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Stigma-Related Survey Responses and Anticipated Help-Seeking Deterrence in Al-Ahsa, Saudi Arabia: An Area-Standardized Secondary Analysis and Measurement Appraisal

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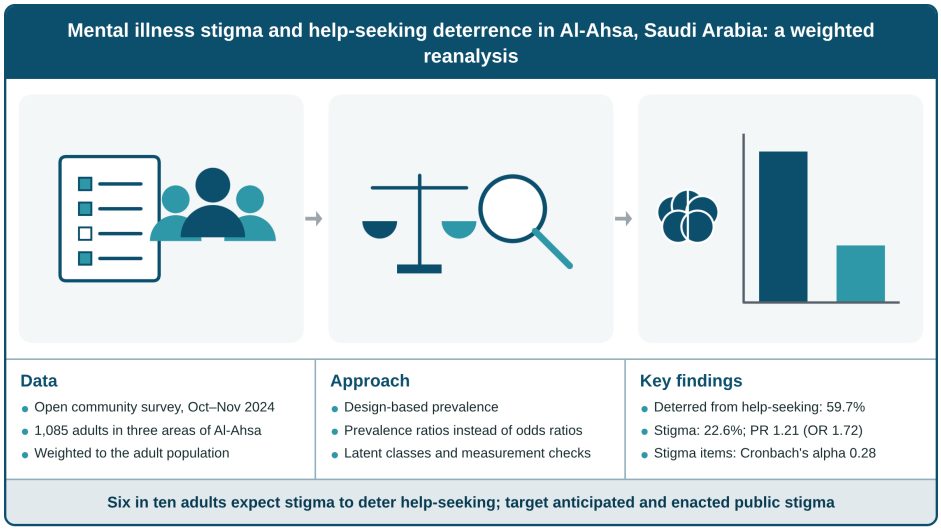
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ABSTRACT

GRAPHICAL ABSTRACT



Background: Stigma may affect mental health help-seeking, but a common survey outcome and an unvalidated composite can be difficult to interpret. We examined openly deposited Al-Ahsa survey data using area-standardized estimates, prevalence ratios and an appraisal of the stigma and deterrence measures.

Methods: We reanalysed 1,085 adult respondents to an October–November 2024 community survey in Al-Ahsa, Saudi Arabia. We constructed area-calibration weights using the three administrative-area population shares reported by the source investigators. We estimated composite-defined outcome proportions and covariate-adjusted prevalence ratios (PRs), examined item-level associations, and conducted exploratory latent class and psychometric analyses. Confidence intervals assume independent observations within the reported areas because original cluster identifiers were unavailable.

Results: Under the original questionnaire cut-offs, the area-standardized proportion meeting the deterrence criterion was 59.7% (model-based 95% CI 56.5–62.9), and the proportion meeting the stigma criterion was 22.6% (20.0–25.4). Overall, 70.9% endorsed the statement that community stigma prevents help-seeking. The adjusted association between the two composite indicators was PR 1.21 (1.08–1.36), versus an adjusted odds ratio of 1.72. The five stigma items had poor internal consistency (Cronbach's alpha 0.28); the four deterrence items had alpha 0.60. Witnessing harsh treatment was associated with the composite deterrence indicator (exploratory adjusted PR 1.37 [1.20–1.55]). A three-class model was selected exploratorily (classification entropy 0.57).

Conclusions: Approximately six in ten survey respondents met the original composite definition of stigma-related help-seeking deterrence; this is not a measured rate of actual care avoidance or a proven population prevalence. The adjusted stigma–deterrence association was modest, and the heterogeneous stigma items should not be interpreted as a validated single construct. Future studies should validate their scales, record recruitment and clustering information, and distinguish anticipated barriers from actual service use.

Keywords: mental health stigma; anticipated help-seeking deterrence; Saudi Arabia; area-standardization; secondary data analysis; prevalence ratios; psychometrics

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1. Introduction

Mental disorders contribute substantially to disability worldwide [1]. Despite the availability of effective care, treatment gaps remain, and stigma may contribute to delayed or avoided consultations. Stigma encompasses stereotyping, prejudice and discrimination directed at people with mental illness; a major international commission identifies it as an important public-health concern [2]. Reviews report associations between stigma and help-seeking, although findings vary by the type of stigma and whether actual service use or attitudes are measured [3,4].

In Saudi Arabia, the National Mental Health Survey found that only a minority of people with a lifetime mental disorder had ever received treatment and that the median delay before first treatment was several years [5]. Among respondents with a disorder who recognised a need for care, attitudinal barriers were reported far more often than structural ones [6], and mental and physical conditions frequently co-occur [7]. Community and patient surveys across the Kingdom consistently identify societal stigma, fear of gossip and concern about marriage prospects as barriers to consultation [8–10], and a systematic review of Saudi studies concluded that stigma is the predominant barrier to seeking mental health care [11]. Qualitative work with young Saudi adults described family attitudes, misconceptions and service accessibility as additional barriers and online therapy as a facilitator [12]. Mental health literacy has improved, but it varies by sex, education and proximity to people with mental illness [13,14]. Because most mental disorders begin in adolescence and early adulthood [15], stigma that delays help-seeking in young people has lasting consequences for the course of illness, education and employment.

Earlier Saudi studies describe barriers to mental health care, including stigma [8–12], but their sampling frames, measurement approaches and analyses vary. For common binary outcomes, odds ratios can be misread as prevalence ratios [17,18]; locally assembled scale totals also require measurement evaluation rather than assuming unidimensionality [16,19]. A prior Al-Ahsa study examined stigma [20]. In June 2026, Elmosaad

and colleagues published an Al-Ahsa survey of 1,085 adult respondents and made anonymized participant-level data available [21]. The original authors reported proportions of 23.1% for composite-defined stigma and 61.0% for composite-defined deterrence, with an adjusted odds ratio of approximately 1.71. These estimates invite sensitivity analyses of area imbalance, common-outcome effect measures and measurement properties.

Using the publicly deposited dataset, this secondary study aimed to (i) estimate area-standardized proportions meeting the source article's stigma and deterrence composite thresholds; (ii) examine associations with covariates using adjusted prevalence ratios and individual items; (iii) explore latent response profiles; and (iv) evaluate internal consistency, factor structure and threshold sensitivity. These are survey-defined responses, not direct measurements of patients' service utilization.

