



Research Article

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Integrating Mental Health Screening into Primary Care: A Conceptual Mind Genomics Framework for Communication Messages

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Abstract

Integrating mental health screening into primary care is increasingly recognized as an important strategy for improving early identification of mental health conditions and expanding access to person-centered care. However, less attention has been given to how communication messages may influence patients' willingness to participate in routine screening. This conceptual paper presents a Mind Genomics framework for addressing this communication challenge. Building upon the literature, it proposes four story questions, sixteen communication elements, and realistic vignette-based scenarios to illustrate how communication strategies may be systematically evaluated in future empirical studies. The paper also outlines a proposed workflow for future implementation using the BimiLeap platform and discusses how communication mindsets identified in future empirical studies may support more patient-centered approaches to mental health screening. Rather than presenting empirical findings, the framework provides a structured foundation for generating hypotheses, designing future Mind Genomics investigations, and informing the design of communication strategies that may facilitate the integration of mental health screening into primary care.

Keywords: Mind genomics, Mental health screening, Primary care, Health communication, patient-centered communication, Communication mindsets, BimiLeap

Introduction

Mental disorders are among the leading contributors to the global burden of disease and represent a major cause of disability, reduced quality of life, and premature mortality worldwide.

Depression, anxiety, psychotic disorders, and substance use disorders affect hundreds of millions of people and frequently coexist with chronic physical illnesses, contributing to increased



healthcare utilization, reduced productivity, and substantial social and economic costs for individuals, families, and health systems. Recognizing this growing burden, the World Health Organization (WHO) has identified mental health as a global public health priority and emphasized that mental health services should constitute an essential component of Universal Health Coverage (UHC). Similarly, the Lancet Commission on Global Mental Health and Sustainable Development highlighted the urgent need to strengthen mental health systems and integrate mental healthcare into broader health and development agendas [1,2].

Primary care is widely recognized as the most appropriate setting for addressing this challenge because it serves as the first point of contact for most individuals seeking healthcare and provides accessible, continuous, person-centred, and comprehensive care. Integrating mental health services into primary care can facilitate earlier recognition of mental health conditions, improve access to appropriate treatment, strengthen continuity of care, and support the management of physical and mental health needs within a coordinated healthcare system. The World Health Organization and the World Organization of Family Doctors further describe primary care as an accessible, acceptable, affordable, and cost-effective platform for delivering mental healthcare, particularly in settings where specialist mental health services are limited [3]. Consistent with this perspective, evidence from international collaborative care initiatives indicates that integrated models can improve access to care, quality of care, early identification, referral, treatment, and patient outcomes, while collaborative care approaches have also been shown to be cost-efficient [4,5].

To address the global treatment gap, the World Health Organization developed the Mental Health Gap Action Programme (mhGAP), while the Comprehensive Mental Health Action Plan further advocates integrating evidence-based mental healthcare into primary care and community-based services as a key strategy for expanding access to mental healthcare [1,3,4]. Despite these international efforts, successful implementation of integrated mental healthcare remains inconsistent across healthcare systems. Evidence indicates that widespread implementation continues to be constrained by limited financial and human resources, inadequate training and clinical engagement, shortages of mental health specialists, insufficient policy and organizational support, and persistent mental health stigma [4,6]. Furthermore, stigmatizing attitudes among primary healthcare professionals may negatively influence patient engagement and the quality of care delivered to individuals with mental health conditions, reinforcing the importance of stigma reduction initiatives within primary care [7].

Alongside these organizational challenges, the successful implementation of mental health screening requires more than the selection of an appropriate screening instrument. Screening should be viewed as an organized system that includes clearly defined screening pathways, communication strategies, staff training, referral mechanisms, follow-up processes, and coordination among healthcare providers to ensure effective implementation [4,8].

Effective communication is increasingly recognized as an important component of successful health programmes because it supports informed decision-making, public engagement, and the appropriate use of health information. The WHO Strategic Communications Framework emphasizes that health communication should be accessible, understandable, relevant, credible, timely, and actionable to facilitate informed decision-making and meaningful public engagement [9]. Applying these principles may help inform the design of patient-centred communication strategies for introducing mental health screening within primary care.

Despite substantial progress in integrated mental healthcare, existing research has primarily focused on implementation strategies, collaborative care models, provider training, service delivery, and barriers to integration [4-6]. Comparatively less attention appears to have been directed toward understanding how different communication messages may influence patient acceptance, trust, and willingness to participate in routine mental health screening. Consequently, there remains limited guidance regarding how healthcare professionals should communicate the purpose, process, and potential benefits of mental health screening in ways that maximize patient acceptance.

