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Offspring participation across family mealtime activities in the Colombian Caribbean

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Abstract

Background

Family mealtime participation involves distinct activities that may be obscured by an overall score. We compared six participation activities and examined associations with shared mealtime practices in the Colombian Caribbean.

Methods

This exploratory cross-sectional study analysed 96 questionnaire records with complete responses to 16 items coded from 1 to 5. Analyses comprised Friedman comparisons, 15 paired exact sign tests with Holm adjustment, and correlations between content-based item means. Specified procedures used 20,000 bootstrap resamples and 99,999 permutations. Sensitivity analyses examined wording, scoring and record selection.

Results

Participation ranks differed across activities (Q = 84.583; permutation p = 0.00001; Kendall W = 0.176, 95% CI 0.093–0.257). Shopping, cleaning and decision responses exceeded each preparation item in all nine corresponding Holm-adjusted comparisons. Differences remained after omitting the decision item. Shared-practices and participation means were positively associated (Pearson r = 0.480, 95% CI 0.309–0.621; Spearman rho = 0.458, 95% CI 0.253–0.622). The association persisted across specified sensitivity scenarios, whereas preparation-related associations depended more strongly on coding.

Conclusions

Distinguishing mealtime activities provides a more specific description of reported family participation than an undifferentiated score. Interpretation depends on verifying response anchors and respondent independence. Cross-sectional associations do not establish causal or developmental effects.

Background

Family meals combine the provision of food with opportunities for interaction. Family members may contribute by preparing food, shopping for food, clearing up or helping choose what is served. These activities give participation several meanings within the same routine. Reviews of family mealtimes encompass meal frequency, social experiences, practical barriers and health-related outcomes, while documenting considerable variation in how meals are defined and measured [1, 2]. A description of the particular contributions involved can make the exposure under study more interpretable: eating together, helping prepare a meal and taking part in a decision each identifies a different aspect of family life.

Existing studies attach different questions to these contributions. Research with Canadian schoolchildren examined participation in meal preparation in relation to dietary quality [3]. A parent–child meal-selection study examined how jointly chosen meals differed from parent-only selections [4]. Qualitative interviews with parents of preschoolers explored the division of feeding responsibilities, including adults' provision of food and children's discretion over whether and how much to eat [5]. These approaches distinguish performing a task, influencing a choice and exercising autonomy. They also motivate examining variation within practical involvement itself: preparing breakfast, helping shop and cleaning after a meal may occupy different positions in the same response profile. An overall participation score leaves those relative positions unspecified.

Participation can also be considered alongside the experience of sharing meals. A systematic review identified diverse approaches to measuring mealtime emotional climate [6], and the Mealtime Emotions Measure for Parents distinguished positive and negative experiences associated with reported food-parenting practices [7]. An ecological momentary assessment study of parents of preschool children with an avid eating profile further examined feeding practices in relation to the immediate context of eating occasions [8]. This literature gives reason to examine whether reports of concrete contributions covary with reports of shared mealtime experiences. The question concerns how participation and shared practices are represented together, while retaining their different content.

Colombian and Chilean research has examined everyday family relationships, the social organization of shared meals and family influences on feeding practices [9, 10, 11]. The present exploratory study contributes a comparison of six named activities in 96 questionnaire records from Atlántico, Colombia. We compared responses concerning preparation of breakfast, lunch and dinner, food shopping, cleaning and meal decisions within each record. We then examined the association between average participation responses and a summary of shared mealtime practices. These analyses address complementary questions: how responses differ across contributions and how their average covaries with the reported experience of family meals.

Methods

Design and study setting

We analysed a cross-sectional questionnaire study of family mealtime practices in Atlántico, Colombia. The study documentation identifies Santo Tomás, Soledad and Malambo as the target municipalities and describes purposive territorial selection. Data collection formed part of a classroom research project involving ninth-semester psychology students at Universidad Simón Bolívar in Barranquilla. Exported records were timestamped from 7 to 19 May 2026. Municipality was not retained as an analytic variable. Reporting was organized according to the cross-sectional STROBE framework [12].

Records and available participant information

The analytic unit was a submitted questionnaire. We retained all 96 exported records because repeated contact addresses or response profiles alone did not establish duplicate or ineligible respondents. The export contained 92 normalized contact addresses; these were used as grouping proxies in sensitivity analyses and internal model evaluation. The available documentation did not provide the recruitment and eligibility information needed to verify independent respondents or households, a prospective sample-size calculation, or the number of people approached. A response rate could therefore not be estimated.

Recorded descriptors comprised sex, occupation and marital status. Respondent age, offspring age, caregiver role and household identifier were absent. The documentation did not describe selecting households by income or vulnerability, and the questionnaire did not measure household income, family resilience, dietary intake or health outcomes. We summarized sex and marital-status labels, retaining ambiguous entries rather than inferring household composition or socioeconomic status.

Questionnaire and score construction

The questionnaire contained 16 items concerning preparation and scheduling, shared mealtime practices and offspring participation. Its conceptual sources included work on meal-planning barriers and feeding coparenting [13, 14]. It was not analysed as an administered version of either published instrument. Additional file 1 provides the exported Spanish wording and explanatory English translations. We use “offspring” to retain the questionnaire’s family relationship without assigning an undocumented age range.

Responses were integer codes from 1 to 5. The exact verbal anchors, administration instructions, recall period and any pre-export recoding were not available. Consequently, the analyses describe numerical responses rather than named frequency categories. Arithmetic summaries assume equal spacing between codes; comparisons across activities additionally require a common response interpretation. All inferential results are conditional on these measurement assumptions and on independent analytic units.

We formed three unweighted content-based means: preparation and scheduling (I01, I02, I07, I08), shared mealtime practices (I03, I04, I05, I06, I09, I10), and offspring participation (I11–I16). The six participation items concern help preparing breakfast, lunch and dinner, shopping, cleaning, and having helped decide what the family would eat. These summaries are operational descriptions rather than validated latent scales or categories of family functioning. The initial specification preserves the exported coding direction.

