



**UNDERSTANDING THE BEHAVIORAL DETERMINANTS OF INTERVENTION FIDELITY IN SCHOOL MENTAL HEALTH: A COM-B MODEL STUDY OF MULTI-TIERED SYSTEMS OF SUPPORT IN CHILE**

**DETERMINANTES COMPORTAMENTAIS DA FIDELIDADE DA INTERVENÇÃO NA SAÚDE MENTAL ESCOLAR: UM ESTUDO DO MODELO COM-B DE SISTEMAS DE APOIO MULTINÍVEL NO CHILE**

**LOS DETERMINANTES CONDUCTUALES DE LA FIDELIDAD DE LA INTERVENCIÓN EN SALUD MENTAL ESCOLAR: UN ESTUDIO MODELO COM-B DE SISTEMAS DE APOYO DE MÚLTIPLES NIVELES EN CHILE**



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**How to reference this paper:**

Rojas-Andrade, R. M., & Ribeiro, L. P. (2026). Understanding the behavioral determinants of intervention fidelity in school mental health: a COM-B model study of multi-tiered systems of support in Chile. *Doxa: Rev. Bras. Psico. e Educ.*, 27, e026007. <https://doi.org/10.30715/doxa.v27i00.20595>



| Submitted: 22/09/2025

| Revisions required: 19/02/2026

| Approved: 22/05/2026

| Published: 03/07/2026

**Editor:** Prof. Dr. Paulo Rennes Marçal Ribeiro  
**Deputy Executive Editor:** Prof. Dr. José Anderson Santos Cruz

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**ABSTRACT:** Mental disorders are a leading cause of morbidity among children and adolescents worldwide, with Chile showing particularly high levels of stress, anxiety, and depression in students. Multi-Tiered Systems of Support (MTSS) offer a structured framework for school-based mental health interventions, yet sustaining fidelity remains challenging. This cross-sectional study analyzed how the COM-B model dimensions (capability, opportunity, and motivation) relate to intervention fidelity in Chilean public schools. Data were collected via surveys from 359 education professionals across all 16 regions, using an adapted DIBQ-18 and a composite fidelity index. Partial least squares structural equation modeling revealed psychological capability and reflective motivation as direct predictors of fidelity, while physical and social opportunities and automatic motivation exerted indirect effects through psychological capability. The model explained 33.2% of fidelity variance. Findings highlight the central role of individual-level determinants, suggesting that capacity-building strategies should prioritize enhancing competencies to strengthen school-based mental health interventions.

**KEYWORDS:** Multi-Tiered System of Support (MTSS). Intervention fidelity. School mental health. COM-B Framework.

**RESUMO:** Os transtornos mentais figuram entre as principais causas de morbidade em crianças e adolescentes no mundo, sendo que, no Chile, há níveis elevados de estresse, ansiedade e depressão entre estudantes. Os Sistemas de Apoio Multinível (MTSS) oferecem um marco estruturado para intervenções em saúde mental escolar, mas a manutenção da fidelidade da implementação continua sendo um desafio. Este estudo transversal investigou como as dimensões do modelo COM-B (capacidade, oportunidade e motivação) se relacionam com a fidelidade em escolas públicas chilenas. Foram aplicados questionários a 359 profissionais da educação nas 16 regiões administrativas, com uso da versão adaptada do DIBQ-18 e de um índice composto de fidelidade. Os resultados indicaram que a capacidade psicológica e a motivação reflexiva predizem diretamente a fidelidade, enquanto oportunidades físicas e sociais e motivação automática exercem efeitos indiretos. Os achados ressaltam o papel central dos determinantes individuais e oferecem subsídios para estratégias de capacitação em intervenções escolares.

**PALAVRAS-CHAVE:** Sistema de Suporte Multiníveis (MTSS). Fidelidade de intervenção. Saúde mental escolar. Estrutura COM-B.

**RESUMEN:** Los trastornos mentales son una de las principales causas de morbilidad en niños y adolescentes a nivel mundial, y en Chile se observan niveles particularmente altos de estrés, ansiedad y depresión entre los estudiantes. Los Sistemas de Apoyo Multinivel (MTSS) ofrecen un marco estructurado para intervenciones de salud mental en las escuelas; sin embargo, mantener la fidelidad de la implementación sigue siendo un desafío. Este estudio transversal analizó cómo las dimensiones del modelo COM-B (capacidad, oportunidad y motivación) se relacionan con la fidelidad en escuelas públicas chilenas. Se aplicaron encuestas a 359 profesionales de la educación en las 16 regiones del país, utilizando una adaptación del DIBQ-18 y un índice compuesto de fidelidad. Los resultados mostraron que la capacidad psicológica y la motivación reflexiva predicen directamente la fidelidad, mientras que las oportunidades físicas y sociales y la motivación automática influyen indirectamente. Los hallazgos destacan el rol central de los determinantes individuales y orientan estrategias de fortalecimiento de capacidades en intervenciones escolares.