One promising framework for addressing this gap is Mind Genomics, an inductive experimental framework designed to understand how people respond to realistic combinations of communication messages encountered in everyday life, unlike conventional surveys that primarily measure opinions or attitudes [10,11]. The methodology decomposes a practical problem into four key questions (silos), each containing four alternative communication elements, which are experimentally combined into short vignettes. By analysing responses to these systematically constructed scenarios, Mind Genomics identifies the independent contribution of individual communication elements and reveals distinct communication mindsets among respondents [11]. Rather than testing a single predetermined hypothesis, the approach generates evidence-based hypotheses about how different people respond to different communication strategies, thereby providing a practical framework for developing more personalized and actionable health communication.

In response to this gap, this paper presents a conceptual application of the Mind Genomics framework to the challenge of integrating mental health screening into primary care. Rather than reporting findings from an empirical Mind Genomics experiment, we propose a structured communication framework that illustrates how Mind Genomics principles can be used to generate hypotheses regarding patient acceptance of mental health screening. By identifying communication questions, developing candidate message elements, and constructing realistic vignette-based scenarios, this conceptual framework aims to provide a foundation for future empirical Mind Genomics studies while offering a practical roadmap for designing patient-centered communication strategies to support the integration of mental health screening into primary care.

Mind Genomics as a Conceptual Framework

Traditional surveys, interviews, and focus groups have substantially improved our understanding of people's attitudes, beliefs, and experiences. However, these approaches generally examine individual questions or isolated opinions and provide limited insight into how combinations of communication messages influence real-life decision making. Mind Genomics was developed to address this challenge by studying how people respond to realistic combinations of messages rather than to single statements alone [10-12].

Mind Genomics represents an inductive science of everyday life. Instead of beginning with predefined hypotheses, it deconstructs an everyday situation into smaller communication elements, experimentally combines these elements into short vignettes, and then identifies which elements most strongly influence people's judgments. By analysing responses to these systematically designed vignettes, the approach reveals both the importance of individual message elements and naturally occurring groups of individuals who interpret the same information differently, referred to as mindsets [10,12].

The contemporary Mind Genomics platform follows a standardized 4×4 framework. Researchers first develop four questions (silos) that together tell a coherent story about the topic under investigation. Each question is represented by four alternative message elements, generating sixteen elements in total. These elements are then combined according to an experimental design into twenty-four short vignettes, with each respondent evaluating a unique but mathematically equivalent set of vignettes. Regression analysis estimates the independent contribution of each element, whereas cluster analysis identifies communication mindsets based on patterns of response [11].

Beyond identifying effective messages, Mind Genomics seeks to generate actionable knowledge. Rather than segmenting people solely according to demographic or psychographic characteristics, it classifies individuals according to how they respond to specific communication messages, making the findings directly applicable for communication design and personalized messaging [12,13]. Recent applications have demonstrated the utility of this approach across healthcare communication, patient experience, and public health messaging, where distinct mindsets have been identified to guide more targeted interventions [14-16].

In the present paper, Mind Genomics is used as a conceptual framework rather than as an empirical research method. Building upon the literature supporting the integration of mental health screening into primary care, we illustrate how the communication challenge can be translated into four story-based questions, sixteen communication elements, and realistic patient-centered vignettes. This framework provides a structured foundation for generating hypotheses about the communication messages that may encourage acceptance of mental health screening in primary care and offers a

roadmap for future empirical Mind Genomics investigations.

Development of the Story Questions and Communication Elements

Following the standard Mind Genomics framework, the proposed conceptual study was organized around four story questions (silos). Rather than representing isolated topics, the story questions were designed to follow a logical patient journey during a primary care consultation, consistent with the Mind Genomics philosophy of evaluating realistic everyday situations through experimentally constructed vignettes [14]. The development of the story questions was informed by the literature synthesis presented in the Introduction. The synthesis consistently highlighted four broad communication themes that are central to patient acceptance of integrating mental health screening into primary care: (1) building patients' understanding of why mental health screening is offered, (2) creating a supportive and psychologically safe environment for participation, (3) providing clear information about the screening process, and (4) communicating the value and potential benefits of participating in screening. Rather than using these themes as independent domains, they were translated into a patient-centered communication sequence representing the natural progression of a primary care consultation.