Four wording features motivated sensitivity analyses. I04 and I05 have apparently repeated labels. I07 combines tiredness or lateness, a quick dinner and offspring preferences. I08 concerns sharing dinner only at special events. I16 uses past-tense decision wording, whereas the five practical-help items use the present tense. These features were examined explicitly rather than resolved by selecting whichever scoring rule produced the strongest association.

Descriptive analysis and paired activity comparisons

The analytic extension was developed after data inspection and was exploratory. We checked missingness, integer coding and allowable range, and calculated category counts, means, sample standard deviations and quartiles. We applied no imputation, sampling weights or undocumented exclusions. Pointwise 95% bias-corrected and accelerated (BCa) intervals used 20,000 complete-record bootstrap resamples, preserving the pairing among items [15]. Cronbach alpha described internal consistency and was not interpreted as evidence of construct validity [16].

The main comparison used the tie-corrected Friedman statistic for I11–I16 and Kendall W = Q/[N(k − 1)] [17]. We evaluated the null distribution using 99,999 independent within-record permutations of item labels. This procedure assumes exchangeable labels under the null. Follow-up comparisons covered all 15 pairs using two-sided exact sign tests, with one Holm adjustment across the complete family [18]. We retained higher, lower and tied counts for each contrast. The ordinal effect estimate was the probability that the code for activity B exceeded that for activity A among discordant records, with a Clopper–Pearson 95% interval [19]. Paired mean-code differences and BCa intervals describe the numerical magnitude across all records as a separate estimand.

Wilcoxon signed-rank tests formed a separate 15-test sensitivity family, omitting zero differences and using tie and continuity corrections with an asymptotic null. In contrast to sign tests, signed-rank tests use difference magnitudes and require symmetry of the paired difference distribution under the null. We retained the sign test as the principal paired analysis. Supplementary Friedman comparisons examined the three preparation items and the five practical-help items after omitting I16.

Associations and sensitivity analyses

We estimated Pearson correlations with Fisher 95% intervals and Spearman correlations with paired-record BCa intervals and permutation tests of absolute association. Pearson p values used the exact two-sided null distribution under independent bivariate-normal observations with zero population correlation. Spearman correlations ranked the arithmetic item means; they therefore assess monotonic association between those summaries without removing the scoring assumptions used to construct them. Holm adjustments were applied separately to the three Pearson and three Spearman tests. Monte Carlo tests used a plus-one correction, giving a minimum reportable p value of 0.00001. Confidence intervals were pointwise, and the stated test families did not provide study-wide error control.

Scoring scenarios reversed I08 alone or I07 and I08 together, and omitted I04, I05 or both from the shared-practices mean. Record-selection scenarios retained one response from each of two candidate resubmission pairs, the first or last record per normalized contact, or the first occurrence of an identical 16-item profile. These scenarios assessed the sensitivity of associations to explicit selection rules; they did not verify respondent identity or evaluate the paired task profile under those selection rules.

Supplementary diagnostics used the Kaiser–Meyer–Olkin index [20] and principal-component parallel analysis with 2,000 independent within-item permutations [21]. Ordered observed eigenvalues were compared with null 95th percentiles [22]. We examined Pearson and Spearman matrices with and without I05. These diagnostics did not determine the item groups or constitute a fitted measurement model.

Secondary model and reproducibility

An ordinary least-squares model estimated the concurrent participation mean from the shared-practices and preparation means. The model contained an intercept and two fixed predictors with no overlapping item assignments, automated selection or tuning. Coefficients used HC3 standard errors, approximate t-based 95% intervals with 93 residual degrees of freedom, and Holm adjustment for the two slopes [23]. These are conditional associations, not estimates adjusted for unmeasured household or developmental confounders.

Internal evaluation held out all records sharing each normalized contact address, producing 92 refits. Each training set supplied its own mean-only baseline. We report root mean squared error (RMSE), mean absolute error and relative squared-error reduction. A 2,000-resample contact-group bootstrap repeated fitting and evaluation while keeping copies of each contact together. Its percentile performance intervals are exploratory; cross-validation uncertainty does not have a simple general solution [24]. Contact blocking separates observed addresses between fitting and evaluation sets but does not establish household independence. Full specifications and diagnostics are provided in Additional file 1.

Analyses used Python 3.12.14, NumPy 2.3.5, SciPy 1.17.0 and openpyxl 3.1.5. The accompanying code records the seeds and produces aggregate results without changing the source workbook. Contact addresses and individual response records are excluded from the public supplementary material.

ChatGPT (OpenAI) assisted with drafting, translation, editorial organization, reference checking, statistical exploration and interpretation, and analysis and figure code. Numerical results were obtained by executing code on the supplied data. The authors retain responsibility for independently verifying the text, references, data decisions and calculations.

Ethics approval and compliance

The Programme Committee (Comité de Programa) of the Psychology programme at Universidad Simón Bolívar, Barranquilla, Colombia, determined that this classroom research project was exempt from the requirement for separate research ethics committee approval. The determination took into account the educational nature of the project and the committee's assessment under the Colombian Ministry of Health's Resolution 8430 of 1993. It was recorded in the Programme Committee meeting minutes dated 23 February 2026.

Written informed consent was obtained for participation. The original response workbook contains contact information; the manuscript and supplementary materials report aggregate findings and exclude participant contact details and identifiable individual records. Conditions for any access to de-identified individual-level data are specified in the data availability declaration.

The safeguards for informed consent and confidentiality described above are reported with reference to the World Medical Association Declaration of Helsinki – Ethical Principles for Medical Research Involving Human Participants (2024 revision) [25] and the Colombian Ministry of Health's Resolution 8430 of 1993, "Por la cual se establecen las normas científicas, técnicas y administrativas para la investigación en salud" [26].

Results

Record characteristics and response distributions

All 96 records had complete responses to the 16 items, yielding 1,536 integer values without missing cells or out-of-range codes. Recorded sex labels were female in 85 records (88.5%) and male in 11 (11.5%). Marital-status normalization yielded 48 single, 28 married, 15 cohabiting, one separated and one widowed response; two "Casasa" and one "Con novio" response remained separate (Additional file 1, Table S3). Among repeated contacts, two pairs were flagged as candidate resubmissions: one with identical item responses and one differing on a single item. Both pairs were retained in the main analysis.