2. Materials and Methods

2.1. Study Design and Data Source

We performed a secondary analysis of the cross-sectional Al-Ahsa survey carried out from 27 October to 3 November 2024 [21]. The original survey article was published on 24 June 2026, and the anonymized item-level data were publicly deposited in Figshare in March 2026 (version 2; doi:10.6084/m9.figshare.31811980.v2; CC BY 4.0). The data were downloaded on 6 November 2026 and their checksum was compared with the archived repository metadata. The source article describes multistage selection across Al-Hofuf, Al-Mubarraz and Al-Qura, contact by telephone and social-media channels, and a Google Forms questionnaire completed under interviewer guidance. This is compatible with the dataset catalogue's brief description of online collection. However, the deposited file does not identify sampling clusters or independently establish the implementation of the recruitment plan or response denominator.

2.2. Participants

The source survey included 1,085 respondents aged at least 18 years who lived in Al-Ahsa and could read Arabic or English. The deposited file contains 682 responses from Al-Hofuf (62.9%), 221 from Al-Mubarraz (20.4%) and 182 from Al-Qura (16.8%). For standardization, we used the source article's reported adult population count (1,095,344) and area shares (42%, 38% and 20%, respectively) [21]; these margins were not independently verified. The dataset does not identify respondents' nationality or ethnic background. Therefore, it cannot establish the proportion of Arab participants in the study sample.

2.3. Variables

The source investigators created a five-item composite scored 0–10 for 'mental illness-related stigma', with a score of 5 or above classified as stigma [21]. Items addressed respondents' avoidance of people with mental illness, willingness to interact, beliefs about weak personality, witnessing harsh treatment, and willingness to support affected people. These domains combine personal attitudes and observations of others, so the original threshold is treated here as an operational score definition rather than a validated diagnosis or unidimensional measure of stigma [16,19,21,22].

The source article's four-item deterrence composite (score 0–6, cut-off 3 or above) includes perceived community stigma as a barrier, respondents' self-reported past avoidance due to fear of judgment, and two anticipated avoidance items (professional help and discussion with family or friends) [21]. The composite consequently mixes belief, recall and hypothetical intentions; it is not an observed rate of treatment non-use. Respondents also identified perceived stigma influences, including family, peers, culture, workplace, education, healthcare, awareness campaigns, social media and experiences. Models used the recorded age category, sex, administrative area, education, marital status, employment and contact with a person with mental illness.

2.4. Statistical Analysis

Area-calibration weights were constructed as the source-reported population share divided by each area's observed sample share (equivalently, proportional to N_h/n_h), because Al-Hofuf was over-represented relative to the published margins [21]. The resulting weights spanned approximately 675–1883 and had a Kish weight-

only design effect of 1.23. No original selection probabilities, nonresponse-adjusted weights, sampling-cluster identifiers or age/sex calibration margins were supplied. We therefore report area-standardized estimates, not independently verified design-unbiased population estimates. The available Taylor-linearization intervals treat respondents as independent within each area and do not capture possible clustering, nonresponse or coverage errors; they may be too narrow.

The main outcomes were the proportions meeting the source-defined deterrence and stigma cut-offs, with logistic-transformed 95% intervals conditional on the reported area design approximation. Adjusted prevalence ratios (PRs) were estimated using area-weighted modified Poisson regressions with robust variance [17,18]; adjusted and unadjusted odds ratios were retained for comparison with [21]. Covariates were entered simultaneously. The association with the numeric stigma score was evaluated descriptively with observed score-specific proportions and a spline. Exploratory item-level models were added after examining the scale structure and should not be interpreted as confirmatory tests. Results are associations, not effects of stigma on later healthcare use; no multiplicity correction was applied.

An exploratory latent class analysis of the nine recorded stigma and deterrence items was fitted without survey weights using poLCA, comparing one to five classes with 20 random starts and consulting the Bayesian information criterion [24,25]. Class summaries were subsequently standardized to the area margins. Because the same deterrence items enter both class estimation and the composite outcome, class-specific deterrence is descriptive and cannot independently validate that outcome. Class assignment is uncertain (entropy 0.57). Internal consistency was assessed using alpha and approximate omega; a continuous-variable one- and two-factor confirmatory model was used as a diagnostic approximation for mixed-category items [16,26,27]. Threshold, weighting and regression sensitivity analyses used the archived outputs.

The supplied reproducibility package includes R analysis outputs and a separately coded Python recomputation for the two principal area-standardized estimates and the adjusted composite PR, which agree to numerical precision in the recorded audit. We compared the archived checksums, numerical results and manuscript tables; the full statistical pipeline was not newly executed in this editorial revision.

2.5. Reporting Guideline

We used the STROBE and CROSS reporting frameworks to review the description of this cross-sectional secondary survey analysis [28,29]. A completed checklist with verified manuscript page references is required before submission.

2.6. Ethics

The original investigators report approval by the King Faisal University Deanship of Scientific Research Ethics Committee (KFU-REC-2024-OCT-ETHICS2653) and written informed consent for primary data collection [21]. This secondary analysis involved no new participant recruitment and used the anonymized public dataset. No separate institutional approval or written exemption determination for this secondary analysis was included among the supplied files; the authors' institution should confirm applicable requirements before publication.

3. Results

3.1. Participants

The deposited analysis file contains 1,085 records: 574 (52.9%) respondents were women, 320 (29.5%) were aged 18–29 years, 49 (4.5%) were older than 65 years, 752 (69.3%) reported college education, and 412 (38.0%) reported contact with a person with mental illness (Table 1). No missing values were reported in the analysis variables in the supplied package; the sampling frame and nonresponse denominator could not be independently checked.

3.2. Prevalence of Stigma and Deterrence

The area-standardized proportion meeting the original deterrence composite cut-off (score ≥3/6) was 59.7% (model-based 95% CI 56.5–62.9); 22.6% (20.0–25.4) met the original stigma composite cut-off (score ≥5/10).