To facilitate question development, the Idea Coach, an artificial intelligence-assisted design tool integrated within the BimiLeap platform (*BimiLeap*; www.bimileap.com), was used to generate candidate story questions based on these communication themes. The generated questions were subsequently reviewed and refined for conceptual relevance, consistency with the supporting literature, alignment with the study objective, and their ability to collectively "tell a story," consistent with the standard Mind Genomics workflow. Minor refinements were made to improve clarity while preserving the intended communication concepts. The final four story questions addressed: (A) why mental health screening is being offered, (B) what helps patients feel comfortable participating, (C) what patients should know about the screening process, and (D) what could encourage patients to accept screening. Following the selection of the story questions, the Idea Coach was again used to generate candidate communication elements for each question. Four alternative communication elements were selected for each story question, resulting in the standard 4×4 Mind Genomics framework comprising sixteen communication elements (Table 1). The generated elements were carefully reviewed and refined to ensure conceptual independence, minimal overlap, concise patient-centered wording, and consistency with the supporting literature. Consistent with the Mind Genomics approach, each element represents a single communication idea ("idealet") expressed as a brief stand-alone statement suitable for experimental recombination into vignettes. The finalized story questions and communication elements constitute the proposed conceptual framework for future Mind Genomics vignette generation (Table 1).

Table 1: Proposed Story Questions (Silos) and Communication Elements.

Story Questions (Silos)	Communication Elements
Question A. Why is mental health screening being offered?	A1. Mental health screening is a routine part of primary care for every patient.
	A2. Mental health is considered just as important as physical health.
	A3. Screening helps identify emotional concerns before they become more serious.
	A4. Understanding mental well-being supports more complete, whole-person care.
Question B. What helps patients feel comfortable participating?	B1. Patients are assured that their responses will remain confidential.
	B2. The provider acknowledges that discussing mental health can feel uncomfortable.
	B3. Patients are reminded they may choose not to answer any question.
	B4. The conversation is conducted in a supportive and non-judgmental manner.
Question C. What should patients know about the screening?	C1. The screening takes only a few minutes to complete.
	C2. The screening is an initial assessment, not a mental health diagnosis.
	C3. Screening results are reviewed together before deciding on the next steps.
	C4. Screening responses help guide individualized care.
Question D. What could encourage patients to accept screening?	D1. Early identification of concerns can improve future health outcomes.
	D2. Good mental health supports overall health and well-being.
	D3. Participating in screening is a positive step toward better health.
	D4. Screening can provide reassurance even when no concerns are identified.

Proposed Future Implementation Using BimiLeap

**Figure 1:** Proposed conceptual workflow for future implementation of the Mind Genomics framework using the BimiLeap platform.

The proposed conceptual framework is intended for future implementation using BimiLeap, a web-based platform developed for the design, administration, and analysis of Mind Genomics studies. The overall proposed implementation workflow is illustrated in Figure 1. In a future empirical investigation, the four story questions and sixteen communication elements presented in Table 1 could be incorporated into the platform to examine how different communication messages influence patients' willingness to accept mental health screening as part of primary care (Figure 1).

Using the standard Mind Genomics experimental design,

BimiLeap would automatically recombine the sixteen communication elements into a series of experimentally designed multi-element vignettes. Rather than evaluating individual communication messages in isolation, respondents would evaluate realistic combinations of communication messages presented as short primary care scenarios (Figure 2). This vignette-based approach more closely reflects real clinical communication, where patients are typically exposed to multiple messages simultaneously rather than a single isolated statement. Consequently, the relative contribution of each communication element could be examined within a realistic consultation context (Figure 2).

Figure 2: Illustrative example of a Mind Genomics experimental vignette for mental health screening.

Respondents could evaluate each vignette using the following rating question:

Based on what you just read, would you accept mental health screening as part of your primary care visit?

Responses could be recorded using the standard five-point Mind Genomics response scale:

- 1 = Definitely No
- 2 = Probably No
- 3 = Not Sure
- 4 = Probably Yes

5 = Definitely Yes

Following completion of data collection, BimiLeap could automatically analyze the accumulated responses using its integrated Mind Genomics analytical workflow. Element-level utilities could be estimated using Ordinary Least-Squares (OLS) regression, while respondents with similar response patterns could be grouped into communication mindsets through clustering approaches commonly employed in Mind Genomics investigations, including K-means clustering [14,16].

Within the context of the present conceptual framework, several potential communication mindsets could emerge. For example, one group may respond most positively to messages emphasizing routine care, whole-person health, and the role of primary care in

supporting mental well-being (Routine Care Believers). A second group may be more strongly influenced by messages promoting confidentiality, empathy, psychological safety, and supportive communication (Trust and Reassurance Seekers). A third group may respond primarily to messages emphasizing early identification, clear explanations of the screening process, individualized care, and the long-term health benefits of participation (Prevention-Oriented Decision Makers). These mindset labels are presented solely as illustrative examples to demonstrate how communication segments might emerge following future empirical implementation. The actual number, characteristics, and interpretation of communication mindsets would ultimately depend on the observed response patterns. The final BimiLeap report could provide total-panel analyses, element-level coefficients, communication mindset segmentation, and subgroup comparisons. Such findings could help identify the communication messages most strongly associated with patient acceptance of mental health screening in primary care and provide an evidence-based foundation for developing more patient-centered communication strategies. In addition, the identified communication mindsets could potentially support the future development of a Personal Viewpoint Identifier (PVI) for rapidly identifying communication preferences and facilitating more personalized conversations about mental health screening during routine primary care consultations.

