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Emotional Resource, Academic Cost? Romantic Relationships, Academic Functioning and Psychological Well-Being among Students at a Public University in Egypt: A Mixed-Methods Study

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Abstract

Few studies have examined how university students' romantic relationships relate to both academic functioning and psychological well-being where premarital intimacy is socially regulated. This mixed-methods study combined an online survey of undergraduates at a public university in Egypt (N = 260) with ten interviewer-prepared interview accounts. Compared with never-partnered students, those describing their relationship as stable scored higher (β = 0.43) and those describing it as troubled lower (β = −0.56) on a study-developed index of psychological well-being, largely robust in sensitivity analyses. Relationship-experienced students reported lower grade categories (odds ratio 0.49, 95% confidence interval 0.29–0.81), but this association weakened or lost significance when 39 never-partnered respondents reporting a relationship duration of six months or more were excluded or reclassified, and an interaction test did not show that it varied by year of study (p = .255). Within relationships (n = 128), relationship quality was associated with higher achievement motivation (β = 0.30), robust to multiple-testing adjustment, and perceived relationship-to-study interference with lower motivation (β = −0.34) and, less robustly, engagement; interference was not empirically distinct from relationship strain, which was unrelated to either outcome overall. Social support was associated with a weaker strain–well-being link, not robust to multiple-testing adjustment, and a stronger strain–interference link. Interview accounts, which contextualise rather than corroborate these patterns, described study boundaries, distraction during conflict and concealment from families. Because the data are cross-sectional, self-reported and from one university, these are associations, not effects.

1. Introduction

The university years coincide with emerging adulthood, when romantic involvement becomes developmentally salient while educational and occupational futures are still being assembled (Arnett, 2000). In Egypt, combining romance with study is complicated by the ambiguous moral standing of premarital relationships (Wynn, 2018) and by a long and costly path to marriage (Singerman, 2007).

Quality-of-life research has a stake in this question because student well-being is multidimensional, with components that need not respond alike to the same pressures (Liu et al., 2024), and because romantic relationships can be a source of both well-being and negative outcomes (Gómez-López et al., 2019). We examine psychological well-being, students' evaluations of their satisfaction, mood, coping, self-regard and meaning, as one component of the psychological domain of quality of life, broader than global life satisfaction and distinct from campus social integration (Tinto, 1994).

Existing evidence points in different directions across domains. Committed relationships have been associated with fewer mental health problems among college students (Braithwaite et al., 2010) and relationship involvement with higher life satisfaction (Beckmeyer & Cromwell, 2019), whereas break-ups of unmarried relationships have been followed by increased distress and declining life satisfaction (Rhoades et al., 2011). Academic evidence is thinner: in the United States, romantic involvement was associated with missed classes but not with grade point average (Schmidt & Lockwood, 2017), and academic support from friends, but not partners, predicted engagement and, through it, registrar-recorded grades (DeLuca Bishop et al., 2023). Where premarital relationships are socially regulated, research on students has centred on norms

and sexual behaviour (Khalajabadi Farahani & Cleland, 2015), and the studies we located examined single outcomes, such as loneliness (Nazzal et al., 2021) or academic performance (Batool et al., 2024).

These findings mirror a tension between role strain and role enrichment (Sect. 2.1). Because most studies examine one outcome at a time, they cannot show whether involvement is associated with depletion in one domain and enrichment in another, or which relationship features matter for which outcomes.

We therefore combined a survey and interviews at a public Egyptian university to examine how relationship status, relationship quality, strain and perceived relationship-to-study interference relate to academic functioning, psychological well-being and campus social integration, whether perceived social support moderates the associations of strain, how family acceptance relates to outcomes, and how students describe these connections. A targeted literature search found no Egyptian study of university students' romantic relationships that examined academic functioning or psychological well-being (Online Resource 1, Section S15), so the contribution lies in examining these outcomes side by side in this setting.

2 Theoretical Framework and Literature Review

2.1 Romantic Involvement between Role Strain and Role Enrichment

Goode's (1960) theory of role strain holds that total role obligations tend to exceed the resources available to meet them, so a romantic relationship would compete with the student role for time and attention. Sieber (1974) and Marks (1977) argued instead that multiple roles can supply status security, resources and energy, and Greenhaus and Powell (2006) formalised this as enrichment, through which resources generated in one role improve affect and performance in another.

The perspectives can be reconciled by distinguishing time-based conflict, in which time devoted to one role is unavailable for another, from strain-based conflict, in which strain produced in one role impairs functioning in another (Greenhaus & Beutell, 1985). Every relationship takes time, but strain is concentrated in relationships marked by conflict or dissolution, whereas stable relationships may also supply support and positive affect. We therefore expected academic costs mainly in troubled and ended relationships, and engagement and well-being advantages in stable ones (H1–H3). By analogy with work–family research, *relationship-to-study interference* denotes students' perception that their relationship takes study time or disrupts concentration, a perceived link between strain and academic functioning (H4), not a demonstrated mechanism.

2.2 Relationship Quality, Strain and Social Support

Relationship status is a crude indicator: single emerging adults who strongly want a relationship report more depressive symptoms than partnered and uninterested peers, so the never-partnered group is itself heterogeneous (Beckmeyer & Cromwell, 2019). In stress-process terms (Pearlin et al., 1981), relationship strain is a chronic stressor whose consequences depend on the resources a person can mobilise, and perceived social support should weaken its association with distress (Cohen & Wills, 1985; H5), although support may ease distress without returning the time and attention a troubled relationship absorbs. Campus

social integration, which shapes persistence (Tinto, 1994), is a further channel: a stable relationship may extend ties on campus, a troubled one may isolate.

2.3 Regulated Intimacy: Marriage Timing, Concealment and Gender in Egypt

In Egypt, marriage remains the socially recognised framework for intimate partnership. By *romantic relationship* we mean any self-identified romantic involvement, known or not to families, which can take socially distinct forms, such as engagement (a family-sanctioned stage before the marriage contract) or *urfi marriage*, a customary contract not registered with the state whose legal recognition, including children's status, can be contested (Hasso, 2011); premarital sexual relationships were not measured.

Marriage typically comes years after university entry: in the 2014 Egypt Demographic and Health Survey, the median age at first marriage (the age at which a woman began living with her first husband) among women aged 25–49 was 20.8 years, and 22.3 years among women with at least completed secondary education (Ministry of Health and Population et al., 2015, Table 7.5). Delayed marriage, particularly among men, is tied to the costs of housing, dower and celebrations (Singerman, 2007) and, for men, to employment (Salem, 2016). We found no representative national estimates of romantic involvement or urfi marriage among Egyptian students.