Unweighted proportions were 61.0% and 23.1%, respectively. The corresponding mean scores were 2.98/6 and 3.18/10. At item level (Figure 1), 15.4% reported frequently avoiding people with mental illness, 17.2% agreed that mental illness reflected a weak personality, 21.5% had frequently witnessed harsh treatment, and 4.4% said mental illness would reduce their willingness to support affected people. In the deterrence items, 70.9% believed community stigma prevents help-seeking, 24.3% reported avoiding help for fear of judgment, and 21.6% and 32.7% expressed a high probability of avoiding professional help or discussing mental health with family and friends, respectively. These are distinct questions and cannot be treated as a single observed avoidance rate. The most frequently cited perceived stigma influences were family beliefs (59.4%), friends/peers (48.2%), quality of care (43.6%) and social media (44.1%).

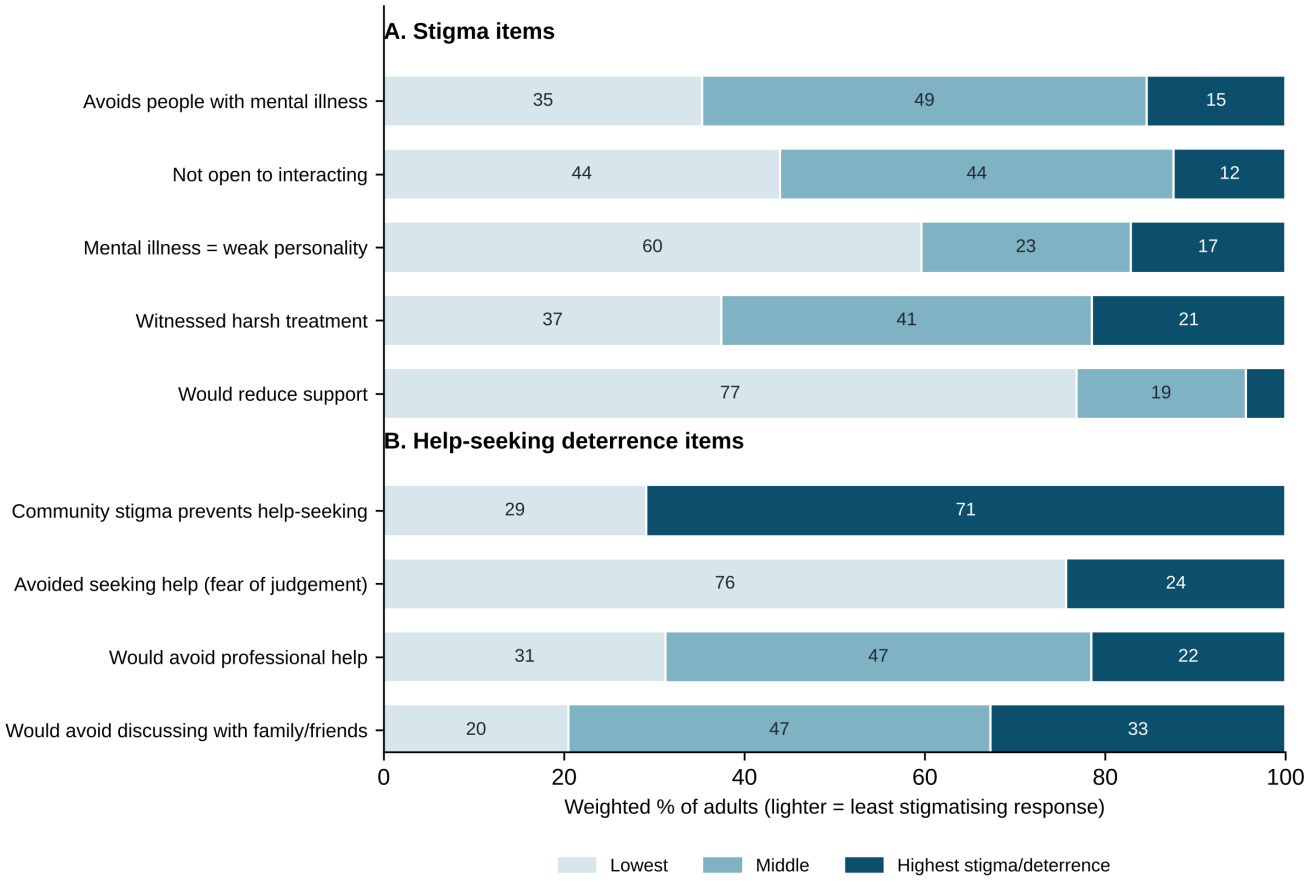


Figure 1. Area-standardized distributions of five survey stigma items (A) and four stigma-related help-seeking deterrence items (B), collected in Al-Ahsa, 2024. Percentages apply to the surveyed sample after area calibration, not to a verified probability sample. Darker shading denotes the higher coded response, not necessarily a single validated stigma construct.

Using the original stigma score cut-off, the area-standardized proportions were 26.2% for men and 19.0% for women, 29.3% at ages 18–29 and 18.2% at ages 54–65, and 14.8% among retired respondents (Table 1, Figure 2A). The deterrence composite proportion ranged from 53.8% in Al-Qura to 68.8% among ages 30–41 and was 69.7% in respondents with the stigma score criterion versus 56.8% without it (Figure 2B). These subgroup contrasts are descriptive and subject to sampling and measurement limitations.

Table 1. Participant characteristics and area-standardized proportions meeting the source-defined stigma and deterrence thresholds, by recorded subgroup.

Characteristic	n (unweighted %)	Stigma, % (95% CI)	Deterred, % (95% CI)
All adults	1,085 (100)	22.6 (20.0–25.4)	59.7 (56.5–62.9)
Age, years: 18–29	320 (29.5)	29.3 (24.1–35.1)	60.5 (54.4–66.3)