**PALABRAS CLAVE:** Sistema de apoyo de varios niveles. Fidelidad de intervención. Salud mental escolar. Marco COM-B.

## INTRODUCTION

Mental disorders rank among the leading causes of morbidity in children and adolescents globally. It is estimated that 11.6% of individuals aged 5–24 years' experience at least one mental disorder, affecting over 290 million people. This population accounts for nearly 20% of all disability-adjusted life years attributed to mental health conditions (Kieling et al., 2024).

In Latin America, structural deficiencies in healthcare systems, coupled with persistent social inequalities, exacerbate the mental health crisis (Caqueo-Urizar et al., 2020). In Chile, 50.2% of students report elevated stress levels, 63.6% present symptoms of anxiety, and 60.2% exhibit signs of depression (Martínez-Líbano & Yeomans-Cabrera, 2024). These statistics highlight the pressing need for scalable and systematic strategies to address mental health challenges among children and adolescents (Weist et al., 2024).

Schools play a critical role in addressing mental health needs, offering consistent access to children and adolescents during pivotal developmental stages. One of the most prominent frameworks for improving mental health in educational settings is the multitiered system of support (MTSS), which organizes interventions within a graduated continuum tailored to students' needs (Hoover & Bostic, 2021; Weist et al., 2023).

Organized across three tiers, the MTSS offers a comprehensive approach to meet diverse student needs. Tier 1 focuses on fostering a positive socioemotional environment and preventing emerging problems within the entire school community. Tier 2 provides targeted interventions for students identified as at-risk, whereas Tier 3 delivers intensive support for complex cases, often through individualized plans or collaboration with specialized mental health services (Moore et al., 2023). Studies underscore the benefits of MTSS, including reductions in anxiety and depression symptoms (Arora et al., 2019), lower rates of chronic absenteeism, and improvements in academic performance and prosocial behaviors (Kearney & Graczyk, 2020; Nitz et al., 2023).

While MTSS has demonstrated significant promise, its effectiveness hinges on the level of fidelity with which its components are delivered (Moore et al., 2023; Lyon et al., 2024). Intervention fidelity refers to the extent to which practices are implemented as intended, including adherence to planned content, expected frequency or dosage, and the requisite level of practitioner expertise (Domitrovich et al., 2008; Fixsen et al., 2019). Sustaining high fidelity is critical to achieving intended outcomes and maintaining the integrity of the framework across diverse school contexts (McKenna et al., 2014).

Nevertheless, multiple factors compromise implementation fidelity in school-based interventions. At the organizational level, insufficient financial investment and limited intersectoral collaboration with external support services may constrain both the scope and the quality of implementation processes (Locke et al., 2019; Marsh & Mathur, 2020). In addition, high turnover rates among teachers and school administrators can weaken institutional continuity, disrupt organizational climate, and undermine sustained leadership in school mental health initiatives (Carlock et al., 2023). At the individual level, excessive workload demands and the perception that mental health programs constitute an additional professional burden may reduce staff engagement and limit adherence to intervention protocols (Dulaney et al., 2013; Forman et al., 2009; Owens et al., 2014). Confronting these structural and professional barriers is essential to reducing the implementation gap and strengthening the long-term sustainability of MTSS within school mental health systems (Lyon et al., 2024).

### **MECHANISMS OF CHANGE AND IMPLEMENTATION DETERMINANTS: THE COM-B MODEL**

Understanding the fidelity of school-based mental health interventions requires attention not only to organizational conditions, but also to the behavioral mechanisms that influence how education professionals engage with, adapt, and sustain these practices in everyday school contexts. Although implementation frameworks have increasingly emphasized structural and contextual determinants, less analytical attention has been devoted to the individual-level processes that shape implementation behavior among school staff (Nilsen & Bernhardsson, 2019). In this regard, the Capability, Opportunity, Motivation–Behavior (COM-B) model offers a theoretically grounded framework for examining how professional behaviors are produced and maintained within complex institutional environments. Developed as part of a broader behavior change framework (Michie et al., 2011; Michie, et al. 2014a), COM-B conceptualizes behavior as emerging from the dynamic interaction between capability, opportunity, and motivation. Rather than treating implementation as a solely technical or procedural process, the model highlights how cognitive, social, and environmental conditions jointly influence adherence to intervention practices. This integrative perspective makes COM-B particularly relevant for analyzing and strengthening implementation fidelity in school mental health interventions (Birken et al., 2017; Nilsen, 2015).

The COM-B framework posits that behavior results from the dynamic interplay of three components: capability, opportunity, and motivation. Capability refers to both the

psychological knowledge and skills required for action and the physical conditions that support it. Opportunity encompasses the material and social contexts that facilitate or hinder behavior. Motivation includes both reflective processes (e.g., goals, intentions, and beliefs) and automatic processes (e.g., habits and emotional responses) (Michie et al., 2011). This comprehensive model enables the design of interventions that target specific behavioral determinants. For instance, training programs can enhance capability, peer networks may improve social opportunities, and strategies addressing attitudes or cognitive biases can strengthen motivation (Michie et al., 2014b).