Where relationships lack social endorsement, concealment is one way of managing them; in studies in the United States, secrecy was associated with lower relationship quality, partly through the burden it imposes (Foster & Campbell, 2005), and with lower commitment, lower self-esteem and more health symptoms (Lehmiller, 2009). Because this evidence comes from other settings, family acceptance and disclosure difficulty were examined only exploratorily.

These conditions are unlikely to bear equally on women and men. Among unmarried Egyptian adolescents, neither girls nor boys held egalitarian gender-role attitudes, although girls' views were less traditional (Mensch et al., 2003); norms of female respectability and male honour shape the penalties of transgressing sexual and gender norms (Wynn, 2018); and informants in a regional study described norms of family honour and men's control over women's mobility (UNICEF Middle East and North Africa Regional Office & International Center for Research on Women, 2017). If the reputational stakes of relationships and disclosure are greater for women, relationship experiences could be more closely associated with strain, academic functioning and well-being among female students (H6), although this rests on evidence about norms, not on tests of gender differences, and some relationship dimensions matter more for young men's mental health (Simon & Barrett, 2010).

3 Research Questions and Hypotheses

The study protocol specified hypotheses before data collection. Those testable with the administered instrument are restated below; Online Resource 1 (Table S12) maps them to the protocol and documents those re-specified or untestable.

H1. Troubled or ended relationships will be associated with lower self-reported grades than no relationship, whereas stable relationships will not.

H2. Stable relationships will be associated with stronger academic engagement (attendance and timely submission of assignments).

H3. Relationship status will be associated with psychological well-being and campus social integration, with stable relationships associated with the highest and troubled relationships with the lowest levels.

H4. Among relationship-experienced students, relationship strain will be associated with greater relationship-to-study interference, interference with weaker academic functioning, and relationship quality with higher well-being.

H5. Perceived social support will attenuate the associations of relationship strain with well-being and with interference.

H6. These associations will be stronger among women than among men.

The qualitative strand explored how students describe these connections. Analyses of family acceptance, disclosure difficulty, year of study and gender differences within relationships were exploratory.

4 Methods

4.1 Design

The study combined a cross-sectional online survey with semi-structured interviews, giving priority to the survey. The protocol described an explanatory sequential design, but the interview guide was prepared at the design stage, interviewees were selected for variation in relationship experience rather than on survey results, and the timing of the interviews relative to the survey analysis was not recorded. The strands were therefore designed independently and integrated at interpretation through narrative comparison and a joint display, closest to a convergent design (Fetters et al., 2013); the accounts were analysed with knowledge of the survey results. Reporting follows the Good Reporting of A Mixed Methods Study (GRAMMS; O'Cathain et al., 2008) and Consolidated Criteria for Reporting Qualitative Research (COREQ; Tong et al., 2007) guidelines, with completed checklists in Online Resource 1.

4.2 Setting, Participants and Data Audit

The target population was the undergraduate students of a public university in Egypt. The questionnaire was self-administered online in Arabic (Google Forms), participation was voluntary and self-selected, and, according to the protocol, data were collected in the second semester of the 2025/2026 academic year.

The data contained 363 rows (Online Resource 1, Table S1). Twenty-four empty rows, which divide the export into two parts, and 71 exact copies of other records (20.9% of the 339 non-empty records) were removed, and eight respondents who gave the same answer to all 82 attitude items, including oppositely keyed ones, were

excluded as invariant responders (Curran, 2016; Meade & Craig, 2012); eight who used one option for at least 90% of the items were retained and examined in sensitivity analyses. The analytic sample comprised 260 students (Table 1). Fourteen (5.4%), all first-year students, reported no grade category; this was unrelated to relationship experience in a logistic regression adjusting for gender and first year (p = .571), but 13 of them were among the 52 cases in the second part of the export. Grade models used 246 students and within-relationship models 128 (121 for grade). Power-sensitivity calculations are in Online Resource 1 (Table S6e).

Table 1 Characteristics of the analytic sample by self-reported relationship status, *n* (%)

Characteristic	Total (*N* = 260)	Never (*n* = 132)	Stable (*n* = 74)	Troubled (*n* = 18)	Ended (*n* = 36)
Gender					
Women	186 (71.5)	102 (77.3)	49 (66.2)	12 (66.7)	23 (63.9)
Year of study					
First	137 (52.7)	82 (62.1)	38 (51.4)	10 (55.6)	7 (19.4)
Second	32 (12.3)	13 (9.8)	8 (10.8)	4 (22.2)	7 (19.4)
Third	39 (15.0)	17 (12.9)	12 (16.2)	1 (5.6)	9 (25.0)
Fourth	52 (20.0)	20 (15.2)	16 (21.6)	3 (16.7)	13 (36.1)
Faculty group					
Arts	100 (38.5)	45 (34.1)	28 (37.8)	7 (38.9)	20 (55.6)
Mass communication	53 (20.4)	37 (28.0)	10 (13.5)	4 (22.2)	2 (5.6)
Economics and political science	29 (11.2)	16 (12.1)	8 (10.8)	2 (11.1)	3 (8.3)
Science, engineering and health	55 (21.2)	29 (22.0)	13 (17.6)	3 (16.7)	10 (27.8)
Education and other	23 (8.8)	5 (3.8)	15 (20.3)	2 (11.1)	1 (2.8)
Economic and living conditions					
Employed alongside study	63 (24.2)	20 (15.2)	25 (33.8)	6 (33.3)	12 (33.3)
Daily allowance < 50 EGP	57 (21.9)	29 (22.0)	16 (21.6)	4 (22.2)	8 (22.2)
Daily allowance 51–100 EGP	113 (43.5)	58 (43.9)	32 (43.2)	6 (33.3)	17 (47.2)
Daily allowance 101–200 EGP	55 (21.2)	28 (21.2)	17 (23.0)	4 (22.2)	6 (16.7)
Daily allowance > 200 EGP	35 (13.5)	17 (12.9)	9 (12.2)	4 (22.2)	5 (13.9)
Lives with family in the governorate	195 (75.0)	103 (78.0)	52 (70.3)	12 (66.7)	28 (77.8)
Private housing, non-local	42 (16.2)	16 (12.1)	14 (18.9)	5 (27.8)	7 (19.4)
University dormitory	23 (8.8)	13 (9.8)	8 (10.8)	1 (5.6)	1 (2.8)
Rural origin	37 (14.2)	16 (12.1)	9 (12.2)	5 (27.8)	7 (19.4)
Self-reported cumulative grade category					
Excellent	56 (21.5)	40 (30.3)	11 (14.9)	2 (11.1)	3 (8.3)
Very good	88 (33.8)	48 (36.4)	22 (29.7)	7 (38.9)	11 (30.6)
Good	68 (26.2)	27 (20.5)	23 (31.1)	3 (16.7)	15 (41.7)

Characteristic	Total (*N* = 260)	Never (*n* = 132)	Stable (*n* = 74)	Troubled (*n* = 18)	Ended (*n* = 36)
Pass	28 (10.8)	8 (6.1)	11 (14.9)	3 (16.7)	6 (16.7)
Weak	6 (2.3)	2 (1.5)	3 (4.1)	1 (5.6)	0 (0.0)
Not reported	14 (5.4)	7 (5.3)	4 (5.4)	2 (11.1)	1 (2.8)

Note. Percentages are within columns. Science, engineering and health comprises eight faculties (names withheld during review); education and other comprises education, industrial education and commerce. EGP = Egyptian pounds. Status groups differed in year of study (first vs later years, $\chi^2(3) = 20.78$, $p < .001$), faculty group ($\chi^2(12) = 30.93$, $p = .002$) and employment ($\chi^2(3) = 12.04$, $p = .007$), not in gender, allowance, housing or rural origin (all $p > .20$).