Characteristic	n (unweighted %)	Stigma, % (95% CI)	Deterred, % (95% CI)
30–41	170 (15.7)	25.0 (18.4–32.9)	68.8 (60.2–76.3)
42–53	256 (23.6)	19.8 (15.0–25.7)	60.9 (54.1–67.3)
54–65	290 (26.7)	18.2 (13.9–23.4)	53.0 (46.5–59.3)
>65	49 (4.5)	9.2 (3.6–21.6)	56.3 (40.4–71.0)
Sex: Men	511 (47.1)	26.2 (22.3–30.6)	62.1 (57.3–66.6)
Women	574 (52.9)	19.0 (15.7–22.8)	57.5 (52.9–61.9)
Area: Al-Hofuf	682 (62.9)	23.0 (20.0–26.3)	63.8 (60.1–67.3)
Al-Mubarraz	221 (20.4)	19.0 (14.3–24.8)	58.4 (51.7–64.7)
Al-Qura	182 (16.8)	28.6 (22.4–35.6)	53.8 (46.5–61.0)
Education: High school or lower	234 (21.6)	25.4 (19.8–32.1)	56.1 (48.9–63.0)
College	752 (69.3)	22.0 (19.0–25.4)	60.6 (56.7–64.5)
Master or higher	99 (9.1)	20.2 (12.7–30.7)	61.7 (50.3–71.9)
Marital status: Married	733 (67.6)	20.4 (17.4–23.8)	58.3 (54.3–62.3)
Single	305 (28.1)	28.9 (23.6–34.9)	64.4 (58.2–70.1)
Divorced or widowed	47 (4.3)	13.9 (6.4–27.7)	50.7 (34.8–66.5)
Employment: Employed	392 (36.1)	23.9 (19.6–29.0)	64.8 (59.4–69.8)
Student	226 (20.8)	29.5 (23.5–36.4)	60.1 (52.8–67.0)
Unemployed	146 (13.5)	24.5 (17.6–33.0)	58.7 (49.5–67.4)
Retired	321 (29.6)	14.8 (11.2–19.3)	53.6 (47.5–59.6)
Contact with a person with mental illness: No	673 (62.0)	24.3 (21.0–28.0)	59.2 (55.0–63.2)
Yes	412 (38.0)	19.7 (15.8–24.3)	60.7 (55.2–65.8)

Estimates use area-standardization to source-reported adult population shares and model-based 95% CIs assuming independence within areas; these intervals exclude unmeasured cluster and nonresponse uncertainty. Stigma = source composite score ≥5/10; deterrence = source composite score ≥3/6. 'High school or lower' includes four respondents without formal education. CI, confidence interval.

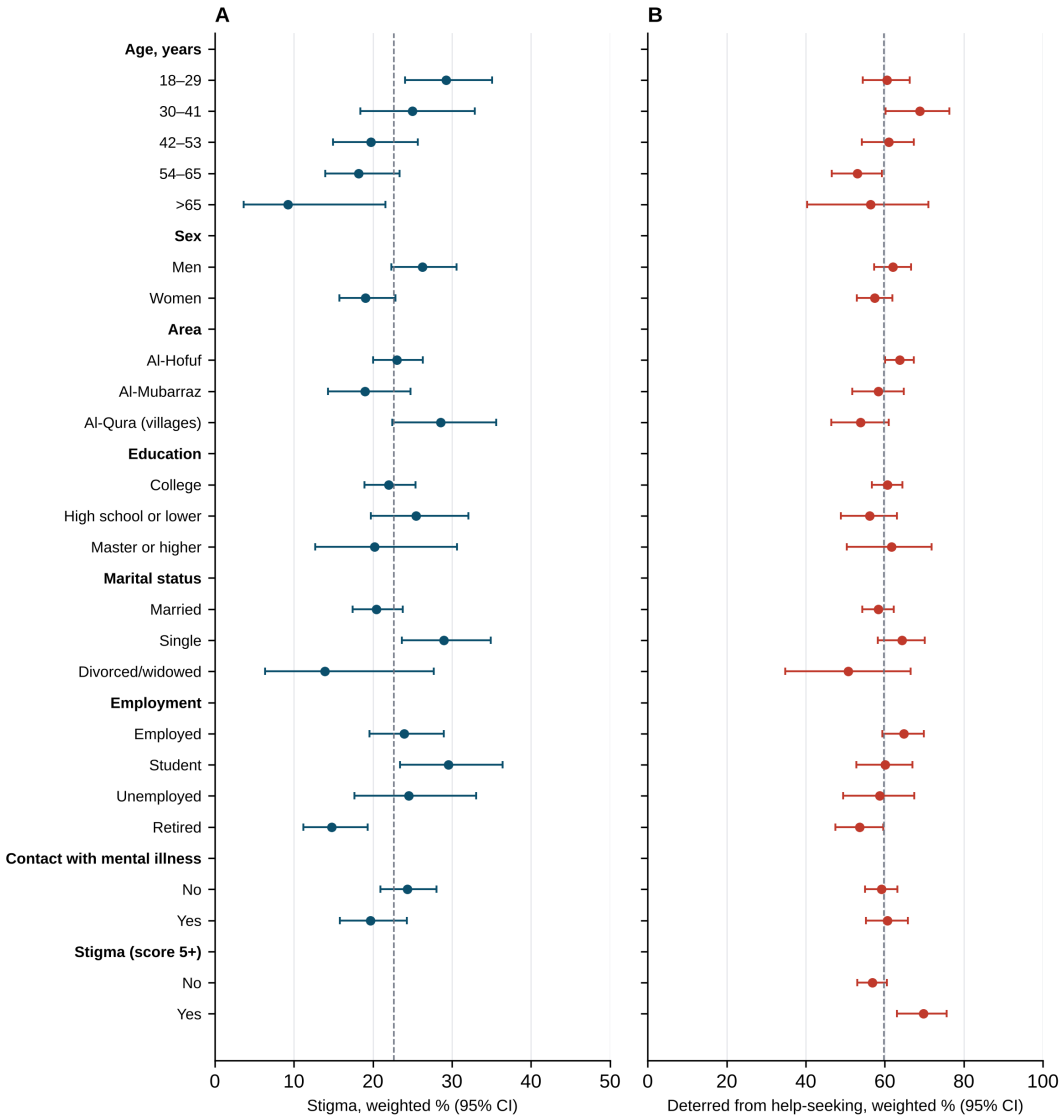


Figure 2. Area-standardized proportions meeting the original stigma threshold (A) and deterrence threshold (B), by recorded subgroup. Points show model-based 95% CIs; dashed lines show overall sample estimates (22.6% and 59.7%). Unmeasured cluster and selection uncertainty is not included.