Figure 1 shows the complete item distributions. Mean participation codes were 2.594 for breakfast preparation, 2.615 for lunch preparation, 2.958 for dinner preparation, 3.521 for shopping, 3.490 for cleaning and 3.688 for decisions. Preparation, shared-practices and participation means were 3.099, 3.413 and 3.144, respectively (Table 1). Corresponding alpha estimates were 0.512 (95% BCa CI 0.314–0.659), 0.830 (0.755–0.884) and 0.854 (0.798–0.895).

Each bar contains 96 records. Segments represent codes 1–5; numbers are rounded percentages shown only for segments of at least 10%. Rounded percentages may not total 100. Wording is abbreviated; full Spanish text and counts appear in Additional file 1. Response anchors remain unverified, so colours do not denote favourable or unfavourable functioning.

Table 1
Operational item group summaries and internal consistency

Item group	Items	Mean [95% CI]	SD	Alpha [95% CI]
Preparation and scheduling	4	3.099 [2.917, 3.271]	0.889	0.512 [0.314, 0.659]
Shared mealtime practices	6	3.413 [3.205, 3.602]	0.997	0.830 [0.755, 0.884]
Offspring participation	6	3.144 [2.926, 3.357]	1.089	0.854 [0.798, 0.895]

N = 96 records. Scores are equal-weight means of exported codes 1–5. CI, pointwise 95% BCa interval from 20,000 record resamples; SD, sample standard deviation. Item assignments are in Additional file 1. Alpha describes internal consistency, not construct validity. Interpretation requires verified response anchors and independent respondents.

Participation across the six activities

Within-record ranks differed across the six activities (Friedman Q = 84.583, df = 5; permutation p = 0.00001; Kendall W = 0.176, 95% BCa CI 0.093–0.257). The complete paired comparisons located the clearest directional differences between the three preparation items and shopping, cleaning or decisions. All nine of these contrasts remained detectable after Holm adjustment across 15 pairs, with adjusted p values ranging from 0.00000032 to 0.0274 (Table 2; Fig. 2).

Shopping codes exceeded breakfast-preparation codes in 47 records, were lower in nine and tied in 40. Among the 56 discordant records, the estimated probability of a higher shopping code was 0.839 (exact 95% CI 0.717–0.924). The mean difference across all 96 records was 0.927 code units. Decision codes exceeded breakfast in 56 records, were lower in 11 and tied in 29, with a mean difference of 1.094. These counts describe a directional pattern alongside substantial within-record ties. The three comparisons among shopping, cleaning and decisions did not meet the same adjusted evidential criterion; equivalence was not tested.

Among preparation activities, dinner exceeded lunch in 24 records, was lower in six and tied in 66. The conditional higher-code probability was 0.800 (exact 95% CI 0.614–0.923; Holm p = 0.0100). Dinner versus breakfast produced 26 higher, 12 lower and 58 tied responses. Its adjusted sign-test p value was 0.1678, compared with 0.0405 in the signed-rank sensitivity analysis. Lunch versus breakfast showed 15 higher, 16 lower and 65 tied responses. The complete results therefore support a qualified dinner–lunch contrast rather than a consistent ordering of every preparation activity.

Omitting the decision item retained a five-item profile difference (Q = 63.403, df = 4; permutation p = 0.00001; W = 0.165, 95% BCa CI 0.082–0.249). The profile difference was thus not confined to the item with past-tense wording. The three preparation items alone yielded Q = 10.717, df = 2, permutation p = 0.00405 and W = 0.056 (95% BCa CI 0.011–0.117). These W estimates concern different item sets and were not compared inferentially.

Panel a shows six mean codes and pointwise 95% BCa intervals. Panel b shows P(B > A | B ≠ A) and exact Clopper–Pearson 95% intervals for all 15 pairs. The reference is 0.5. Counts show higher/lower/tied codes among 96 records; probabilities exclude ties. Sign-test p values use Holm adjustment across 15 pairs. Intervals are pointwise and may disagree with adjusted tests. Breakfast, lunch and dinner denote preparation. Common response anchors remain unverified.

Table 2
Complete paired comparisons of offspring participation responses

Contrast B − A	Higher / lower / tied	P(B > A | B ≠ A) [95% CI]	Mean B − A [95% CI]	Sign Holm p
Lunch − Breakfast	15/16/65	0.484 [0.302, 0.669]	0.021 [-0.240, 0.302]	1.000
Dinner − Breakfast	26/12/58	0.684 [0.513, 0.825]	0.365 [0.135, 0.635]	0.1678
Dinner − Lunch	24/6/66	0.800 [0.614, 0.923]	0.344 [0.135, 0.573]	0.0100
Shopping − Breakfast	47/9/40	0.839 [0.717, 0.924]	0.927 [0.604, 1.260]	3.09e-06
Shopping − Lunch	46/8/42	0.852 [0.729, 0.934]	0.906 [0.604, 1.219]	1.8e-06
Shopping − Dinner	36/11/49	0.766 [0.620, 0.877]	0.562 [0.302, 0.844]	0.0028
Cleaning − Breakfast	47/13/36	0.783 [0.658, 0.879]	0.896 [0.562, 1.240]	0.000121
Cleaning − Lunch	45/9/42	0.833 [0.707, 0.921]	0.875 [0.604, 1.177]	8.02e-06
Cleaning − Dinner	39/17/40	0.696 [0.559, 0.812]	0.531 [0.271, 0.802]	0.0274
Cleaning − Shopping	21/23/52	0.477 [0.325, 0.633]	-0.031 [-0.271, 0.219]	1.000
Decisions − Breakfast	56/11/29	0.836 [0.725, 0.915]	1.094 [0.750, 1.427]	3.22e-07
Decisions − Lunch	50/9/37	0.847 [0.730, 0.928]	1.073 [0.771, 1.396]	7.37e-07
Decisions − Dinner	42/13/41	0.764 [0.630, 0.868]	0.729 [0.427, 1.042]	0.0010
Decisions − Shopping	26/19/51	0.578 [0.422, 0.723]	0.167 [-0.083, 0.427]	1.000
Decisions − Cleaning	27/18/51	0.600 [0.443, 0.743]	0.198 [-0.052, 0.469]	0.9308