The qualitative strand comprised ten students (P1–P10) recruited purposively for variation in relationship experience: eight women and two men from Arts (*n* = 5), Education (*n* = 2), Science (*n* = 2) and Commerce (*n* = 1). One had never been in a relationship and nine described current or past relationships, including two formal engagements that began through the families (Online Resource 1, Table S8a).

4.3 Measures

The study-developed questionnaire comprised demographic items and 82 statements rated from 1 (*strongly disagree*) to 5 (*strongly agree*), not all of which formed scales; item codes, wording and use are in Online Resource 1 (Section S1, Table S2). Because the form had no skip logic, never-partnered students also answered statements about “my relationship”; these responses were treated as not applicable.

Relationship status was a compulsory item (never in a romantic relationship, stable, troubled, ended); “stable” and “troubled” are students’ own characterisations, and the item did not distinguish dating, engagement, ﷺurfi or registered marriage. A compulsory item on the duration of the “current or most recent relationship” had no “not applicable” option, so never-partnered students also answered it, and 39 of the 132 (29.5%) chose six months or more (26 “more than two years”). The data cannot show whether these answers reflect forced responding to an inapplicable item, past or informal involvement, undisclosed involvement or misreading. These discordant students stayed in the group they chose in the primary analyses and were examined in sensitivity analyses (Sect. 4.5).

Self-reported grade was the cumulative grade category (excellent, very good, good, pass, weak; coded 5 to 1), not checked against records and, for first-year students surveyed in their second semester, reflecting at most one semester. *Academic engagement* combined two items (attendance, timely submission) and *achievement motivation* ten (striving, persistence, responsibility, planning, use of time). *Psychological well-being* comprised six items (life satisfaction, mood stability, optimism, coping, self-esteem, meaning in life); not validated against established instruments, it is a locally developed index, not a measure of psychological quality of life as a whole. *Campus social integration* (peer relations, belonging, participation, enjoyment) and *perceived social support* (family, friends, wider network) had four items each.

Among relationship-experienced students, *relationship quality* comprised six items (stability, partner support, trust, open communication, respect for academic priorities, contribution to self-confidence) and *relationship strain* four (stress, frequent disagreements, difficulty resolving them, anxiety). Of eight *relationship-to-study interference* items, two referred to grades and two to motivation, both outcomes, so the primary scale was restricted, before the models reported here were estimated, to four items on study time and attention (postponing study, reduced concentration in lectures, sacrificing study time for the partner, postponing academic commitments). The eight-item scale serves for comparison, and a three-item version without postponing commitments, close in content to timely submission, was examined for engagement. Single items captured *family acceptance* of the relationship and *disclosure difficulty*, that is, difficulty talking with family about one's romantic life because of cultural sensitivity. Covariates were gender, year of study, faculty group, daily allowance, employment, housing and rural origin.

4.4 Measurement Analysis

Factor structure was examined with polychoric correlations, parallel analysis and exploratory and confirmatory factor analysis (Online Resource 1, Sections S3–S4), reliability with omega and alpha, and discriminant validity with the heterotrait–monotrait ratio (HTMT; threshold .85; Henseler et al., 2015).

4.5 Statistical Analysis

Self-reported grade was analysed with proportional-odds ordinal logistic regression (McCullagh, 1980), checking the assumption with binary models at the upper cut-points and a Brant test (Brant, 1990) in a model combining the two lowest categories, and standardised continuous outcomes with ordinary least squares and heteroscedasticity-consistent (HC3) standard errors (Long & Ervin, 2000), so that β is a difference in standard deviations. Full-sample models adjusted for all covariates and within-relationship models for gender, first versus later years, faculty group, allowance, employment and ended relationships. Holm's (1979) procedure adjusted three families of tests separately: the five focal tests implied by the protocol (relationship experience for grade, stable relationships for engagement, and status omnibus tests for motivation, well-being and integration), six focal within-relationship tests (strain with interference; interference with grade and engagement; quality with well-being, motivation and engagement) and seven moderation tests (two strain × support and five gender interactions). Year-of-study differences in the grade association were examined exploratorily, in stratified models and in a model with an experience × first-year term and a common covariate set; only the latter tests whether the associations differ (Gelman & Stern, 2006).

Three sensitivity analyses re-estimated the status models (i) excluding the discordant students, (ii) entering them as a separate category and (iii), for the binary grade contrast, classifying them as relationship-experienced, a bound on misclassification rather than a claim that they had relationships.

Direct, indirect and total associations of strain through interference were estimated with percentile bootstrap confidence intervals (CIs; 2,000 resamples); with cross-sectional data they partition covariance and cannot distinguish mediation from confounding (MacKinnon et al., 2000). Moderation by support was probed at its subsample mean and 1 *SD* below and above it, and gender differences were tested with interaction terms.

Within-relationship models were re-estimated without predictor and outcome items close in content (e.g., self-confidence and self-esteem). Robustness analyses varied the treatment of careless responders and duplicates, the covariates, the coding of grade and the part of the export. Analyses used Python 3.13.17 (statsmodels 0.15.0, factor_analyzer 0.5.1, semopy 2.3.11); run on the de-identified data, the code reproduces every reported estimate (Online Resources 2 and 3).

4.6 Qualitative Data and Analysis

Undergraduate members of the research team, under faculty supervision, conducted the interviews in Egyptian Arabic with a semi-structured guide prepared at the design stage (relationship experiences, academic consequences, well-being, family and social context, balancing strategies). The guide planned audio recording and about 20 interviews; ten were documented, as written question-and-answer accounts prepared by the interviewers, without recordings or transcripts, and their dates and durations were not documented.