3.3. Factors Associated with Deterrence and Stigma

The area-calibrated adjusted PR for meeting the deterrence criterion was 1.21 (95% CI 1.08–1.36) for respondents meeting versus not meeting the stigma criterion (crude PR 1.23 [1.10–1.37]); the Al-Qura versus Al-Hofuf PR was 0.82 (0.71–0.95) (Table 2, Figure 3A). Single versus married respondents had a PR of 1.21 (1.00–1.48), whose interval abuts the null. Other recorded covariate estimates were imprecise. The adjusted odds ratio was 1.72 (1.21–2.45); unweighted estimates reproduced the source article's reported models within rounding [21]. Women versus men had an adjusted PR of 0.75 (0.57–0.99) for the stigma score criterion. Because the criteria are heterogeneous and outcome items overlap stigma content, these estimates should not be read as causal or diagnostic associations.

Table 2. Associations between source-defined composite indicators and recorded covariates, using area-calibrated regression weights.

Characteristic	Deterred, weighted PR (95% CI)	Deterred, weighted OR (95% CI)	Deterred, unweighted OR (95% CI)	Stigma, weighted PR (95% CI)
Stigma (score ≥5) vs none	1.21 (1.08–1.36)	1.72 (1.21–2.45)	1.71 (1.24–2.34)	—
Age 30–41 vs 18–29 years	1.22 (0.97–1.53)	1.74 (0.91–3.34)	1.80 (1.01–3.21)	0.94 (0.57–1.57)

Characteristic	Deterred, weighted PR (95% CI)	Deterred, weighted OR (95% CI)	Deterred, unweighted OR (95% CI)	Stigma, weighted PR (95% CI)
Age 42–53 vs 18–29 years	1.14 (0.90–1.45)	1.41 (0.76–2.61)	1.22 (0.70–2.13)	0.73 (0.44–1.23)
Age 54–65 vs 18–29 years	1.04 (0.78–1.39)	1.13 (0.56–2.31)	0.95 (0.50–1.81)	0.83 (0.45–1.55)
Age >65 vs 18–29 years	1.14 (0.77–1.70)	1.40 (0.54–3.64)	1.37 (0.58–3.23)	0.39 (0.13–1.17)
Women vs men	0.93 (0.83–1.06)	0.84 (0.61–1.16)	0.90 (0.68–1.19)	0.75 (0.57–0.99)
Al-Mubarraz vs Al-Hofuf	0.92 (0.81–1.04)	0.80 (0.58–1.10)	0.80 (0.58–1.10)	0.78 (0.58–1.06)
Al-Qura vs Al-Hofuf	0.82 (0.71–0.95)	0.61 (0.43–0.86)	0.62 (0.44–0.87)	1.13 (0.86–1.49)
High school or lower vs college	0.94 (0.81–1.09)	0.87 (0.61–1.24)	1.00 (0.73–1.38)	1.22 (0.91–1.62)
Master or higher vs college	0.92 (0.75–1.12)	0.80 (0.47–1.37)	0.80 (0.50–1.28)	0.97 (0.61–1.56)
Single vs married	1.21 (1.00–1.48)	1.71 (0.96–3.03)	1.50 (0.90–2.49)	1.02 (0.66–1.59)
Divorced or widowed vs married	0.91 (0.66–1.25)	0.81 (0.41–1.59)	0.89 (0.49–1.61)	0.87 (0.42–1.81)
Student vs employed	0.89 (0.72–1.10)	0.73 (0.40–1.31)	0.78 (0.46–1.33)	0.99 (0.63–1.55)
Unemployed vs employed	0.96 (0.80–1.17)	0.90 (0.55–1.47)	1.01 (0.65–1.57)	1.14 (0.75–1.74)
Retired vs employed	0.93 (0.75–1.15)	0.83 (0.50–1.39)	0.83 (0.52–1.31)	0.72 (0.42–1.21)
Contact with a person with mental illness	1.02 (0.92–1.15)	1.06 (0.79–1.42)	1.25 (0.96–1.63)	0.85 (0.65–1.10)

Models included all displayed covariates (n = 1,085). PRs are from area-calibrated modified Poisson regressions with robust variance; ORs from area-calibrated or unweighted logistic regressions. Model-based intervals may omit uncertainty from clustering and selection. The original source used unweighted logistic regression [21]. CI, confidence interval; OR, odds ratio; PR, prevalence ratio.