N = 96 paired records per contrast. Breakfast, lunch and dinner denote help with preparation; shopping and cleaning denote practical help; decisions denotes having helped decide what the family would eat. Higher/lower counts compare B with A; ties remain explicit. Conditional probabilities use discordant pairs only and exact Clopper–Pearson intervals. Mean-code differences use all records and BCa

intervals. Sign-test p values are adjusted by Holm across all 15 pairs. Intervals are pointwise; mean intervals and sign tests concern different estimands. No equivalence margin was specified.

Shared practices and participation

The shared-practices and participation means were positively associated: Pearson r = 0.480 (95% Fisher CI 0.309–0.621; Holm p = 0.00000226) and Spearman rho = 0.458 (95% BCa CI 0.253–0.622; permutation Holm p = 0.00003). Under the initial coding, preparation was also associated with participation (r = 0.435; rho = 0.375). The preparation–shared-practices association showed greater estimator dependence: r = 0.269 (Holm p = 0.0081) versus rho = 0.176 (permutation Holm p = 0.0867). Table 3 and Fig. 3 present the estimates and intervals.

The apparently repeated I04 and I05 had identical codes in 79 records and differed in 17 (Pearson r = 0.908). Omitting them separately yielded shared-practices–participation correlations of 0.486 and 0.457; omitting both yielded r = 0.442 (95% BCa CI 0.233–0.604). Thus, the positive association remained after removal of this specific overlap in preparation content. First-contact and last-contact scenarios, each retaining 92 records, yielded r = 0.459 and 0.464. Retaining the first identical item profile yielded r = 0.473 in 94 records, and candidate-pair scenarios yielded r = 0.461–0.465 (Additional file 1, Tables S10–S11 and S15).

Panel a compares Pearson estimates with Fisher 95% intervals and Spearman estimates with paired-row BCa 95% intervals. Panel b retains Pearson estimation and compares exported codes with hypothetical reversals using 6 minus the code. N = 96 throughout. Intervals are pointwise. No scenario identifies a valid scoring key; the alternative estimates are not independent replications.

Table 3
Associations among the operational questionnaire summaries

Association	Pearson r [95% CI]	Holm p	Spearman rho [95% CI]	Permutation Holm p
Shared practices with participation	0.480 [0.309, 0.621]	2.26e-06	0.458 [0.253, 0.622]	3e-05
Preparation with participation	0.435 [0.256, 0.584]	1.94e-05	0.375 [0.151, 0.557]	0.000320
Preparation with shared practices	0.269 [0.072, 0.445]	0.0081	0.176 [-0.045, 0.387]	0.0867

N = 96. Pearson intervals use Fisher transformation. Spearman ranks the same arithmetic item means; its intervals use 20,000 paired-record BCa resamples and its p values use 99,999 permutations with a plus-one correction. Holm adjusts three tests separately within each method. Intervals are pointwise. The two estimators retain the assumptions of score construction and independent analytic units.

Score sensitivity and secondary model

Preparation-related associations depended more strongly on coding. Reversing I08 alone changed preparation–shared-practices r from 0.269 to 0.545 and preparation–participation r from 0.435 to 0.525. Reversing I07 and I08 yielded corresponding correlations of 0.539 and 0.376. In the initial preparation group, I08 had a corrected item-total correlation of − 0.061. Supplementary matrix diagnostics yielded KMO values of 0.780–0.818 and three consecutive eigenvalues above permutation thresholds in each of four specifications; no factor loadings or confirmatory structure were estimated (Tables S16–S17; Figures S1–S2).

In the secondary two-predictor model, the shared-practices coefficient was 0.428 (HC3 95% CI 0.204–0.651; Holm p = 0.000513) and the preparation coefficient was 0.404 (0.134–0.673; Holm p = 0.0038), with apparent R^2 = 0.331. Contact-blocked evaluation yielded RMSE = 0.921 (exploratory 95% bootstrap interval 0.812–1.065), compared with 1.096 (0.964–1.249) for the training-mean baseline. Relative squared-error reduction was 0.294 (0.063–0.470). Reversing I07 and I08 changed the preparation coefficient to 0.228 (95% CI − 0.116–0.572; Holm p = 0.1913). Table 4 and Fig. 4 summarize the model; Tables S12–S14 provide its diagnostics and evaluation.

Panel a reports coefficients with approximate HC3 95% intervals and Holm p values for two slopes. Panel b compares held-out RMSE with a training-mean baseline. Performance intervals are exploratory percentiles from 2,000 contact-group resamples repeating all fitting and evaluation; coverage is not guaranteed. Ninety-two contact groups block 96 records and do not identify verified households. The model estimates a concurrent questionnaire score.

Table 4
Concurrent participation score model and internal evaluation

Term	b	HC3 95% CI	HC3 SE	Raw p	Holm p
Intercept	0.434	[-0.305, 1.173]	0.372	0.2463	—
Shared mealtime practices	0.428	[0.204, 0.651]	0.112	0.000257	0.000513
Preparation and scheduling	0.404	[0.134, 0.673]	0.136	0.0038	0.0038

N = 96. Outcome: mean of I11–I16. Each slope conditions on the other questionnaire summary; b is in exported score units. Intervals and raw p values use the approximate HC3 t distribution with 93 residual degrees of freedom. Holm includes the two slopes; the intercept is excluded. Apparent R^2 = 0.331 and adjusted R^2 = 0.317. Contact-group evaluation yielded RMSE = 0.921 [0.812, 1.065], compared with baseline RMSE = 1.096 [0.964, 1.249]; brackets denote exploratory full-procedure bootstrap 95% intervals, not individual prediction intervals. Full performance measures and sensitivity results are in Additional file 1.