An audit of the accounts (Online Resource 1, Section S8) found near-identical sentences in P3 and P5 (Jaccard similarity of four-word sequences .068, against at most .008 for other pairs), a formulaic sentence in P2 and P4, and the end of P8's final answer attached to P9's account. At least some passages were thus not recorded verbatim; writing up from notes or memory, or editing across accounts, would explain the pattern, which does not by itself show that content was invented. Scripts written directly after an interview by experienced, trained interviewers can capture detail comparable to transcripts (Rutakumwa et al., 2020), but when and from what notes our accounts were written, and how the interviewers were trained, was not documented. We therefore treated them as interviewer-prepared accounts, based interpretations on case-specific passages, counted near-identical passages once and report paraphrases, not quotations.

Because reconstructed accounts lack the verbatim first-person material that the interpretative phenomenological analysis specified in the protocol requires, we conducted a thematic analysis (Braun & Clarke, 2006) with inductive and theory-derived codes. Saturation was not used as a stopping rule (Braun & Clarke, 2021); judged by information power (Malterud et al., 2016), ten heterogeneous accounts of uncertain verbatim accuracy, including only two men and one never-partnered student, support only illustrative, hypothesis-generating interpretation. The Arabic passages underlying the paraphrases are in Online Resource 1 (Table S9).

4.7 Use of AI-Assisted Tools

SCiNiTO, an AI research assistant, supported the screening of previous studies. Claude (Anthropic), a large language model, was used under the authors' direction to write and run the code for the data audit, the statistical analyses and the audit of the interview accounts (Online Resource 3), to assist with the initial coding of the Arabic accounts (Sect. 4.6). The authors checked all AI-assisted output and take full responsibility for the content of this article.

5 Quantitative Results

5.1 Sample and Measurement

Half of the sample (50.8%) reported never having been in a relationship, 28.5% a stable, 6.9% a troubled and 13.8% an ended relationship (Table 1). The top grade category was reported by 2% of students in Arts and 65% in Mass Communication, where 37 of 53 students were never-partnered. Among relationship-experienced students, 50.0% agreed that their family knew of and accepted the relationship and 43.0% reported difficulty talking with their family about their romantic life.

Parallel analysis indicated a dominant first factor among the general items (eigenvalue 15.74) and three factors above chance; relationship statements separated into quality and strain (factor correlation −.56) and into interference and balance or partner encouragement (−.40; Online Resource 1, Section S3). Internal consistency was adequate to high (ω = .78–.94; Table 2). The hypothesised five-factor general model fitted marginally but far better than a one-factor model (comparative fit index, CFI = .895 vs .645; root mean square error of approximation, RMSEA = .071 vs .128), and the relationship model with the four-item interference scale fitted poorly (CFI = .893, RMSEA = .098, standardised root mean square residual = .086). The four-item scale correlated .95 with the eight-item version. With the four-item scale, strain and interference were not empirically distinct (HTMT = .885, above the .85 threshold); with the eight-item scale the ratio was .835.

Table 2 Measurement properties of the study constructs

Construct	Sample	Items	λ	ω	α	CR	AVE	*M* (*SD*)
Psychological well-being	Full	6	.67–.81	.89	.87	.89	.58	3.65 (0.83)
Campus social integration	Full	4	.66–.85	.88	.83	.87	.63	3.71 (0.85)
Achievement motivation	Full	10	.68–.83	.94	.91	.94	.59	3.93 (0.71)
Academic engagement	Full	2	.81–.93	.86	.79	.86	.76	4.19 (0.85)
Perceived social support	Full	4	.37–.87	.81	.74	.80	.52	3.68 (0.84)
Relationship quality	Experienced	6	.70–.87	.91	.88	.91	.64	3.94 (0.80)
Relationship strain	Experienced	4	.57–.76	.78	.74	.78	.47	3.03 (0.88)
Relationship-to-study interference, four items	Experienced	4	.63–1.00	.86	.83	.86	.61	2.66 (0.93)
Relationship-to-study interference, eight items[a]	Experienced	8	.64–.97	.91	.89	.91	.58	2.67 (0.89)

Note. Full = analytic sample (*N* = 259–260); Experienced = relationship-experienced students (*n* = 128). λ = range of standardised loadings (unweighted least squares on polychoric correlations); ω = McDonald's

omega; α = Cronbach's alpha; CR = composite reliability; AVE = average variance extracted. One interference loading reached 1.0; fit indices are in Online Resource 1 (Table S4a). [a] Includes two items on grades and two on motivation; for comparison.

5.2 Relationship Status, Academic Functioning and Psychological Well-Being

H1 was not supported in its differentiated form (Table 3). Relationship-experienced students reported lower grades than never-partnered students (odds ratio, OR = 0.49, 95% CI 0.29–0.81, p = .005; Holm-adjusted p = .021), with similar estimates for stable (0.52), troubled (0.44) and ended relationships (0.46); contrary to H1, the estimate for stable relationships was as low as for the others. The proportional-odds assumption held for relationship experience (Brant $\chi^2(2) = 0.13$, p = .936; binary-model odds ratios 0.48–0.55) but not for the model as a whole ($\chi^2(28) = 49.47$, p = .007), mainly because of faculty group and allowance. The odds ratio was 0.35 without covariates and 0.43 without faculty adjustment.

H2 was not supported: the engagement advantage of stable relationships was small and imprecise (β = 0.26, 95% CI −0.02 to 0.53; Holm-adjusted p = .122; omnibus $\chi^2(3) = 4.17$, p = .244), and achievement motivation showed a similar, statistically uncertain pattern ($\chi^2(3) = 7.36$, p = .061; Holm-adjusted p = .122).

H3 was partially supported. Status was associated with psychological well-being ($\chi^2(3) = 18.30$, $p < .001$; Holm-adjusted p = .002) in the predicted order: students in stable relationships scored 0.43 *SD* higher and those in troubled relationships (18 students) 0.56 *SD* lower than never-partnered students, a stable–troubled contrast of 0.98 *SD* (95% CI 0.45–1.52). Status was also associated with campus social integration ($\chi^2(3) = 12.65$, p = .005; Holm-adjusted p = .021), but only through an advantage of stable relationships (β = 0.48); students in troubled relationships did not report the lowest integration (β = 0.08), so the predicted ordering did not hold for integration.