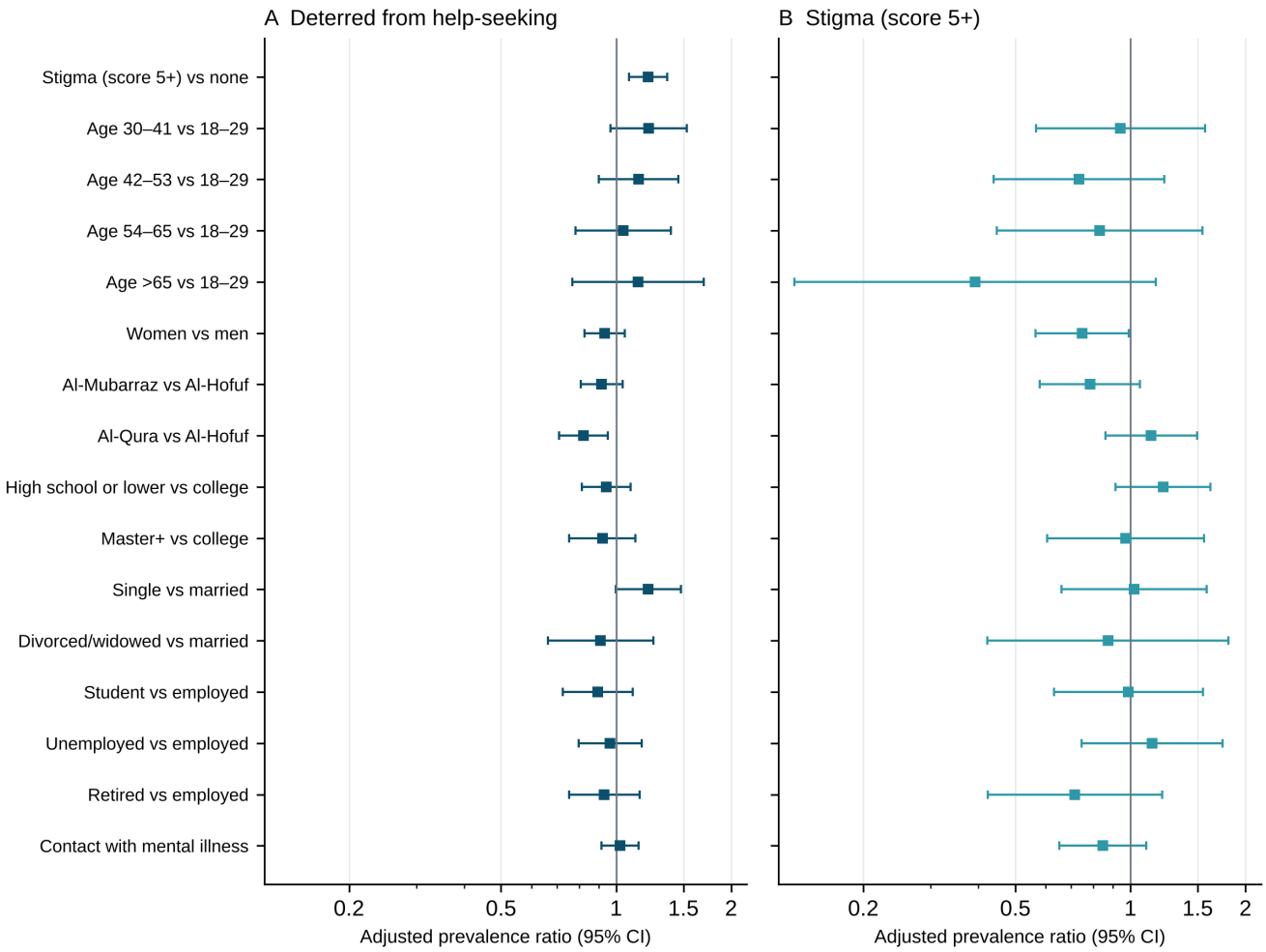


Figure 3. Adjusted PRs for meeting the deterrence score criterion (A) and stigma score criterion (B). Estimates use area-calibrated weights, and intervals do not include missing cluster-design information. Associations do not demonstrate temporal or causal effects.

3.4. Dose–Response and Item-Level Associations

The proportion meeting the deterrence threshold rose across the original stigma score, from 31.1% (model-based 95% CI 19.3–46.0) at a score of 0 to 62.9% at 3 and 82.9% at 7 (Figure 4A). The adjusted PR per score point was 1.08 (1.05–1.12); an exploratory spline comparison gave p = 0.037 without multiplicity adjustment. The estimated difference in the deterrence score was 0.16 points (0.10–0.23) per stigma score point. In post hoc item-level models, having witnessed harsh treatment was associated with meeting the deterrence criterion (any vs never: PR 1.37 [1.20–1.55]); observed avoidance of people with mental illness had PR 1.29 (1.14–1.46) and lack of openness 1.17 (1.04–1.31). The weak-personality belief and reduced-support item did not show clear evidence of an association in the archived models. Cross-item comparisons are exploratory and are not tests of an underlying causal pathway.

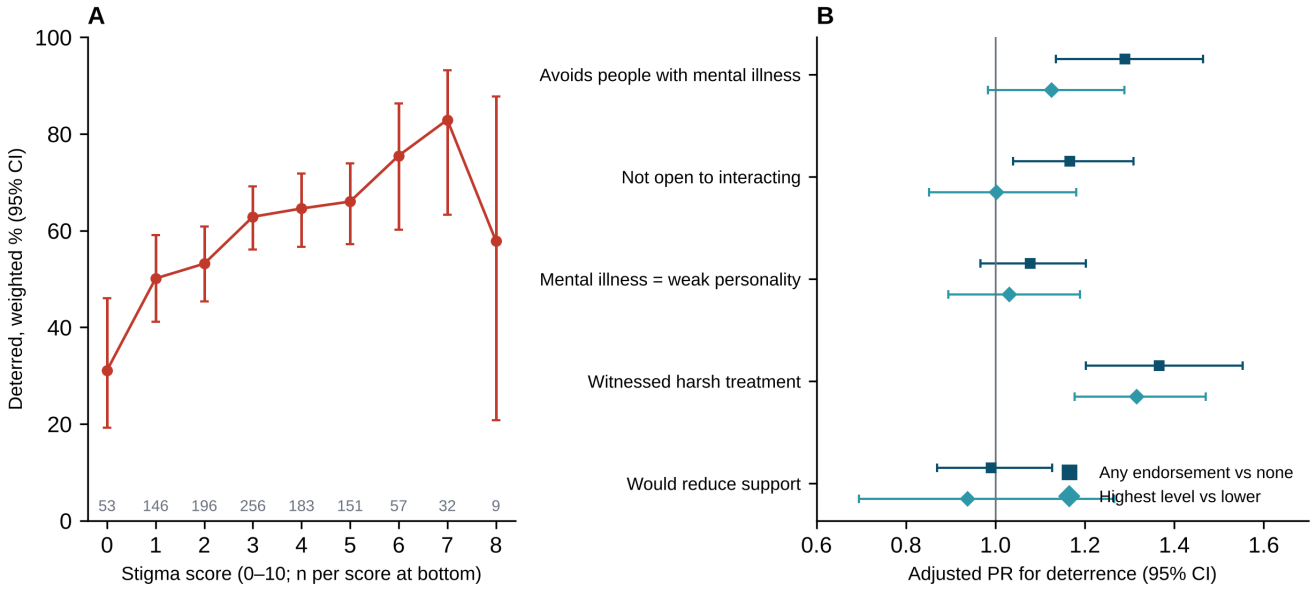


Figure 4. Descriptive relation between original stigma composite score and meeting the deterrence criterion (A), and post hoc adjusted PRs for individual stigma items (B). The score-9 category contained two respondents and is omitted. Associations may reflect overlapping questionnaire content and should not be interpreted as mediated or causal effects.

3.5. Latent Classes

The exploratory unweighted latent class model had the smallest BIC at three classes (BIC 16916, compared with 16963 for two classes and 16954 for four classes). Classification was only moderate (entropy 0.57; mean maximum posterior probability 0.80). Subsequent area-calibrated class shares were 38.9%, 36.6% and 24.5%, respectively. The original deterrence threshold was met by 15.4%, 80.0% and 99.7% of the classes, whereas the original stigma threshold was met by 11.2%, 30.7% and 28.7%, respectively (Figure 5). Since class assignment was based partly on deterrence items, these class-specific deterrence proportions are descriptive and not independent validation of a behavioral phenotype.