The COM-B model has demonstrated versatility across a wide range of contexts. It has been used to promote adherence to assistive technologies (Creaser et al., 2023), encourage healthy lifestyle changes (Guzman & Aguiñaga, 2024), and improve compliance with clinical guidelines (Gong et al., 2024). In educational settings, evidence suggests that reflective motivation and social opportunity play critical roles in sustaining mental health programs over time, while psychological capability is essential for achieving intervention fidelity. Training is particularly important in preparing school staff to implement evidence-based strategies, evaluate their effectiveness, and adapt them to diverse student populations. Additionally, contextual factors—such as the availability of resources (physical opportunity) and supportive, collaborative environments (social opportunity)—also influence implementation, as do habitual practices and emotional engagement (automatic motivation) (Nitz et al., 2023; Verdonschot et al., 2024; Weist et al., 2018).

The COM-B framework offers a structured approach for identifying both barriers and facilitators, providing a behavioral perspective to navigate the complexities of implementation. This lens is particularly relevant in school mental health, where ensuring high levels of intervention fidelity within frameworks such as MTSS requires not only organizational adjustments but also changes in daily routines and stakeholder mindsets. Leveraging the COM-B model can help schools enhance the sustainability and effectiveness of mental health initiatives.

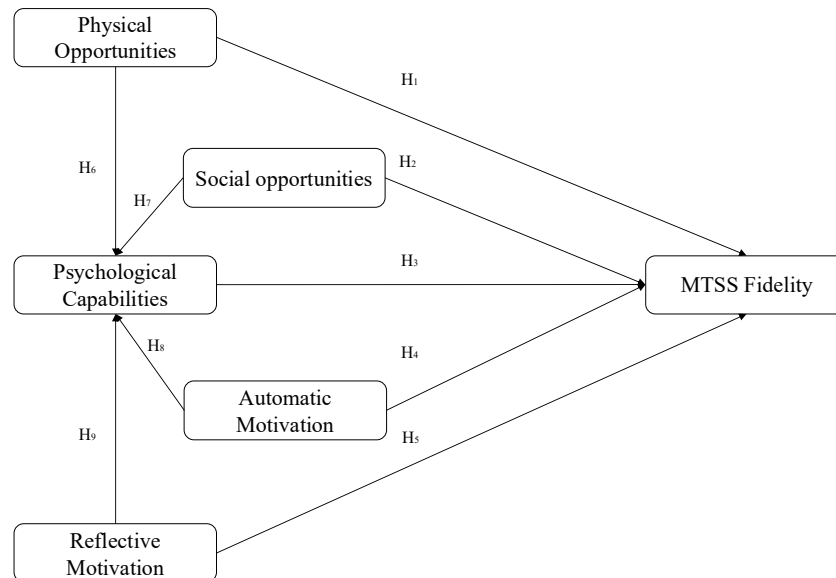
## THE PRESENT STUDY

This study investigates the association between the COM-B model components (capability, opportunity, and motivation) and intervention fidelity within state-funded Chilean schools. Specifically, it tests nine hypotheses that examine both direct and indirect relationships

between these behavioral dimensions and the fidelity with which the core components of MTSS are delivered across its multi-tiered structure (Figure 1).

**Figure 1.**

*Hypothesized interactions between Capability, Opportunity, Motivation, and Intervention Fidelity in MTSS*



Note. Authors' proposal.

This research contributes to the literature in three keyways. First, it addresses a critical gap by exploring behavioral determinants of MTSS intervention fidelity in Latin American contexts. Second, it identifies actionable barriers and facilitators that can inform the adaptation of school mental health policies. Third, it applies advanced statistical modeling to assess the influence of each COM-B dimension, providing a rigorous foundation for scaling and sustaining effective practices.

By integrating theoretical models with empirical analysis, this study aims to generate insights that improve fidelity and promote the long-term success of mental health interventions in schools.

## METHODS

This study employed a cross-sectional observational design to examine the associations between behavioral determinants and intervention fidelity within Multi-Tiered Systems of Support (MTSS) in Chilean public schools. The study followed the Strengthening the Reporting

of Observational Studies in Epidemiology (STROBE) guidelines for cross-sectional studies. A completed STROBE checklist is included as supplementary material.

The study was conducted in Chile, where recent national policies have promoted the development of school-based mental health systems through multi-tiered approaches aimed at fostering well-being in educational communities (Mineduc, 2024; Mineduc & Minsal, 2022). Despite these policy efforts, implementation remains heterogeneous across school contexts, and critical gaps persist in understanding the behavioral determinants of intervention fidelity (Lyon et al., 2024; Rojas-Andrade et al., 2024).

A total of 359 K–12 education professionals from state-funded Chilean schools participated in the study. The sample included professionals from all 16 administrative regions of the country. Eligibility criteria required participants to be actively involved in the delivery of school-based mental health strategies as part of their professional responsibilities. Data were collected online via SurveyMonkey and disseminated through professional networks and institutional contacts. All participants provided digital informed consent, ensuring the confidentiality and voluntary nature of their responses.

A priori power analysis was conducted using G\*Power 3.1 to determine the minimum sample size. Based on a regression model with five predictors, a medium effect size ( $f^2 = 0.10$ ), an alpha level of 0.05, and a statistical power of 0.80, the required sample was estimated at 195 participants. The final sample of 359 exceeded this threshold, ensuring sufficient statistical power for hypothesis testing. Surveys with missing data or invariant responses were excluded from the analyses.