Discussion

Differences among contributions to meals

The response profile separated meal preparation from other forms of contribution. Shopping, cleaning and decision responses were higher than breakfast, lunch and dinner preparation in all nine corresponding paired comparisons after adjustment across 15 pairs. Because shopping and cleaning are themselves practical tasks, this pattern extends beyond a distinction between practical help and decision making. Omitting the decision item retained differences among the five remaining activities. The result gives a specific reason to preserve the activity profile alongside an overall score: preparation as the sole indicator of involvement would omit other contributions that received higher responses in this questionnaire.

This detail matters when interpreting the wider participation literature. Chu and colleagues studied meal preparation in Canadian schoolchildren and its association with dietary quality [3]. Studer-Perez and Musher-Eizenman studied joint meal selection and found nutritional differences relative to parent-only choices [4]. A contribution to preparing food and a contribution to choosing it therefore correspond to different exposures and potentially different outcomes. The present comparisons bring several such contributions into the same description. They show why a general label of participation gives insufficient information about which activity an association concerns. The relevant question for subsequent outcome research is which contribution was made, under what circumstances, and with what degree of responsibility or influence.

Differences in opportunity offer one plausible explanation for the observed ordering. Preparing a particular meal may depend on being present at the right time, having the necessary skills and being allocated a role. Helping shop or clear away may involve a different arrangement of opportunities. Studies of parental time scarcity and fatigue identify practical demands around planning and preparation [13]; interviews with parents of preschoolers describe how adults understand the division of feeding responsibilities [5]. These findings motivate studying opportunity and assigned responsibility alongside willingness to help. They also suggest useful questions for interpreting a response: whether help was possible, whether it was requested and what the contribution involved. The present survey identifies the pattern to be explained; it did not observe those processes.

The directional pattern did not describe every record equally. For dinner versus lunch, 66 of 96 responses were tied; the estimated higher-code probability of 0.800 referred to the remaining 30 records. Presenting the paired counts alongside the effect estimate shows how much of the sample contributed to a directional contrast. It also makes clear why a detectable contrast should not be read as a uniform ordering across informants.

Participation alongside shared practices

The second finding concerns variation between records. Higher averages for shared mealtime practices were associated with higher participation averages. This is a different comparison from the differences among tasks within the same record. The correlation remained positive after removing the two apparently repeated shared-preparation items, decreasing from r = 0.480 to r = 0.442. The remaining four-item summary covered enjoyment, shared eating, exchanging experiences and managing distractions.

Thus, the numerical association extended to shared practices beyond the two statements most directly overlapping with preparation. Keeping the profile and the correlation distinct preserves both observations without treating the association as an explanation for the ordering of tasks.

Research on mealtime experience provides a useful context for this co-occurrence. White and colleagues found that parents' positive and negative mealtime emotions were associated with different reported food-parenting practices [7]. Edwards and colleagues examined relationships between the immediate eating context and feeding practices among parents of preschoolers selected for avid eating behaviour [8]. These studies direct attention to the setting in which food-related actions occur. Shared occasions could provide opportunities for assistance, while assistance could help make shared meals feasible. Household circumstances could also support both. A repeated-meal design could examine these possibilities by documenting who was present, what contributions occurred and when they occurred, rather than relying on one general report of each practice.

The secondary model placed the two other questionnaire summaries in a joint description of participation. Both coefficients were positive in the direct-code specification, and contact-blocked RMSE was 0.921 compared with 1.096 for the training-mean baseline. The shared-practices association therefore remained present alongside the preparation summary. The latter coefficient was sensitive to scoring choices, underscoring the need to interpret an operational average through the wording of its component items.

Scope and limitations

These findings describe coded responses in a small questionnaire dataset from purposively selected areas. Verbal response anchors and recall periods require verification before score levels can be expressed as behavioural frequencies, and the past-tense decision item may carry a different reference frame. Respondent roles, offspring ages and household identifiers were unavailable. Contact and response-profile sensitivities assess how the composite associations depend on explicit selection rules; they neither establish the number of independent families nor verify the paired task profile under those rules. A common informant and reporting occasion may contribute to the association between item averages. The preparation group also combines unlike statements, while the shared-practices group contains apparently repeated wording. Alpha and principal-component diagnostics do not validate those groups as psychological constructs [16]. The analyses were developed after data inspection; multiplicity adjustment and resampling do not make them confirmatory. These conditions restrict inference about developmental processes, population prevalence and temporal direction. The model's internal performance estimates also remain exploratory, as uncertainty in cross-validation performance is difficult to estimate [24].

Implications for subsequent research

The next empirical step is to distinguish opportunity, contribution and influence for each activity. Recording the occasions on which a task was available would provide a denominator for participation; recording whether help was requested and what was done would clarify responsibility. For meal

decisions, being consulted and determining the final choice should be recorded separately. Common response anchors and recall periods would make contrasts across these activities interpretable, while defined respondent roles and offspring ages would establish the population to which they apply. Repeated reports from family members could then examine whether changes in shared practices accompany changes in assistance within the same household. This design would retain the present study's attention to named activities while allowing clearer explanations of why their patterns differ.

Conclusions

Reported offspring participation was distributed unevenly across family mealtime activities. The most consistent paired contrasts separated meal preparation from shopping, cleaning and decisions, and a profile difference remained when the decision item was omitted. Shared mealtime practices were associated with participation across the specified association sensitivities. Together, these observations support distinguishing the activities through which family members contribute, rather than interpreting participation solely through cooking or a total questionnaire score. The findings define specific questions about task allocation and shared interaction for subsequent studies with verified measurement, independent respondents and repeated observations; they do not establish causal or developmental effects.

Abbreviations

BCa
bias-corrected and accelerated
CI
confidence interval
HC3
heteroskedasticity-consistent covariance estimator type 3
KMO
Kaiser–Meyer–Olkin
RMSE
root mean squared error
SD
standard deviation
STROBE
Strengthening the Reporting of Observational Studies in Epidemiology.