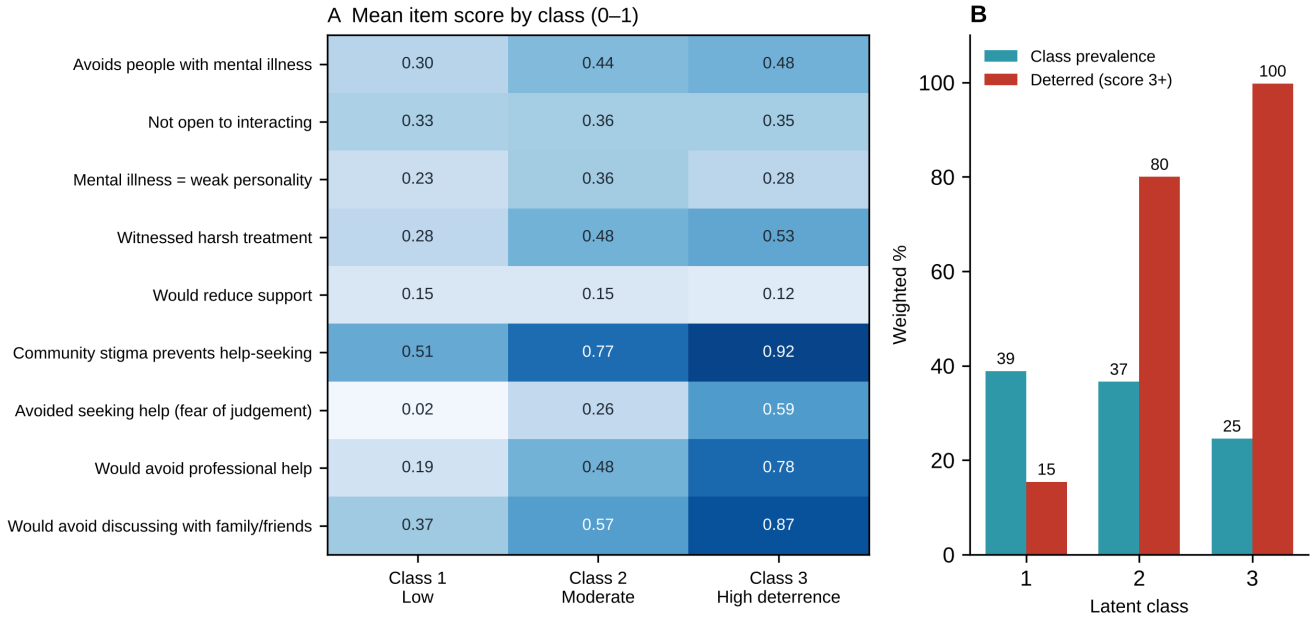


Figure 5. Exploratory latent class profiles of the same nine questionnaire items (A); area-standardized class shares and original deterrence composite responses (B). Classes were fitted without weights; entropy was

0.57. The relation between class and deterrence is partly definitional because deterrence items contributed to class fitting.

3.6. Measurement Properties and Sensitivity Analyses

The five-item original stigma composite had low internal consistency in the deposited sample (Cronbach's alpha 0.28; approximate omega 0.20; corrected item-total correlations 0.07–0.22). Standardized loadings in the approximate continuous-variable two-factor analysis ranged from −0.12 to 0.78. The four deterrence items had alpha 0.60 and approximate omega 0.61 (loadings 0.38–0.67). The two-factor model showed CFI 0.82, TLI 0.75 and RMSEA 0.068; its CFI exceeded that of the one-factor model (0.74), but neither model supports treating the original nine items as a validated single construct. The source paper reports alpha 0.83 from a pilot questionnaire; its sample and item set may differ, so this should not be treated as a direct like-for-like discrepancy without the original pilot scoring details [21].

The source-defined threshold results were sensitive to arbitrary cut-offs: the area-standardized stigma composite proportion ranged from 40.4% using ≥4 to 9.2% using ≥6; the deterrence composite proportion ranged from 80.5% using ≥2 to 37.4% using ≥4. The adjusted PR remained above one in the archived alternative-threshold models, but one deterrence-threshold interval included the null (PR 1.18, 95% CI 0.98–1.42). Given weak stigma-scale reliability, these cutoff-dependent percentages are not reliable estimates of a distinct single stigma condition (Table 3). The supplied independent audit reported agreement for the principal estimate and PR within rounding.

Table 3. Measurement diagnostics and threshold sensitivity for the original heterogeneous stigma and deterrence item sums.

Property	Stigma composite (5 items)	Deterrence composite (4 items)
Cronbach's alpha (McDonald's omega)	0.28 (0.20)	0.60 (0.61)
Standardised loadings, range	-0.12 to 0.78	0.38 to 0.67
Two-factor CFA: CFI / TLI / RMSEA	0.82 / 0.75 / 0.068	same model
One-factor CFA: CFI / TLI / RMSEA	0.74 / 0.66 / 0.078	same model
Prevalence, primary cut-off, % (95% CI)	22.6 (20.0–25.4) (score ≥5)	59.7 (56.5–62.9) (score ≥3)
Prevalence, lower cut-off, % (95% CI)	40.4 (37.2–43.6) (score ≥4)	80.5 (77.7–83.0) (score ≥2)
Prevalence, higher cut-off, % (95% CI)	9.2 (7.4–11.2) (score ≥6)	37.4 (34.3–40.7) (score ≥4)
Unweighted prevalence, primary cut-off, %	23.1	61.0
Adjusted PR stigma→deterrence, alternative cut-offs	≥4: 1.22 (1.10–1.36); ≥6: 1.29 (1.12–1.49)	≥2: 1.11 (1.04–1.19); ≥4: 1.18 (0.98–1.42)

The CFA fitted continuous-variable approximations to mixed-category items. The two-factor fit indices summarize both item sets. PR sensitivity analyses vary one composite cutoff at a time; all interpretations remain conditional on the source-defined coding and missing cluster information. CFA, confirmatory factor analysis; CFI, comparative fit index; CI, confidence interval; PR, prevalence ratio; RMSEA, root mean square error of approximation; TLI, Tucker–Lewis index.