Among the respondents, 64.9% were women, the mean age was 46.26 years ( $SD = 11.49$ ), and the average professional experience was 18.95 years ( $SD = 11.81$ ). Regarding educational background, 64.3% held degrees in education, while 35.7% had qualifications in psychosocial fields such as psychology or social work.

## INSTRUMENTS

### *Determinants of Implementation Behavior*

Behavioral determinants were assessed using the short version of the Determinants of Implementation Behavior Questionnaire (DIBQ-18), previously validated and adapted into Spanish for use in school mental health contexts (Zurita Arangurén, 2023). The instrument evaluates five COM-B dimensions: psychological capability, reflective motivation, automatic

motivation, physical opportunity, and social opportunity. Items related to physical ability were excluded during the validation process due to low factor loadings. Participants responded to items using a 5-point Likert scale. Table 1 provides a summary of the adapted items and their COM-B domain classification.

**Table 1.**  
*Adapted DIBQ-18 Items for Multilevel School Mental Health Interventions*

Domain	Item
<b>Psychological Capability</b>	
C1. Know	I clearly understand the objectives of the MTSS framework in my school and my role in its delivery. (Conozco claramente los objetivos del marco MTSS en la escuela y mi rol en su ejecución.)
C2. Skill	I have experience delivering MTSS strategies in my school according to manuals and protocol guidelines. (Tengo experiencia llevando a cabo estrategias MTSS en la escuela siguiendo las recomendaciones de manuales y protocolos.)
C3. Behavioral regulation	I know how to address the potential scenarios where I will deliver upcoming MTSS strategies in my school. (Sé cómo abordar los posibles escenarios en los que realizaré próximas estrategias MTSS en la escuela.)
C4. Nature of behaviors	Delivering MTSS strategies in my school according to manuals and protocols is something I do almost automatically. (Llevar a cabo estrategias MTSS en la escuela según lo indicado en manuales y protocolos es algo que hago de manera casi automática.)
<b>Automatic Motivation</b>	
M1.1 Beliefs about capabilities	For me, delivering MTSS strategies in my school according to manuals and protocols is very easy. (Para mí, llevar a cabo estrategias MTSS en la escuela siguiendo los manuales y protocolos es muy fácil.)
M1.2 Optimism	I am always optimistic about the future of the MTSS framework in my school. (Siempre estoy optimista respecto al futuro del marco MTSS en la escuela.)
M1.3 Beliefs about consequences	Delivering MTSS strategies in my school is very interesting. (Llevar a cabo estrategias MTSS en la escuela es muy interesante.)
M1.4 Positive emotions	When I deliver MTSS strategies in my school, I feel enthusiastic. (Cuando ejecuto estrategias MTSS en la escuela, siento entusiasmo.)
M1.5 Negative emotions	When I deliver MTSS strategies in my school, I feel sad. * (Cuando ejecuto estrategias MTSS en la escuela, siento tristeza.)
<b>Reflective Motivation</b>	
M2.1 Professional Role	My profession requires me to have knowledge about the MTSS framework and to communicate it to others. (Mi profesión me exige tener conocimientos sobre el marco MTSS y transmitirlos.)
M2.2 Intentions	I intend to deliver MTSS strategies in my school in the coming months. (Pretendo llevar a cabo estrategias MTSS en la escuela en los próximos meses.)
M2.3 Goals	Delivering MTSS strategies in my school is a personal goal. (Llevar a cabo estrategias MTSS en la escuela es una meta personal.)
<b>Physical Opportunity</b>	
O1.1. Socio-political context	My leadership provides sufficient support to deliver MTSS strategies in my school. (Mi jefatura entrega suficiente apoyo para llevar a cabo estrategias MTSS en la escuela.)
O1.2. Organization	I can rely on my leadership's support when delivering MTSS strategies in my school becomes challenging. (Puedo contar con el apoyo de mi jefatura cuando se me dificulta llevar a cabo estrategias MTSS en la escuela.)

O1.3. Innovation strategies	My school has the resources and logistical support needed to deliver MTSS strategies. (Mi escuela dispone de recursos y apoyo logístico para ejecutar estrategias MTSS.)
<b>Social Opportunity</b>	
O2.1 Innovation	MTSS strategies are compatible with my daily work in the school. (Las estrategias MTSS son compatibles con mi quehacer laboral cotidiano en la escuela.)
O2.2 Clients	During the MTSS strategies I deliver in my school, participants show enthusiasm to cooperate. (Durante las estrategias MTSS que ejecuto en la escuela, quienes participan muestran entusiasmo por cooperar.)
O2.3 Social influences	I can rely on the support of my peers when challenges arise in delivering MTSS strategies in the school. (Puedo contar con el apoyo de mis pares cuando se presentan dificultades al llevar a cabo estrategias MTSS en la escuela.)

Note. Authors' proposal. MTSS = Multilevel intervention for school mental health. \*Inverse item.