Declarations

Ethics approval and compliance

The Programme Committee (Comité de Programa) of the Psychology programme at Universidad Simón Bolívar, Barranquilla, Colombia, determined that this classroom research project was exempt from the requirement for separate research ethics committee approval, taking into account its educational nature and the committee's assessment under the Colombian Ministry of Health's Resolution 8430 of 1993. The determination was recorded in the Programme Committee meeting minutes dated 23 February 2026.

The ethical safeguards reported for this project comprise written informed consent and the dissemination of aggregate findings without participant contact details or identifiable individual information. The original response dataset contains contact information and is not publicly available. Access to a de-identified individual-level dataset would be subject to the scope of informed consent, authorization by the body responsible for data custody, and any applicable institutional ethics requirements, as stated in the data availability declaration.

Consent to participate

Written informed consent was obtained for participation in the study. Results are presented in aggregate form and do not include contact addresses or other identifiable individual data.

Consent for publication

Not applicable. The manuscript and its supplementary materials present aggregate results and do not include identifiable individual information.

Availability of data and materials

The questionnaire, aggregate results, and code used for the statistical analyses and figure generation are provided in the supplementary materials accompanying this article. The original response dataset is not publicly available because it contains participant contact information. Requests concerning access to a de-identified version of the individual-level data may be directed to the corresponding author, Lourdes Isabel Albor-Chadid (lourdes.albor@unisimon.edu.co). Any access would be subject to the scope of the informed consent, authorization by the institutional body responsible for data custody, any applicable institutional ethics requirements, and appropriate safeguards to protect participant confidentiality.

Competing interests

The authors declare that they have no financial or non-financial competing interests related to this study.

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Authors' contributions

Lourdes Isabel Albor-Chadid: Conceptualization, Supervision, Project administration, and Writing – review & editing.

Kendry Paola Amador Donado: Investigation, Data curation, and Writing – original draft.

Paula Andrea Brito Paredes: Investigation, Data curation, and Writing – original draft.

Merabel Marleth Marriaga Rodríguez: Investigation, Data curation, and Writing – original draft.

Anderson Díaz Pérez: Methodology, Formal analysis, Visualization, and Writing – review & editing.