4. Discussion

4.1. Principal Findings

This secondary analysis of an Al-Ahsa survey found that 59.7% of area-standardized responses met the original questionnaire's stigma-related deterrence criterion. That criterion combines beliefs, reported experiences and anticipated actions; it cannot be interpreted as the proportion of adults who actually failed to access care. The five-item stigma score was internally inconsistent, making its cut-off prevalence difficult to interpret. Meeting the stigma score criterion was associated with the deterrence criterion (adjusted PR 1.21), but both meas-

ures contained related questionnaire content. Item-specific analyses identify descriptive patterns rather than intervention targets validated by causal evidence.

4.2. Comparison with Previous Studies

Area standardization changed the main survey-score proportions only modestly relative to the original article (from 61.0% to 59.7% for deterrence and from 23.1% to 22.6% for stigma), using three geographic margins reported by the source authors [21]. This should not be interpreted as establishing population representativeness: cluster identifiers, individual selection probabilities, nonresponse adjustments and nationality were not available. For a common outcome, the corresponding odds ratio of 1.72 is numerically farther from one than the adjusted prevalence ratio of 1.21; they quantify different associations and must not be used interchangeably [17,18].

The associations involving individual questionnaire items were exploratory and not adjusted for multiple testing. Observation of harsh treatment had one of the larger adjusted PRs for meeting the deterrence score criterion, while the weak-personality belief was not clearly associated. Both observed mistreatment and the deterrence items address stigma-related experiences or fears, and shared questionnaire content could contribute to the association. No mediator, temporal ordering or pathway from beliefs to actual treatment utilization can be identified in these cross-sectional data.

Saudi studies document several perceived barriers to mental health consultations [5,6,8–12]. In the current questionnaire, 70.9% endorsed the belief that community stigma can hinder help-seeking; this is a perception, not a directly observed service-use rate. The source article reports adjusted odds ratios for the questionnaire's deterred outcome of 1.80 (ages 30–41 vs 18–29) and 0.62 (Al-Qura vs Al-Hofuf) [21]. Under the deposited outcome coding, these values indicate greater and lower *odds of the deterrence indicator*, respectively, whereas some source prose describes the contrasts in terms of help-seeking. The directional interpretation should follow the actual outcome coding. The present estimates do not establish causal differences between demographic groups, and broader generalization is limited by the selection process.

4.3. Measurement Considerations

The low alpha for the five stigma items (0.28) and heterogeneous loadings indicate they should not be presented as a unitary validated stigma scale. Items include private attitudes, willingness to support others and personal observation of discrimination, which need not covary. Their threshold-dependent sum is a source-defined operational indicator, not a measure whose psychometric validity has been established in this deposit. The four deterrence items were somewhat more internally consistent but still combined distinct response types, including one retrospective report and anticipated attitudes. The unweighted latent class analysis is exploratory, with entropy 0.57 and partial definitional overlap with the deterrence score. Future work should validate Arabic-language instruments and collect actual help-seeking behavior, not only intentions [19].

4.4. Relevance for Saudi Arabia

The findings suggest that stigma-related perceptions were frequently endorsed in the surveyed group, but they do not test the effectiveness of any anti-stigma intervention. Policy proposals to strengthen confidentiality, social support, information and practical access routes remain plausible priorities informed by the broader literature [2,33–35], not proven solutions from this analysis. Population-specific interventions should be evaluated with valid instruments and observed healthcare outcomes.

4.5. Strengths and Limitations

Strengths include analysis of anonymized item-level data with explicit source attribution, area-calibration sensitivity, reporting of prevalence ratios rather than only odds ratios, item-level patterns, and deliberate scrutiny of the original composite thresholds. The supplied package includes frozen results, scripts and checksums supporting auditability; the present editorial review checked the archived records and manuscript consistency, but did not independently rerun the complete analysis.

Several limitations constrain interpretation. First, the data are cross-sectional and the reported outcomes combine perceptions, past experience and hypothetical intentions, rather than observed clinical care. Second, weights calibrate only to source-reported proportions across three Al-Ahsa areas; eligibility, selection probabilities, response denominator, cluster identifiers and individual-level calibration margins were not available in the deposit, so neither probability-based generalization nor fully design-corrected uncertainty can be established. Third, nationality or ethnic-group data were not recorded; the proportions of Arab and non-Arab respondents are unknown, a separate issue for journals with population-specific eligibility rules. Fourth, the five-item stigma scale has low internal consistency, its items capture different domains and cutoff choice materially changes the reported proportion; the deterrence scale also mixes response types. Fifth, continuous-variable factor analysis of categorical items and unweighted exploratory latent classes offer only approximate structural diagnostics; class separation was moderate. Sixth, multiple post hoc item models were not multiplicity-corrected. Finally, attitudes and self-reports can be subject to selection, recall and social desirability biases, and responses from Al-Ahsa in late 2024 should not be assumed to represent the wider Saudi population.

4.6. Implications

These results support further methodological work: future Al-Ahsa or national studies should predefine psychometrically validated Arabic stigma and help-seeking instruments, measure actual service use separately from anticipated avoidance, record nationality where ethically appropriate, document sampling probabilities and cluster identifiers, and report both raw and transparently standardized estimates. The present findings may inform hypotheses about perceived barriers, but do not by themselves establish which intervention would improve care uptake.

5. Conclusions

In 1,085 respondents from a 2024 Al-Ahsa survey, 59.7% of area-standardized records met a source-defined composite threshold for stigma-related deterrence from help-seeking, while 22.6% met the source's heterogeneous stigma score threshold. These results are survey-score proportions and cannot establish rates of actual service avoidance or population-wide prevalence. The adjusted composite association was modest (PR 1.21), and the five stigma items showed poor internal consistency (alpha 0.28). Future surveys should employ validated, distinct measures of stigma and care utilization and document the sampling design to enable credible population inference.

Declarations

Institutional Review Board Statement: The original survey is reported to have received King Faisal University ethics approval KFU-REC-2024-OCT-ETHICS2653 [21]. This secondary analysis used publicly deposited anonymized data and recruited no new participants.

Informed Consent Statement: The source article reports written informed consent for the original survey [21]. No new participants were approached for this secondary analysis.

Data Availability Statement: The source data are openly available at https://doi.org/10.6084/m9.figshare.31811980.v2 under CC BY 4.0 [21]. The supplied secondary-analysis archive contains R/Python scripts, frozen result summaries and checksums.

Acknowledgments: The original investigators are credited for depositing the source data under CC BY 4.0. This secondary work must not imply the data owners endorsed the new interpretation.

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