### *Intervention fidelity of Multilevel School Mental Health Interventions (MTSS)*

Intervention fidelity was evaluated using the MTSS fidelity index, a composite measure that integrates two self-reported indicators: (1) frequency of implementation and (2) perceived expertise in delivering each core component of the Multi-Tiered System of Support (MTSS). This approach is consistent with established definitions of fidelity (Domitrovich et al., 2008; Fixsen et al., 2019) and adheres to national guidelines for school mental health interventions in Chile (Mineduc, 2024; Mineduc & Minsal, 2022). Each MTSS component was rated on two 5-point Likert scales: one for frequency (ranging from 1 = never to 5 = always) and another for perceived expertise (ranging from 1 = very inexperienced to 5 = very expert). The MTSS fidelity index was calculated by averaging both scores for each component, yielding values from 1 to 5. Fidelity levels were then categorized as low (1.0–2.9), moderate (3.0–3.49), or high (3.5–5.0).

The MTSS components were organized into three tiers of intervention. The universal tier comprises school-wide preventive strategies designed to benefit the entire student population. These include universal prevention (U1), involving classroom-based actions aimed at promoting socioemotional well-being; the use of didactic materials (U2), such as posters and murals to reinforce mental health messages; and mental health literacy seminars (U3), which promote awareness through structured educational sessions. The targeted tier is directed toward specific groups of students and includes mutual support groups (F1), which provide safe spaces for shared experiences and peer connection, as well as targeted socioemotional development groups (F2), aimed at strengthening emotional regulation and interpersonal skills. Finally, the intensive tier addresses more complex or severe cases through referrals to external mental

health services (E1), facilitating access to specialized care, and case follow-up (E2), which ensures continuity and coordination of individualized support.

## **DATA ANALYSIS**

Missing data were handled through listwise deletion to ensure the integrity of the dataset. To evaluate the potential impact of non-random missingness, sensitivity analyses were conducted. All statistical analyses were performed using the statistical software SmartPLS 4, applying Partial Least Squares Structural Equation Modeling (PLS-SEM) to assess both direct and indirect relationships between the COM-B dimensions and MTSS intervention fidelity.

This method is particularly appropriate for exploratory models involving latent constructs, especially in studies with moderate sample sizes and data that deviate from normality (Hair et al., 2019; Memon et al., 2021). Model evaluation followed a two-step approach. For the measurement model, internal consistency and construct validity were assessed using Cronbach's alpha ( $\alpha > 0.70$ ), average variance extracted (AVE  $> 0.50$ ), composite reliability ( $\rho > 0.70$ ), and discriminant validity through the heterotrait–monotrait ratio of correlations (HTMT  $< 0.85$ ). For the structural model, key indicators included the examination of path coefficients, explained variance ( $R^2$ ), predictive relevance ( $Q^2$ ), and multicollinearity via variance inflation factor (VIF  $< 5$ ). The significance of estimated effects was tested using bootstrapping with 5,000 resamples, with statistical significance defined by p-values below 0.05 and t-values exceeding 1.96.

## **RESULTS**

The MTSS fidelity index had a mean score of 3.12 (SD = 0.90), reflecting a moderate level of overall implementation. Analysis by intervention tier revealed a clear pattern: components from the intensive tier showed the highest implementation levels, with Referrals to External Services (E1; M = 3.69, SD = 1.19) and Case Follow-Up (E2; M = 3.66, SD = 1.20) receiving the strongest ratings. In contrast, components from the universal tier demonstrated the lowest fidelity, particularly Universal Prevention (U1; M = 2.88, SD = 0.98) and Mental Health Literacy Seminars (U3; M = 2.81, SD = 1.18). These results suggest that schools may be more responsive to complex individual cases than to the systematic delivery of school-wide preventive strategies.

Regarding the COM-B dimensions, a chi-square test ( $\chi^2 = 190.53$ ;  $df = 4$ ;  $p < 0.001$ ) indicated significant differences in the mean scores. *Reflective motivation* ( $M = 3.97$ ,  $SD = 0.89$ ) was the highest, followed by *automatic motivation* ( $M = 3.82$ ,  $SD = 0.71$ ) and *social opportunities* ( $M = 3.71$ ,  $SD = 0.79$ ). Meanwhile, *Psychological Capabilities* ( $M = 3.53$ ,  $SD = 0.93$ ) and *Physical Opportunities* ( $M = 3.34$ ,  $SD = 0.99$ ) presented comparatively lower mean values. The correlations between MTSS fidelity and the COM-B dimensions were significant, with the strongest association observed for psychological capabilities ( $\rho = 0.504$ ,  $p < 0.01$ ), followed by reflective motivation ( $\rho = 0.467$ ,  $p < 0.01$ ) and automatic motivation ( $\rho = 0.438$ ,  $p < 0.01$ ). These initial descriptive results highlight the importance of both individual and contextual factors in achieving effective implementation.

The measurement model demonstrated satisfactory validity and reliability. Convergent validity, evaluated through average variance extracted (AVE), exceeded the recommended threshold of 0.50 for all the constructs, ranging from 0.538 (automatic motivation) to 0.742 (physical opportunities). The internal consistency was high, with Cronbach's alpha values between 0.764 and 0.896 and composite reliability (rho\_C) values ranging from 0.844 to 0.918. Discriminant validity, assessed via the HTMT criterion ( $< 0.85$ ), confirmed that the latent variables were conceptually distinct. Collectively, these indicators support the suitability of the measurement model for further structural analysis. Table 2 summarizes the reliability and validity statistics for each construct.