Table 3 Adjusted associations of relationship status with academic functioning and psychological well-being (reference: never in a relationship)

	Self-reported grade, OR [95% CI]	Academic engagement, β [95% CI]	Achievement motivation, β [95% CI]	Psychological well-being, β [95% CI]	Campus social integration, β [95% CI]
Stable relationship	0.52 [0.28, 0.94]	0.26 [−0.02, 0.53]	0.26 [0.003, 0.52]	0.43 [0.16, 0.70]	0.48 [0.21, 0.75]
Troubled relationship	0.44 [0.16, 1.21]	−0.23 [−1.04, 0.58]	−0.33 [−0.95, 0.28]	−0.56 [−1.09, −0.03]	0.08 [−0.49, 0.65]
Relationship ended	0.46 [0.22, 0.94]	0.06 [−0.32, 0.44]	−0.11 [−0.50, 0.28]	0.01 [−0.36, 0.38]	0.06 [−0.33, 0.46]
Any relationship experience	0.49 [0.29, 0.81]	---	---	---	---
Omnibus test of status, $\chi^2(3)$	8.03, p = .045	4.17, p = .244	7.36, p = .061	18.30, p < .001	12.65, p = .005
Focal test, Holm-adjusted p	.021	.122	.122	.002	.021
R^2	---	.19	.25	.19	.14
n	246	260	260	260	260

Note. OR = odds ratio; CI = confidence interval. Grade: proportional-odds ordinal logistic regression (OR below 1 = lower grade categories); other outcomes: ordinary least squares on standardised scores with HC3 standard errors. All models adjust for gender, year of study, faculty group, daily allowance, employment, housing and rural origin. “Any relationship experience” comes from a separate model with a single indicator. Omnibus tests: likelihood ratio for grade, Wald otherwise. Focal tests and Holm adjustment as defined in Sect. 4.5.

5.3 Classification of the Reference Group

Table 4 shows how the contrasts changed with the classification of the 39 discordant students. Compared with the 93 concordant never-partnered students, who reported durations under six months, they were more often first-year students (79% vs 55%) and in Mass Communication (17 of 39 vs 20 of 93), reported higher grades (mean category 4.22 vs 3.81) and answered the relationship-quality statements like never-partnered rather than relationship-experienced students (means 2.95 for discordant, 3.06 for concordant and 3.94 for relationship-experienced students), more consistent with answering an inapplicable item than with describing a relationship. Excluding them attenuated the grade association (OR = 0.56, 95% CI 0.33–0.97, p = .040; Holm-adjusted p = .120), and classifying them as relationship-experienced removed its statistical significance (OR = 0.72, 95% CI 0.43–1.20, p = .208). The well-being and integration contrasts were largely robust, although the troubled-relationship CI for well-being included zero when discordant students formed a separate category.

In exploratory analyses by year of study, separate models gave odds ratios of 0.86 (95% CI 0.42–1.78) for first-year and 0.19 (0.08–0.42) for later-year students (Online Resource 1, Table S6g), but separate models with different covariates do not test whether associations differ. In a model with a common covariate set and an experience × first-year term, the implied odds ratios were 0.65 (0.32–1.35) for first-year and 0.37 (0.19–0.73) for later-year students, and the interaction was not statistically significant (ratio of odds ratios 1.76, 95% CI 0.67–4.66, $p = .255$; $p = .264$ without discordant students). The analysis therefore established neither that the association differed by year of study nor, given the wide interval, that it was the same. All 14 students without a grade category and 31 of the 39 discordant students were in their first year.

Table 4 Relationship-status contrasts under four classifications of the 39 discordant students (never-partnered students who reported a relationship duration of six months or more)

Estimate	Primary: kept as never-partnered	Excluded	Separate category	Classified as experienced[a]
Self-reported grade, OR [95% CI]				
Any relationship experience	0.49 [0.29, 0.81]	0.56 [0.33, 0.97]	---	0.72 [0.43, 1.20]
Holm-adjusted *p* (focal test)	.021	.120	---	---
Stable relationship	0.52 [0.28, 0.94]	0.59 [0.31, 1.11]	0.60 [0.32, 1.13]	---
Troubled relationship	0.44 [0.16, 1.21]	0.53 [0.19, 1.54]	0.52 [0.18, 1.48]	---
Relationship ended	0.46 [0.22, 0.94]	0.54 [0.26, 1.14]	0.52 [0.25, 1.08]	---
Discordant vs concordant never-partnered	---	---	1.74 [0.78, 3.88]	---
Psychological well-being, β [95% CI]				
Stable relationship	0.43 [0.16, 0.70]	0.46 [0.17, 0.75]	0.47 [0.17, 0.76]	---
Troubled relationship	−0.56 [−1.09, −0.03]	−0.55 [−1.09, −0.002]	−0.51 [−1.05, 0.03]	---
Discordant vs concordant never-partnered	---	---	0.14 [−0.25, 0.53]	---
Campus social integration, β [95% CI]				
Stable relationship	0.48 [0.21, 0.75]	0.45 [0.16, 0.74]	0.46 [0.17, 0.75]	---
Troubled relationship	0.08 [−0.49, 0.65]	0.02 [−0.56, 0.61]	0.06 [−0.52, 0.64]	---
Omnibus status tests, $\chi^2(df)$, p				
Achievement motivation	7.36 (3), .061	8.31 (3), .040	7.67 (4), .104	---
Psychological well-being	18.30 (3), < .001	20.00 (3), < .001	18.78 (4), < .001	---
Campus social integration	12.65 (3), .005	10.79 (3), .013	12.60 (4), .013	---
n (grade models / other models)	246 / 260	209 / 221	246 / 260	246 / ---

Note. Models and covariates as in Table 3; outcome scores keep the metric of the full analytic sample. In the separate-category specification, contrasts are relative to concordant never-partnered students. [a] Binary grade contrast only; a bound on misclassification, not a claim that these students had relationships.

5.4 Relationship Quality, Strain and Interference

Among the 128 relationship-experienced students (Table 5), strain was strongly associated with the four-item interference scale (β = 0.62) and quality was not (β = −0.01); given the HTMT of .885, this largely reflects construct overlap. Interference was associated with lower achievement motivation (β = −0.34; not a focal test) and engagement (β = −0.26), as with the eight-item (−0.32, −0.28) and three-item versions (engagement −0.28), so these associations do not depend on items about grades, motivation or timely submission; its association with grade was imprecise (OR = 0.62 per *SD*, 95% CI 0.36–1.07). Quality was associated with higher well-being (β = 0.29), motivation (β = 0.30) and engagement (β = 0.29). Removing items close in content to the outcome left these estimates essentially unchanged (Online Resource 1, Table S5e). After Holm adjustment across the six focal tests, the associations of strain with interference and of quality with motivation remained statistically significant (other adjusted *p* = .08–.09). H4 was thus supported for the strain–interference association, with the caveat of overlap, and only partly for the academic correlates of interference and for quality and well-being.

The indirect association of strain with motivation through interference (−0.21) was offset by a positive direct association (0.26), leaving a total association close to zero (0.04, 95% CI −0.17 to 0.24); the pattern was similar for engagement (indirect −0.16, direct 0.10, total −0.07, 95% CI −0.30 to 0.14; Online Resource 1, Table S5d). Strain as a whole was thus not associated with lower motivation or engagement; only its part shared with perceived interference was, which describes covariance among self-reports rather than a sequence of effects.