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Figures

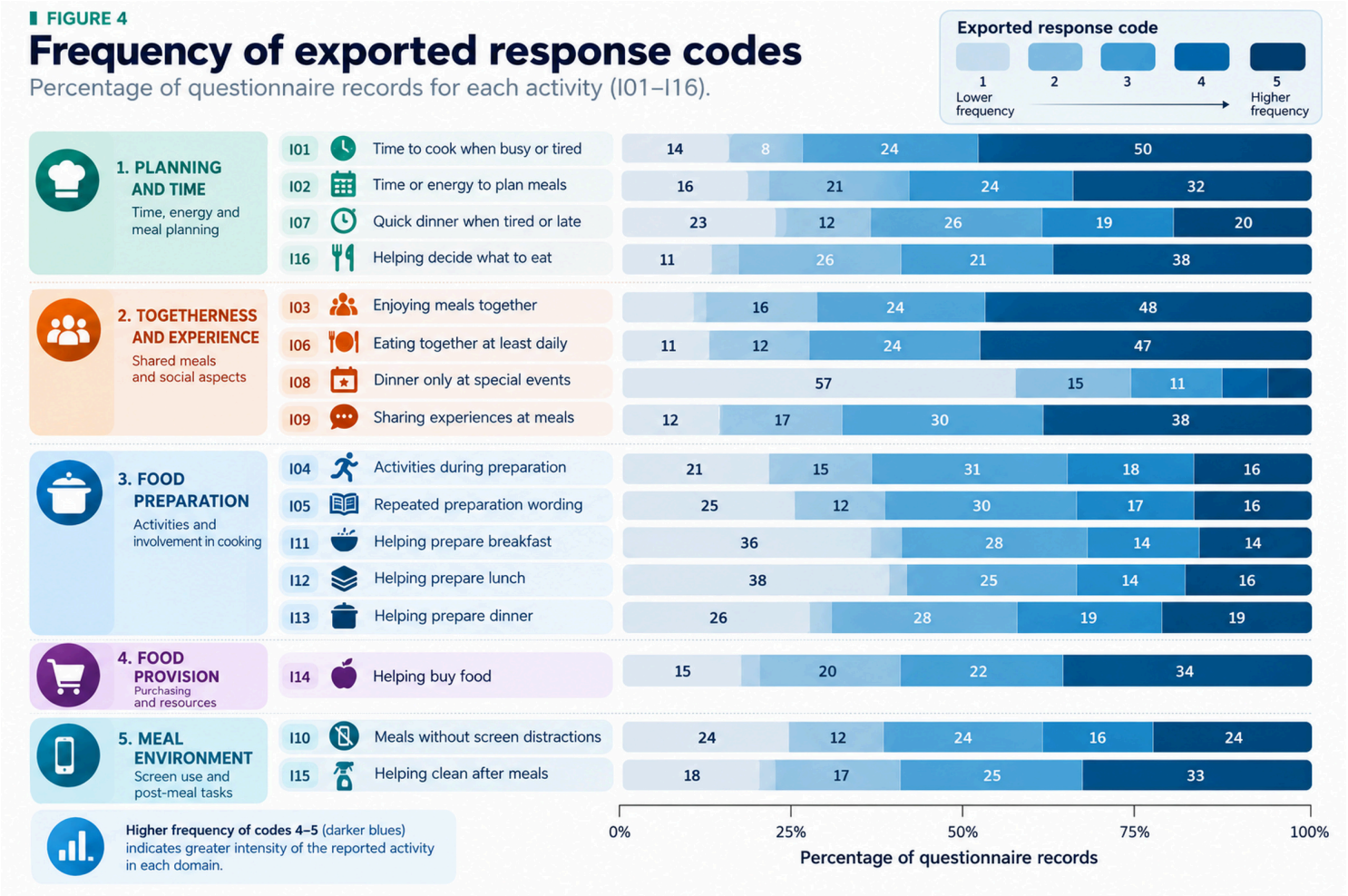


Figure 1

Exported response distributions across the sixteen questionnaire items

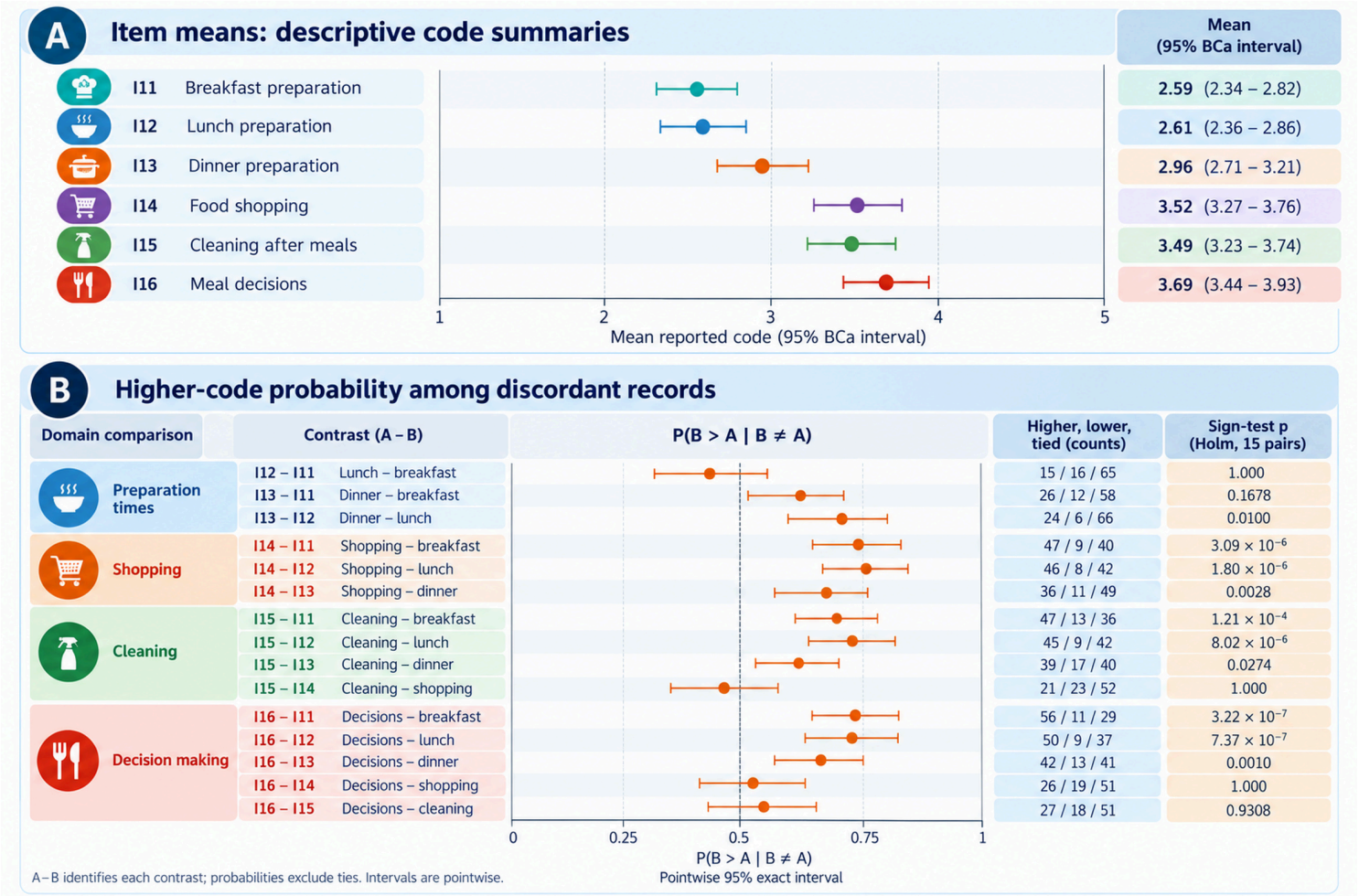


Figure 2

Participation profiles and paired ordinal comparisons