**Table 2.**  
*Reliability and validity of dimensions*

Dimension	Cronbach's Alpha	Rho	Composite Reliability	AVE	Mean (M)	Standard Deviation (SD)	Items
Automatic Motivation	0.771	0.830	0.775	0.439	3.82	0.71	5
MTSS Intervention fidelity	0.896	0.902	0.896	0.554	3.12	0.90	6
Physical Opportunities	0.825	0.829	0.827	0.614	3.34	0.99	3
Psychological Capabilities	0.865	0.874	0.866	0.620	3.53	0.93	4
Reflective Motivation	0.780	0.799	0.779	0.545	3.97	0.89	3
Social Opportunities	0.764	0.769	0.761	0.517	3.71	0.79	3

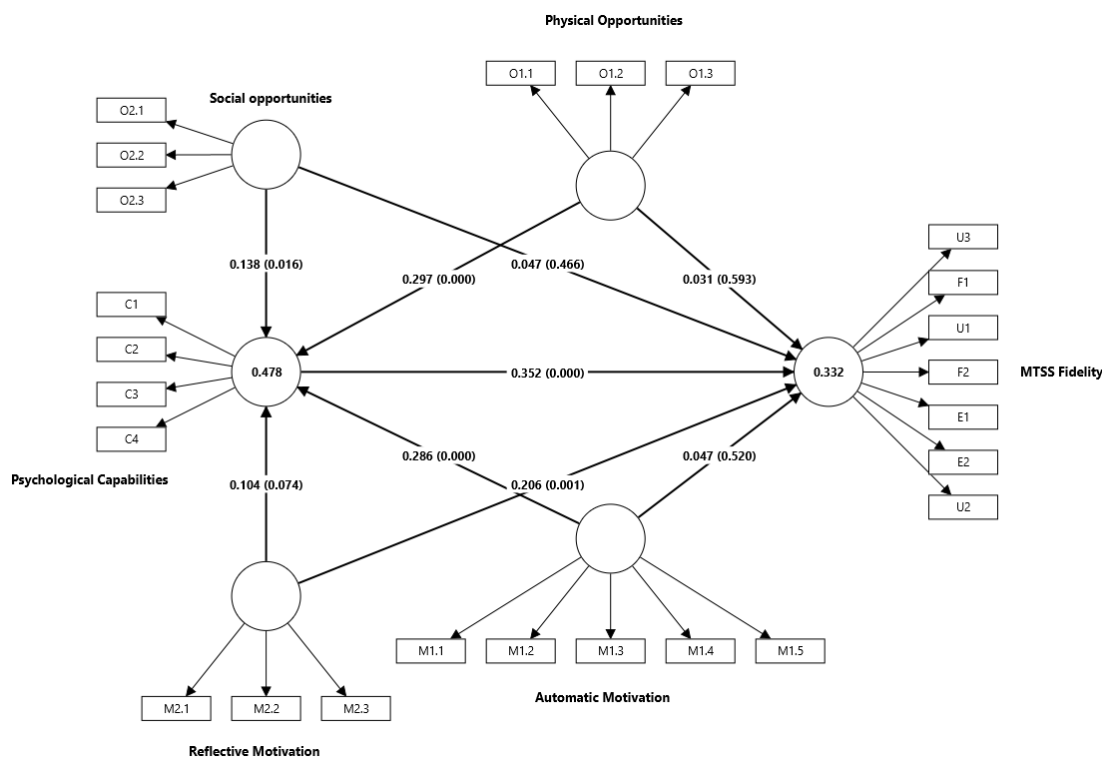
Note. Authors' proposal.

The structural model explained 33.2% of the variance in MTSS fidelity ( $R^2 = 0.332$ ) and 47.8% of the variance in Psychological Capabilities ( $R^2 = 0.478$ ), suggesting a moderate level of explanatory power. Blindfolding procedures yielded positive  $Q^2$  values for both MTSS

fidelity ( $Q^2 = 0.241$ ) and psychological capabilities ( $Q^2 = 0.463$ ), indicating adequate predictive relevance. Furthermore, the variance inflation factor (VIF) values were within acceptable limits (1.788–2.328), ruling out potential collinearity issues (Table 2).

The structural model was applied to test the hypotheses derived from the COM-B framework, providing partial support for the theoretical model. Results indicated that psychological capability and reflective motivation emerged as the strongest direct predictors of intervention fidelity. In contrast, contextual factors and automatic motivation exhibited more indirect effects. Figure 2 displays the structural paths among latent variables, along with the hypothesized relationships and their corresponding coefficients.

**Figure 2.**  
Path Analysis of COM-B Model Determinants for MTSS Intervention fidelity



Note. Authors' proposal.

In support of H3, psychological capability significantly predicted intervention fidelity ( $\beta = 0.352$ ,  $p < 0.001$ ,  $f^2 = 0.097$ ), underscoring the importance of educators' knowledge and skills in meeting implementation standards. Reflective motivation (H4) also demonstrated a significant direct effect on fidelity ( $\beta = 0.206$ ,  $p = 0.001$ ,  $f^2 = 0.035$ ), reinforcing the role of personal goals and professional commitment in successful adoption. In contrast, automatic

motivation did not show a significant direct association with fidelity (H5:  $\beta = 0.047$ ,  $p = 0.520$ ,  $f^2 = 0.001$ ), although it displayed meaningful indirect effects via psychological capability.