Table 5 Relationship quality, strain and relationship-to-study interference among relationship-experienced students

	Interference, β [95% CI]	Psychological well-being, β [95% CI]	Achievement motivation, β [95% CI]	Academic engagement, β [95% CI]	Campus social integration, β [95% CI]	Self-reported grade, OR [95% CI]
Panel A: four-item interference scale (primary)						
Relationship quality	−0.01 [−0.21, 0.18]	0.29 [0.03, 0.54]	0.30 [0.08, 0.52]	0.29 [0.04, 0.54]	0.25 [−0.03, 0.53]	0.82 [0.52, 1.30]
Relationship strain	0.62 [0.44, 0.79]	−0.18 [−0.47, 0.12]	0.26 [−0.01, 0.53]	0.10 [−0.16, 0.35]	−0.03 [−0.33, 0.26]	0.88 [0.50, 1.56]
Interference (four items)	---	0.16 [−0.09, 0.41]	−0.34 [−0.60, −0.09]	−0.26 [−0.51, −0.02]	−0.01 [−0.27, 0.25]	0.62 [0.36, 1.07]
R^2	.56	.20	.33	.22	.19	---
n	128	128	128	128	128	121
Panel B: eight-item interference scale (comparison)						
Relationship strain	0.64 [0.47, 0.81]	---	---	---	---	---
Interference (eight items)	---	0.15 [−0.06, 0.36]	−0.32 [−0.58, −0.07]	−0.28 [−0.53, −0.03]	−0.01 [−0.25, 0.24]	0.70 [0.41, 1.18]

Note. Ordinary least squares with HC3 standard errors; grade: proportional-odds ordinal logistic regression (OR per standard deviation). Relationship measures are standardised within the subsample; outcomes are in standard deviations of the full analytic sample. All models adjust for gender, first vs later years, faculty group, daily allowance, employment and whether the relationship had ended; in Panel B, quality and strain were also included.

5.5 Social Support, Family Acceptance and Gender

Perceived social support did not differ by relationship status ($\chi^2(3) = 1.16$, $p = .762$). The strain × support interaction for well-being (β = 0.20, 95% CI 0.05–0.35, $p = .010$) did not remain statistically significant after Holm adjustment across the seven moderation tests (adjusted $p = .059$; Online Resource 1, Table S5f). In this model, strain was associated with lower well-being at low support (simple slope at −1 *SD*: −0.40, 95% CI −0.72 to −0.08) but not at high support (−0.01, 95% CI −0.18 to 0.17; Fig. 1). For interference, the interaction ran opposite to H5: the strain–interference association was stronger with more support (β = 0.18, 95% CI 0.08–

0.29; adjusted p = .006; simple slopes 0.34 at low and 0.70 at high support). H5 was thus partly supported for well-being, with limited robustness to multiple testing, and contradicted for interference.

In exploratory analyses, family acceptance was associated with higher well-being (β = 0.26, 95% CI 0.07–0.46) and integration (β = 0.30, 95% CI 0.12–0.48), not with strain or interference, and these associations were attenuated once general social support, relationship quality and strain were controlled (β = 0.09 for well-being, p = .323; Online Resource 1, Table S5f). Disclosure difficulty was associated with greater strain (β = 0.28, 95% CI 0.09–0.46) and interference (β = 0.22, 95% CI 0.04–0.40), not with well-being.

H6 was not supported. Gender did not moderate the associations of status with well-being, motivation, engagement or grade (p = .111–.630; Online Resource 1, Table S7), and an interaction for integration (p = .023; Holm-adjusted p = .116) rested on 18 students in troubled relationships, six of them men. Within relationships, quality was less strongly associated with well-being for women than for men (interaction β = −0.44, p = .041; exploratory, unadjusted). With 74 men in the sample and 44 in the subsample, only large differences were detectable, so the absence of moderation does not show equality.

5.6 Robustness

Estimates were stable when invariant responders were retained (grade OR = 0.50; well-being, stable: 0.48), when near-invariant responders were removed (OR = 0.52; 0.37) and when the part of the export was adjusted for (OR = 0.47). Retaining the duplicated records overstated precision (troubled relationships and well-being: p = .008, against p = .040). Variance inflation factors did not exceed 2.37 (Online Resource 1, Table S6d).

6 Qualitative Results

The analysis generated four themes (Online Resource 1, Table S8b). Accounts are attributed by participant number, gender and faculty and paraphrased (Sect. 4.6); they illustrate how participants described their experiences, not how common those experiences are.

6.1 Boundary Work and the Partner as Academic Ally

Students in supportive relationships portrayed study as protected by explicit boundaries, with a good partner helping: P4 (woman, Education) described a partner who encouraged her to focus and reduced contact before examinations, P7 (woman, Arts), whose engagement had begun through her family, kept study time for studying, and P6 (woman, Science) recalled a partner who urged her not to waste her abilities. P8 (man, Science) described the same boundary from the other side: during examinations, a partner should accept that the period was reserved for concentration.

6.2 Conflict, Dissolution and Attentional Spillover

Conflict and dissolution were described mainly as lost attention rather than missed classes. P7 sat in lectures with her mind elsewhere after disagreements; P9 (woman, Arts), whose partner alternated between intense

attention and sudden disappearance, neglected her studies; P3 (woman, Arts) linked a break-up to lost concentration and lower grades; and P10 (woman, Arts) lost concentration during problems but set them aside at examinations. P3, P7 and P9 described later efforts to refocus on their studies. In two accounts the theme did not hold: P2 (woman, Education), in her final year, reported no academic effect after her relationship ended, and P8 left distress behind through exercise and keeping busy.

6.3 Regulated Intimacy: Concealment, Conditional Acceptance and Formalisation

Families appeared in almost every account. P3's family did not know the details, and she preferred to deal with the matter alone (a closely similar passage in P5's account was counted once); P6 withheld details from a household already under strain. Knowledge came with conditions: P4's family accepted her relationship provided there was respect, clear limits and no effect on her studies, and P9's mother, noticing her distress, said that a serious suitor should approach the family formally. Both engagements that began through the families ended, one amid disagreements between the families (P10). The only never-partnered participant (P1, man, Commerce) framed abstention as a priority on success. P3, in words nearly identical to P5's (counted once), described women and men as judged very differently.

6.4 Relationships Entered in Search of Recognition

Three women described entering relationships when they lacked attention or care: P6 during family problems, P9 when she felt alone and needed to feel that she mattered, and P10 when she felt emotionally deprived before her engagement. The relationship brought P6 greater motivation and better grades but became a source of distress for P9. These accounts suggest, but cannot show, that low support may precede relationships as well as follow from them.

7 Mixed-Methods Integration

Table 6 sets each quantitative finding beside the qualitative material; given how the interviews were documented, "consistent" means alignment with the survey pattern, not corroboration. The accounts were consistent with the well-being contrast and the strain–interference association, expanded the findings on family regulation and on emotional deprivation as a possible route into relationships, and were discordant with the lower grades of partnered students, whose supportive relationships were described as academically neutral or beneficial, and with the absence of consistent gender moderation, given the strong gendered judgement participants described.