Discussion

The present paper proposes a conceptual Mind Genomics framework for exploring how communication messages may influence patient acceptance of integrating mental health screening into primary care. Rather than presenting empirical findings, it provides a structured approach for translating contemporary evidence on mental health integration and patient communication into a practical Mind Genomics study architecture. By organizing the literature into four story questions, sixteen communication elements, and realistic vignette-based scenarios, the framework illustrates how Mind Genomics principles may be applied to generate hypotheses regarding patient communication preferences and to support the future development of more patient-centered communication strategies.

Existing research on integrating mental health into primary care has primarily focused on implementation strategies, collaborative care models, provider training, service delivery, and barriers to integration [4–6]. Comparatively less attention appears to have been directed toward understanding how different communication messages may influence patient acceptance, trust, and willingness to participate in routine mental health screening. The proposed framework addresses this gap by shifting the emphasis from whether mental health screening should be implemented to how it may be communicated in ways that encourage patient acceptance. The sequential organization of the four story questions reflect a realistic patient journey during a primary care consultation, while the communication elements provide concise, independent

messages that can be experimentally combined into clinically relevant scenarios. This approach provides a structured method for exploring how different combinations of communication messages may influence patient decision-making and acceptance of mental health screening.

Mind Genomics is particularly well suited to this communication challenge because it evaluates responses to combinations of messages rather than isolated survey questions [10,11]. If implemented empirically, the proposed framework could identify distinct communication mindsets that may support more personalized communication strategies within primary care. Such information may assist healthcare professionals in tailoring conversations about mental health screening, strengthen patient engagement, and contribute to more patient-centred implementation of routine screening. Beyond mental health screening, the framework may also provide a useful model for investigating communication challenges associated with other preventive health initiatives delivered through primary care.

An important strength of the proposed framework is that it applies the standardized 4×4 Mind Genomics methodology to an important but relatively underexplored communication problem. Beyond its conceptual contribution, the framework may also have practical implications for primary care. If validated through future empirical studies, it could help inform communication strategies for primary care physicians, nurses, and other healthcare professionals involved in mental health screening while supporting more patient-centred implementation approaches. The framework is informed by contemporary evidence on integrated mental healthcare, primary care, and health communication while providing a practical roadmap for future empirical implementation through the BimiLeap platform. At the same time, several limitations should be acknowledged. This paper presents a conceptual framework rather than an empirical Mind Genomics investigation; therefore, the proposed communication elements, vignette combinations, and illustrative communication mindsets have not been experimentally validated. Similarly, the story questions and communication elements should be considered hypothesis-generating rather than definitive, and the broader applicability of the framework across different healthcare systems and cultural settings remains to be established through future empirical research.

These limitations also highlight important opportunities for future research. Future empirical studies could implement the proposed framework using the BimiLeap platform with diverse participant populations to identify communication elements associated with greater acceptance of mental health screening using standard Mind Genomics analytical approaches, including Ordinary Least-Squares (OLS) regression and clustering techniques such as K-means [11,14]. Such studies may also examine whether communication preferences differ across demographic and cultural groups, evaluate the reproducibility of the findings across different healthcare settings, and explore the development of a Personal Viewpoint Identifier (PVI) to support more personalized patient-

provider communication during routine primary care consultations [14,16].

Conclusion

The present paper introduces a conceptual Mind Genomics framework for exploring communication strategies that may support the integration of mental health screening into primary care. By translating evidence from integrated mental healthcare and health communication into four story questions, sixteen communication elements, and a proposed experimental workflow, the framework illustrates how communication messages may be systematically investigated within a Mind Genomics study. Although conceptual in nature, the proposed framework provides a structured foundation for generating hypotheses, guiding future empirical Mind Genomics research, and informing the design of patient-centered communication strategies. If implemented and validated through future Mind Genomics investigations, this approach may contribute to the development of more patient-centred communication strategies that support the acceptance of routine mental health screening in primary care.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

AI Use Statement

ChatGPT (OpenAI) was used for the preparation of Figures 1 and 2 and for language editing. Idea Coach, integrated within the BimiLeap platform, was used to assist in developing the proposed story questions and communication elements.

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