Hypotheses H1 and H2, concerning the direct effects of physical and social opportunities on fidelity, were not supported (H1:  $\beta = 0.031$ ,  $p = 0.593$ ; H2:  $\beta = 0.047$ ,  $p = 0.466$ ), suggesting that contextual resources influence fidelity indirectly rather than directly. Specifically, physical opportunity significantly predicted psychological capability (H6:  $\beta = 0.297$ ,  $p < 0.001$ ,  $f^2 = 0.094$ ), as did social opportunity (H7:  $\beta = 0.138$ ,  $p = 0.016$ ,  $f^2 = 0.016$ ). Automatic motivation also showed a significant positive association with psychological capability (H9:  $\beta = 0.286$ ,  $p < 0.001$ ,  $f^2 = 0.072$ ), indicating that habitual behaviors and emotional engagement support the development of key competencies. In contrast, reflective motivation did not significantly affect psychological capability (H8:  $\beta = 0.104$ ,  $p = 0.074$ ,  $f^2 = 0.012$ ), suggesting a limited role of conscious reflection in shaping these capacities.

### *Direct, Indirect, and Mediated Effects*

Analyses of indirect effects revealed that both physical and social opportunities affect intervention fidelity primarily by enhancing psychological capability. Physical opportunity showed a significant indirect effect on fidelity (indirect effect = 0.105,  $p < 0.001$ ), as did social opportunity (indirect effect = 0.048,  $p = 0.034$ ). These results suggest that contextual resources and supportive social environments may not directly drive fidelity, but rather strengthen the psychological competencies required for effective delivery.

Likewise, automatic motivation demonstrated a significant indirect effect on fidelity (indirect effect = 0.101,  $p = 0.001$ ), despite the absence of a significant direct relationship ( $\beta = 0.148$ ,  $p = 0.041$ ). This indicates that habitual and affective processes contribute to fidelity primarily by strengthening psychological capabilities rather than by exerting a direct influence on delivery (Table 3).

**Table 3.**

*Path Analysis: Direct and Indirect Effects*

Relationship	Coefficient ( $\beta$ )	Effect Size ( $f^2$ )	Significance (p)	95% CI	Hypothesis	Support
<b>Direct Effect</b>						
Physical Opportunities → MTSS Fidelity Int.	0.031	0.001	0.593	[-0.04, 0.10]	H1	No
Social Opportunities → MTSS Fidelity Int.	0.047	0.001	0.466	[-0.03, 0.12]	H2	No
Psychological Capabilities → MTSS Fidelity Int.	0.352	0.097	<0.001	[0.25, 0.45]	H3	Yes

Reflective Motivation → MTSS Fidelity Int.	0.206	0.035	0.001	[0.10, 0.31]	H4	Yes
Automatic Motivation → MTSS Fidelity Int.	0.148	0.001	0.041	[0.01, 0.28]	H5	Partially
Physical Opportunities → Psychological Capabilities	0.297	0.094	<0.001	[0.20, 0.39]	H6	Yes
Social Opportunities → Psychological Capabilities	0.138	0.016	0.016	[0.03, 0.24]	H7	Yes
Reflective Motivation → Psychological Capabilities	0.104	0.012	0.074	[-0.01, 0.21]	H8	No
Automatic Motivation → Psychological Capabilities	0.286	0.072	<0.001	[0.18, 0.38]	H9	Yes
<b>Indirect Effect</b>						
Physical Opportunities → MTSS Fidelity Int. (via Psychological Capabilities)	0.105	-	<0.001	[0.07, 0.14]	H6 → H3	Yes
Social Opportunities → MTSS Fidelity Int. (via Psychological Capabilities)	0.048	-	0.034	[0.01, 0.09]	H7 → H3	Yes
Automatic Motivation → MTSS Fidelity Int. (via Psychological Capabilities)	0.101	-	0.001	[0.06, 0.14]	H9 → H3	Yes

Note. Authors' proposal.

## DISCUSSION

This study examined how the behavioral dimensions proposed by the COM-B model (capability, opportunity, and motivation) relate to intervention fidelity within Multi-Tiered Systems of Support (MTSS) in Chilean public schools. The results partially supported the hypothesized pathways and highlighted the central role of individual-level mechanisms, particularly psychological capability and reflective motivation, in sustaining high-quality implementation of school-based mental health practices.

Consistent with previous implementation research (Michie et al., 2014a; Verdonschot et al., 2024), psychological capability emerged as the most robust direct predictor of fidelity. This result underscores that effective MTSS implementation depends not only on procedural knowledge, but also on educators' ability to translate intervention principles into routine professional practice. Reflective motivation also exerted a significant direct effect, indicating that fidelity is strengthened when intervention goals are perceived as coherent with educators' professional values, identities, and institutional commitments. Together, these findings reinforce the interpretation that implementation quality is simultaneously technical, relational, and intentional.