Table 6 Joint display of quantitative findings and qualitative material

Quantitative finding	Qualitative material (participants)	Meta-inference
Lower grade categories with relationship experience in the primary analysis (OR = 0.49), attenuated when discordant students were excluded (0.56) and not statistically significant when they were classified as experienced (0.72); no evidence that the association differed by year of study (interaction p = .255).	Episodic costs: distraction in lectures (P7, P10) and lower grades or academic level (P3, P9) during conflict or after a break-up, followed by efforts to recover (P3, P7, P9); abstention as a priority on success (P1); supportive relationships academically neutral or helpful (P4, P6).	Discordance, unresolved: disruption, selection of success-oriented abstainers and misclassification all remain consistent with the data.
Higher psychological well-being in stable (β = 0.43) and lower in troubled relationships (β = −0.56), largely robust to the classification of the reference group.	Partners as sources of calm, encouragement and protected study time (P4, P6, P7); distress in an erratic relationship (P9).	Consistent.
Strain strongly associated with interference (β = 0.62; overlapping constructs); interference with lower motivation (−0.34) and engagement (−0.26), not clearly with grade.	Conflict as lost attention in lectures; examination periods protected by deliberate effort (P7, P10).	Consistent and complementary: interference may bear more on daily engagement than on examination grades (a hypothesis).
Support associated with a weaker strain–well-being association (not robust to multiple testing) and a stronger strain–interference association.	A partner as an emotional refuge (P6); recovery of study as gradual, effortful catching up (P3, P9).	Expansion (tentative): support may ease distress without restoring lost study time.
Family acceptance associated with well-being and integration; disclosure difficulty with strain and interference (exploratory).	Concealment and coping alone (P3 and near-identical P5, counted once; P6); acceptance conditional on limits and academic progress (P4); formalisation urged by a mother (P9); an engagement ended by conflict between families (P10).	Expansion: regulation through concealment, conditional acceptance and formalisation; negative case: a concealed but supportive relationship (P6).
Perceived social support did not differ by relationship status ($\chi^2(3)$ = 1.16, p = .762).	Three women entered relationships at times of emotional deprivation, with divergent outcomes (P6, P9, P10).	Expansion: deprivation as a possible route into relationships that a measure of current support cannot capture.
No consistent gender moderation; tests of limited sensitivity (74 men).	Strong gendered judgement described (P3 and near-identical P5, counted once); only two men interviewed.	Discordance: possibly limited power, concealment or outcomes that miss reputational costs.

Note. P = participant (Online Resource 1, Table S8a). Qualitative material is paraphrased from interviewer-prepared accounts. Categories adapted from Fetters et al. (2013); “consistent” (alignment, not corroboration) replaces “confirmation”.

8 Discussion

Associations differed by domain: the well-being and integration contrasts by relationship status were largely robust, whereas academic evidence was weaker, with a grade association that depended on classification and did not differ demonstrably by year of study, and perceived interference not clearly distinguishable from strain.

The well-being findings agree with evidence that relationship involvement and quality are associated with better mental health and life satisfaction and break-ups with distress (Beckmeyer & Cromwell, 2019; Braithwaite et al., 2010; Gómez-López et al., 2019; Rhoades et al., 2011). Two cautions apply: “stable” and “troubled” are evaluative self-descriptions that may share an affective outlook with the well-being items (Podsakoff et al., 2003), and students select into relationships and characterise them in ways that may depend on their well-being, so the contrast is not the effect of entering or leaving a relationship.

The grade findings require the most caution. Never-partnered students were over-represented in the highest-grading faculty group, and the association was sensitive to faculty adjustment (odds ratio 0.43 without, 0.49 with), which with five groups may be incomplete, and to the classification of the discordant students, mostly first-year students with relatively high grades. The stronger association estimated among later-year students would fit accumulating academic costs, but the interaction test did not support a difference by year, and first-year grades covered at most one semester; any pattern by year remains a question for longitudinal research. Several explanations remain consistent with the overall association: episodic disruption, as described in the interviews; abstention by students most oriented to academic success, as the never-partnered interviewee argued, with cultural norms shaping selection into relationships (Kuperberg & Padgett, 2016); academic difficulty or emotional need drawing students into relationships; and social desirability shaping self-reported grades differently for students who see themselves as abstaining from a disapproved activity (Tourangeau & Yan, 2007). Cross-sectional data cannot adjudicate between these, and the association should not be read as an effect of relationships on grades.

The associations of interference with motivation and engagement did not depend on overlapping item content, but they remain associations between self-reports, and less motivated students may be more inclined to blame their relationships for study problems. Strain as a whole was unrelated to these outcomes because a negative indirect association was offset by a positive residual one, a pattern that cannot distinguish mediation from confounding or suppression (MacKinnon et al., 2000).

The support findings fit the expectation that social resources weaken the link between chronic stressors and distress (Cohen & Wills, 1985; Pearlin et al., 1981), although the well-being interaction did not survive adjustment for multiple tests. The stronger strain–interference association among well-supported students was unexpected and requires replication; it may reflect the time demands of dense networks, a readiness to acknowledge interference or support mobilised by academic difficulty.

That disclosure difficulty was associated with strain and interference is consistent with research linking secrecy to the burden of managing a relationship (Foster & Campbell, 2005; Lehmiller, 2009) and with accounts of regulated intimacy in Egypt (Hasso, 2011; Wynn, 2018), although concealment and reputational concern were not measured directly. The absence of consistent gender moderation despite described gendered judgement may reflect few men, insensitive tests, concealment, untested differences in item interpretation (Putnick & Bornstein, 2016) or outcomes that miss reputational costs; it does not show that gendered norms are inconsequential.

8.1 Theoretical Implications

Because the observed pattern contradicted H1 for stable relationships and H5 for interference, the following interpretation is post hoc. Role strain and enrichment may be domain-specific rather than competing accounts: patterns consistent with enrichment appeared where the resources at stake were emotional and tied to relationship quality, whereas academic costs were weaker, sensitive to classification and, within relationships, tied to perceived intrusion on study time rather than to strain as a whole. For quality-of-life research, the results suggest that aggregate measures of student quality of life combining psychological, social and academic domains may obscure associations that differ by domain.

8.2 Practical Implications

Given cross-sectional evidence from one university, implications are directions rather than prescriptions. Counselling services could address romantic difficulties as part of academic support, particularly during relationship conflict, combining emotional support with help in protecting study time and attention; confidentiality and a non-judgemental stance are likely to matter for students who conceal relationships.