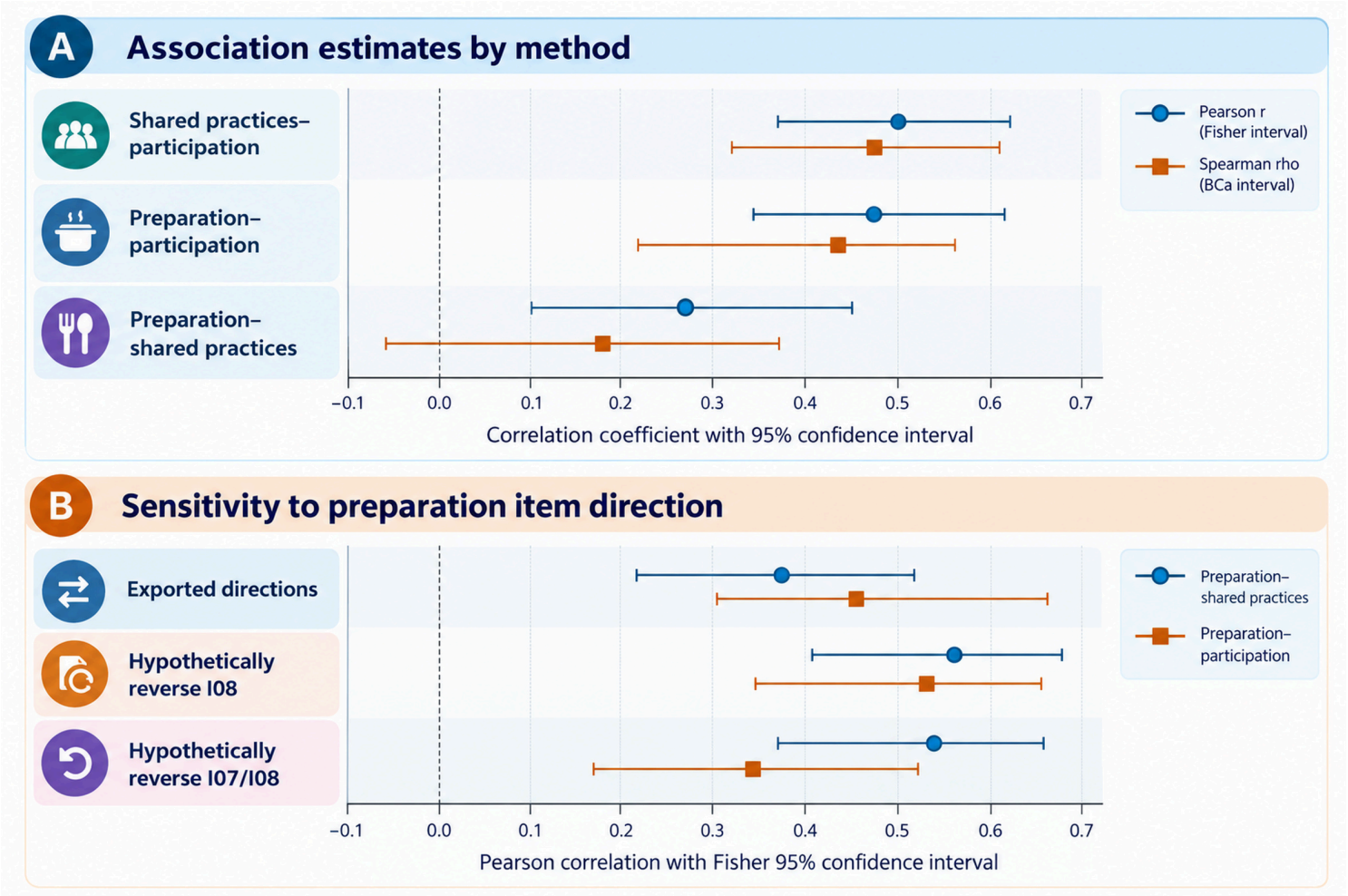


Figure 3

Correlation estimates and sensitivity to preparation item direction

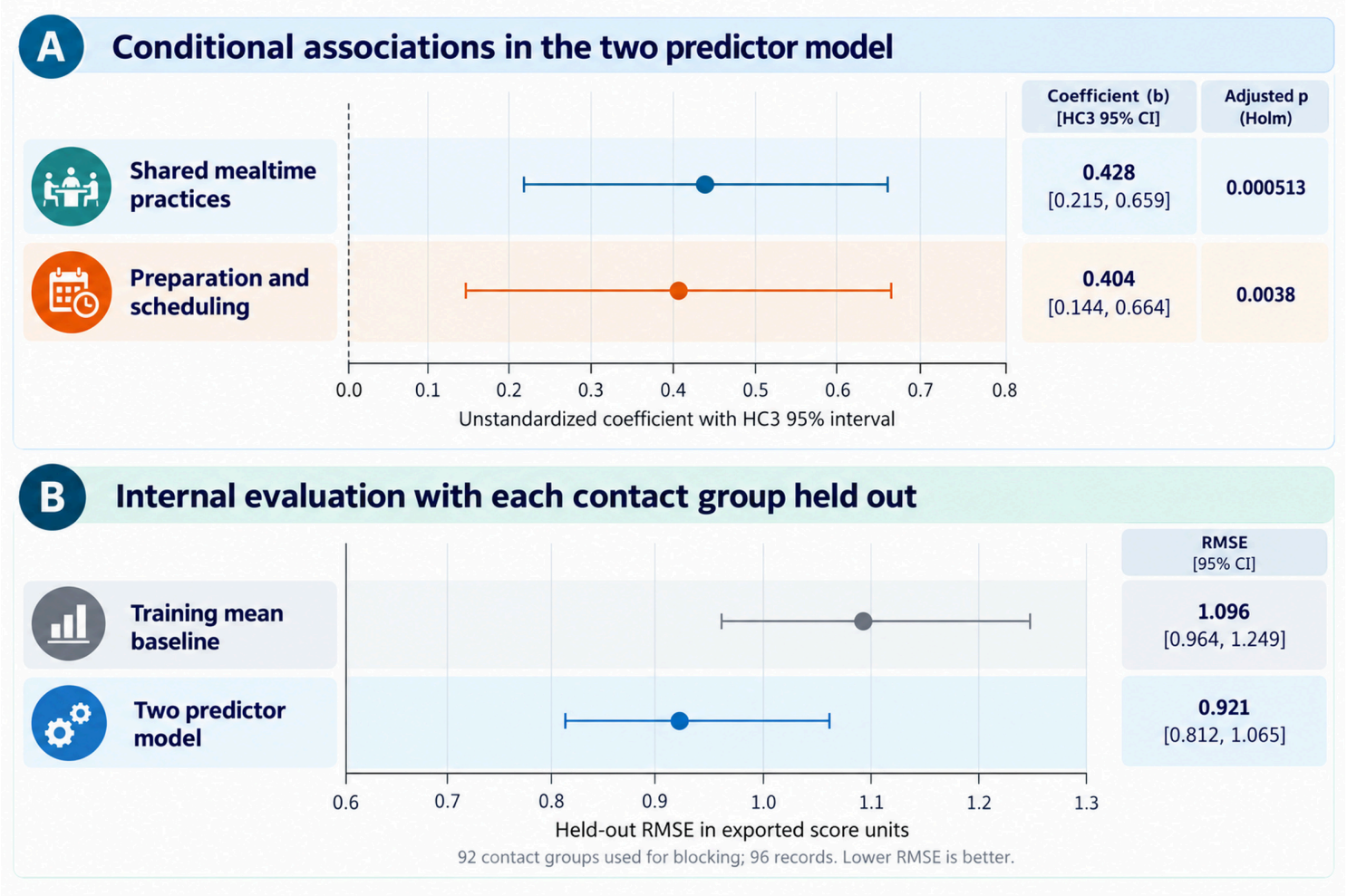


Figure 4

Conditional associations and internal score estimation performance

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