By contrast, physical and social opportunities operated indirectly through their effects on psychological capability. Rather than functioning as autonomous drivers of fidelity,

organizational conditions appear to shape the extent to which educators feel prepared, supported, and capable of implementing interventions consistently. Adequate resources, collaborative professional environments, and engaged leadership may therefore act as enabling conditions that mediate the development of implementation competence. This interpretation aligns with implementation frameworks that conceptualize contextual factors as mechanisms that condition behavioral enactment rather than directly determine it (Nilsen & Bernhardsson, 2019; Weist et al., 2018).

A similar mediational pattern was observed for automatic motivation. Although habits, emotional responses, and ingrained dispositions were not directly associated with fidelity, they significantly contributed through their influence on psychological capability. This suggests that repeated exposure to implementation practices and positive affective experiences may consolidate behavioral routines that strengthen educators' perceived competence and consistency over time (Schultes et al., 2021). In this sense, implementation fidelity may emerge not only from deliberate engagement, but also from the gradual incorporation of intervention practices into everyday school culture.

Collectively, these findings provide empirical support for the COM-B framework as a useful model for understanding behavioral determinants of implementation fidelity in school mental health interventions. More importantly, the distinction between direct and mediated pathways advances a more differentiated interpretation of implementation processes. While capability and reflective motivation operate as proximal determinants of fidelity, contextual and affective dimensions appear to influence implementation indirectly by shaping educators' readiness and behavioral regulation. This may help explain why schools exposed to similar policies and institutional supports often demonstrate markedly different implementation trajectories (Carlock et al., 2023; Moore et al., 2023).

From a practical standpoint, the findings suggest that implementation strategies should extend beyond technical training models. Strengthening psychological capability requires continuous professional development processes that integrate coaching, collaborative learning, and opportunities for applied reflection. At the same time, fostering reflective motivation involves creating institutional conditions in which educators recognize MTSS as aligned with their pedagogical values and professional purposes. Organizational investments (including leadership engagement, protected implementation time, and professional support networks) may indirectly strengthen fidelity by reinforcing educators' sense of competence and

sustainability in practice. Finally, embedding interventions into routine school processes may facilitate the consolidation of automatic motivational patterns that support long-term adherence.

Some limitations should nevertheless be acknowledged. The cross-sectional design restricts causal interpretation of the observed associations, while self-report measures may be influenced by recall and social desirability biases. Although the sample was nationally representative, regional and institutional heterogeneity across the Chilean educational system may not have been fully captured by the analytical model. Future studies would benefit from longitudinal and mixed-methods designs capable of examining how behavioral determinants and implementation fidelity evolve across time and institutional contexts.

## **FINAL CONSIDERATIONS**

This study advances the understanding of intervention fidelity in school-based mental health initiatives by demonstrating how behavioral determinants interact within the implementation of Multi-Tiered Systems of Support (MTSS) in Chilean public schools. The findings indicate that psychological capability and reflective motivation function as proximal determinants of fidelity, whereas contextual opportunities and automatic motivation exert their influence indirectly through the strengthening of educators' implementation competencies. These results reinforce the importance of interpreting implementation fidelity not solely as a technical outcome, but as a behavioral and organizational process shaped by cognitive, relational, and contextual dynamics.

From a theoretical perspective, the study contributes to the growing dialogue between implementation science and school mental health by empirically supporting the applicability of the COM-B framework in educational settings. The identification of mediated pathways expands current understandings of how organizational environments and affective dimensions influence implementation processes, suggesting that fidelity emerges through interconnected behavioral mechanisms rather than isolated structural conditions.

The findings also carry important implications for practice and policy. Efforts to strengthen MTSS implementation should move beyond procedural training models and invest in long-term strategies that enhance educators' professional competence, reflective engagement, and institutional support systems. Leadership practices, collaborative organizational climates, and emotionally sustainable work environments may play a critical role

in fostering implementation consistency and sustainability, particularly in contexts marked by social inequality and uneven access to professional resources.

Finally, future research should examine how behavioral determinants of fidelity evolve across time and institutional contexts, particularly through longitudinal and mixed-methods approaches capable of capturing the dynamic nature of implementation processes. Further investigation in Latin American and other underrepresented educational systems may also help clarify how contextual inequities shape the sustainability and effectiveness of school mental health interventions.

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### ***CRediT Author Statement***

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- **Recognitions:** None.
  - **Funding:** Fondecyt de Iniciación n. 11220112/2022.
  - **Conflicts of interest:** There are no conflicts of interest.
  - **Ethical approval:** Although there was the participation of people in the research, the study did not have ethical risks, the evaluation was not about the subjectivity of the subjects, without risk of identification, the assumption was the evaluation of determinants of EMS in the process of implementing public policies, so it did not require an Ethics Committee in its country of origin. Even so, the participants read and signed the free and informed consent to participate in the research.
  - **Availability of data and material:** The data are in the possession of the researchers and can be accessed if the journal's editorial board wishes.
  - **Authors' contributions:** The authors contributed to the writing, review, and analysis of the research data.
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**Processing and editing: Editora Ibero-Americana de Educação**  
Proofreading, formatting, normalization and translation