8.3 Limitations

The limitations bear on the conclusions unequally. First, no association, including the indirect associations, establishes temporal order or causation; selection into relationships, reverse direction and unmeasured confounding, for example by prior attainment or family background, remain plausible despite adjustment. Second, the self-selected sample from one university, with no documented recruitment channels or denominator, limits generalisation, and repeated participation with non-identical answers cannot be excluded.

Third, measurement limits inference, most seriously for the academic findings. Grades were self-reported in broad categories, unverified and least informative for first-year students, and the year-specific comparisons rested on small strata and an interaction test of limited sensitivity. Relationship status rested on self-classification that did not distinguish dating, engagement or marriage, and a duration item without a “not applicable” option yielded discordant answers whose classification changed the grade association. Interference in its four-item form is a self-attribution not empirically distinct from strain, and the eight-item form was only marginally distinct. All scales were study-developed, examined in the same sample in which associations were estimated, not validated against established instruments and not tested for gender invariance (Putnick & Bornstein, 2016); reliability does not establish validity (Flake et al., 2017), so the well-being index is not comparable with established quality-of-life instruments. The relationship measurement model fitted poorly, family acceptance and disclosure difficulty were single items, only 18 students reported troubled relationships, age was not collected, and common-method variance may have inflated associations among self-reports (Podsakoff et al., 2003).

Fourth, the ten interviews were half the planned number, included only two men and are documented only as interviewer-prepared accounts, some with repeated or transferred wording, so participants’ own words cannot be verified; the AI-assisted coding was not independently validated, and the general framing of the interview

information statement may have shaped what participants disclosed. Because the interview strand was not built on the survey results, the accounts contextualise rather than test the survey associations. These limitations weaken most the conclusions about grades and the academic correlates of interference; the stable–troubled well-being contrast was the most robust finding, though it too rests on self-reports from one university.

9 Conclusion

Where premarital relationships are socially regulated, students' psychological well-being differed markedly between stable and troubled relationships, and relationship quality was associated with higher motivation and, less robustly, well-being. Academic evidence was weaker and more sensitive to measurement decisions: the grade association depended on how inconsistently classified students were treated and did not differ demonstrably by year of study, and perceived interference could not be clearly separated from strain. With cross-sectional data, study-developed scales and interviewer-prepared accounts, these are associations within one university, not effects; longitudinal studies with recorded grades, validated instruments, appropriate skip logic and recorded interviews are needed to distinguish disruption, selection and reporting.

Declarations

Ethics approval The study was approved by the General Committee for Scientific Research Ethics, Suez University. Consent to participate Survey participants received a written information statement and took part voluntarily and anonymously; interviewees received an oral information statement and gave informed consent before the interview (manuscript, Sect. 4.7).

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Figures

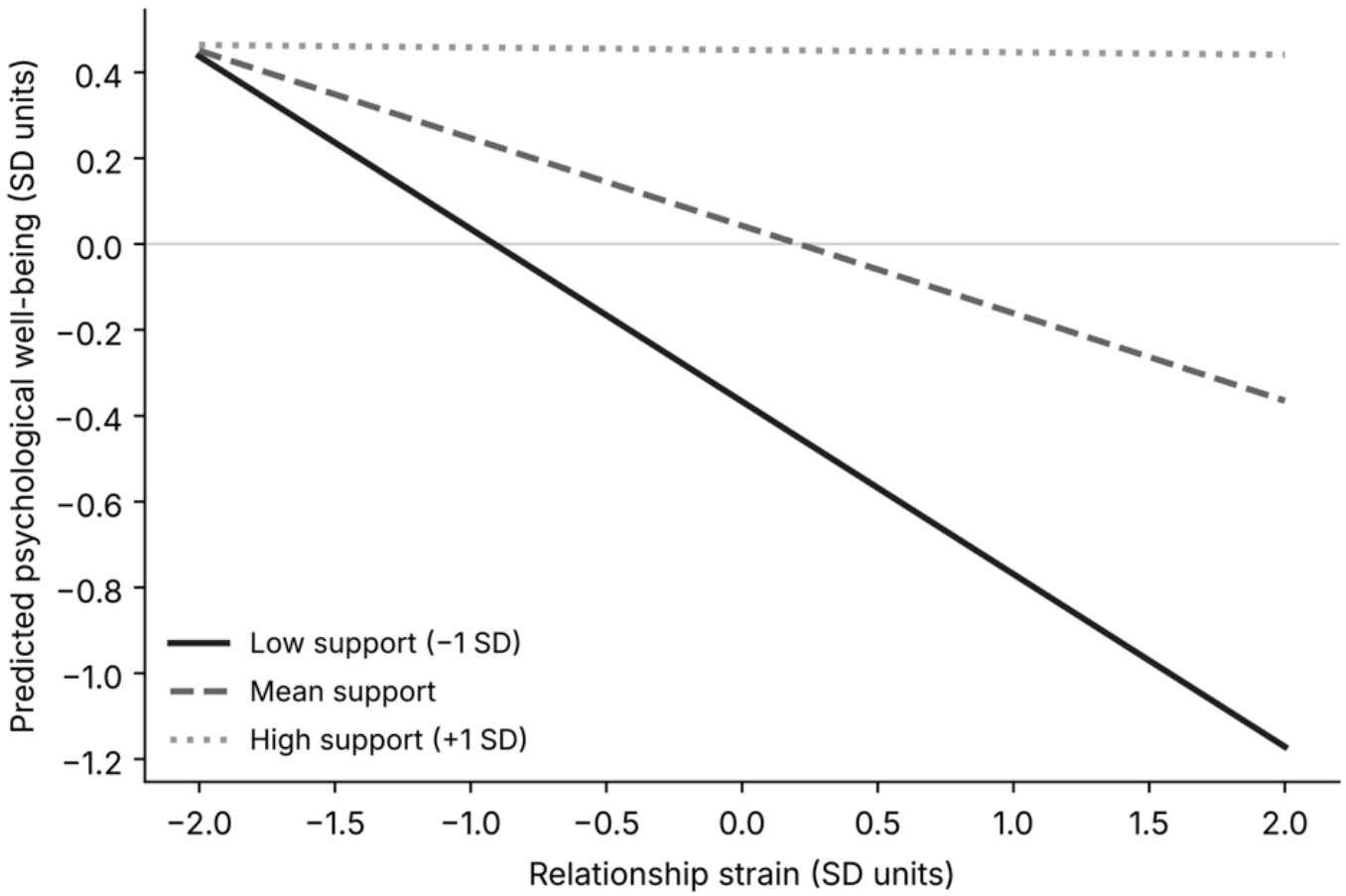


Figure 1

Predicted psychological well-being across relationship strain at low, mean and high perceived social support among relationship-experienced students (*n* = 128; ordinary least squares adjusted for relationship quality and covariates; standardised scores). The interaction (*p* = .010) was not statistically significant after Holm adjustment (*p* = .059)

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