice through anxiety reduction and empathy enhancement, focusing on emotional pathways. Future research should explore:

First, further validating emotional mediators. Only imagined contact studies have tested anxiety reduction' s mediating role [**?**, **?**, **?**, **?**, **?**], while other contact forms remain untested. However, Chiu and Graham (2017) found that other-anxiety (rather than self-anxiety) significantly predicted social distance in direct contact interventions, offering new perspectives for examining anxiety' s role. Although many scholars suggest empathy enhancement as an important mechanism, few studies have tested this, with some finding non-significant empathy mediation in video contact [**?**, **?**, **?**, **?**, **?**]. Empathy' s mediating role requires further validation. Additionally, research indicates that contact interventions may produce emotions like hope, shock, and inspiration rather than simply reducing anxiety or increasing empathy [**?**, **?**]. Contact may thus generate other emotional responses that facilitate attitude change, requiring future investigation.

Second, discovering new mediators from novel perspectives. Researchers could derive new mediators from existing theories. For example, recategorization theory suggests that contact may alter how participants categorize individuals with mental disorders, thereby reducing stigma—a pathway requiring empirical validation. Similarly, based on narrative theory, narrative transportation may mediate stigma reduction in interventions using patient stories, also needing verification. Given current theoretical limitations, researchers could draw from

intergroup contact research on other populations. For instance, research from intergroup threat theory suggests that perceived threat (realistic and symbolic) may mediate contact effects on prejudice reduction [?, ?]. Gronholm et al. (2017) propose that contact interventions may reduce public stigma by decreasing intergroup threat, a hypothesis requiring empirical testing.

5.2.3 Expanding Moderating Variables Contact intervention effects are influenced by moderators including prior contact experience, baseline stigma levels, and demographic variables like gender and age. These primarily reflect individual differences among intervention targets. Future research could:

First, explore other individual differences as moderators. Personal traits may moderate intervention effects. One recent study found that uncertainty-oriented (versus certainty-oriented) participants showed greater increases in positive impressions of individuals with schizophrenia following contact intervention [?, ?, ?, ?, ?], revealing trait-based moderation potential. However, other traits remain untested. For example, do individuals high in empathy traits show greater stigma reduction across more dimensions? Research indicates that individuals low in openness and agreeableness exhibit higher stigma levels [?, ?], suggesting these traits may moderate intervention effects and require future investigation.

Second, explore moderators beyond individual differences. For example, Dovidio, Love, Schellhaas, and Hewstone (2017) identified typicality as a moderator in intergroup contact research. The degree to which participants perceive contacted individuals as representative of their group may moderate intervention effects, with sufficient typicality enhancing and insufficient typicality hindering outcomes. This theoretical proposition requires empirical validation. Future research should explore potential moderators from theoretical perspectives and other relevant frameworks.

5.3 Promoting Evidence-Based Practice Development

Identifying and validating key ingredients can advance evidence-based practice. While effective ingredients have been preliminarily identified, they have received limited empirical validation [?, ?]. Future research should test these ingredients by examining intervention fidelity—the degree to which confirmed effective ingredients are implemented [?, ?]. Fidelity measurement can monitor program implementation and assess the extent of ingredient delivery. Future studies should develop rigorous fidelity measures, examine relationships between fidelity and outcomes, and further test key ingredients' impact on effectiveness, thereby promoting evidence-based practice development.

Additionally, developing manualized, replicable contact interventions would strengthen empirical validity and facilitate evidence-based practice. Some programs have made efforts in this direction. For example, Canada' s Open Minds campaign uses consistent evaluation strategies to identify effective programs and their key ingredients, developing evidence-based interventions for

national dissemination [?, ?, ?, ?]. However, most contact interventions lack rigorous manuals, and few replicable programs exist. Future research should explore structured intervention development.

5.4 Greater Application to Specific Populations and Disorder Types

Given limited resources, scholars increasingly argue that contact interventions should target specific populations whose social roles position them relative to individuals with mental disorders (e.g., employers, healthcare providers, police) [?, ?]. These groups have greater impact on patients' life goals, either through frequent contact or authority to influence patients' lives. Intervening with these populations can provide more life opportunities theoretically and practically [?, ?]. Current research primarily targets university students for convenience, with fewer studies focusing on healthcare populations and even fewer on other specific groups. Studies have recommended incorporating contact ingredients into workplace training or mental health education for healthcare providers, media professionals, and police [?, ?, ?, ?], and into curricula for nursing students [?, ?]. These recommendations provide frameworks for applying contact interventions across populations. Future research should explore optimal contact methods for different groups and test effectiveness across populations.

Furthermore, stigma reduction should focus on specific mental disorder types rather than "mental disorders" as a whole. This is important because stigma levels differ across disorder types, and contact effects vary accordingly [?, ?]. Additionally, improved attitudes toward one disorder may not generalize to others [?, ?]. Some studies have targeted specific stigmas related to schizophrenia, depression, substance use, and eating disorders through contact or combined contact-education interventions [?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?], but this remains insufficient. For instance, research has neglected stigma reduction for highly prevalent anxiety disorders [?, ?]. Future studies should further explore contact interventions' effectiveness and differential impacts across more specific mental disorder types.

Finally, examining cultural differences in contact interventions and developing culturally adapted approaches is essential. Most stigma intervention research originates from high-income Western countries, with limited studies in low- and middle-income nations [?, ?, ?, ?, ?, ?]. Applying findings from high-income countries to other contexts requires consideration of sociocultural factors [?, ?], necessitating effectiveness testing across diverse settings. A study from India demonstrated that direct contact is the most effective approach for reducing public stigma [?, ?], providing evidence for feasibility in low- and middle-income countries. Currently, few Chinese studies employ contact interventions for public stigma. Xu, Rüsch, Huang, and Kösters' (2017) meta-analysis of Chinese public stigma interventions found that most used education or combined education-contact approaches, with no studies examining contact interventions alone. Therefore, further validation of contact intervention effects within Chinese contexts is necessary.

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Note: Figure translations are in progress. See original paper for figures.