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ORIGINAL ARTICLE

"I love you forever (more or less)" – stability and change in adolescents' romantic love status and associations with mood states

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Objective: Experiencing romantic love is an important part of individual development. Here, we investigated stability and change in romantic love and psychological correlates, including mood states, anxiety, and sleep, among Iranian adolescents over a period of 8 months.
Method: Two hundred and one adolescents who had taken part in a previous study were contacted; 157 responded. Participants completed a questionnaire covering sociodemographic data, current state of love, and mood, including symptoms of depression, anxiety (state and trait), and hypomania. They also completed a sleep and activity log.
Results: Of 64 participants formerly in love, 45 were still in love; of 86 participants not in love at baseline, 69 were still not in love (overall stability, 76%); 17 had fallen in love recently while 19 were no longer in love. Significant and important changes in mood and anxiety were observed in that experiencing romantic love was associated with higher anxiety scores. Hypomania scores increased in those newly in love, and decreased in those in a longer-lasting romantic relationship. Sleep and sleep-related variables were not associated with romantic love status.
Conclusion: These findings suggest that, among Iranian adolescents, the state of love is fairly stable, and that love status seems to be associated with specific states of mood and anxiety.

Keywords: Adolescents; romantic love; stability; change; state anxiety; hypomania; sleep

Introduction

Experiencing romantic love is an important factor in psychosocial development during adolescence, and a significant opportunity to prepare for future romantic relationships as adults[1,2] (see Bajoghli et al.[3] for an overview). As such, romantic relationships are important and necessary learning opportunities, aiding identity development, psychosocial competence for future romantic relationships as adults,[1] and mate value.[4] Furthermore, as shown by studies in evolutionary psychology,[4-6] falling and being in love are cross-cultural universals – experiences that arise across all prevailing social, cultural, and religious contexts.[7] In this regard, Khalajabadi Farahani & Cleland[8] recently investigated young female Iranian students' attitudes toward premarital romantic relationships and sexual experience and observed that the majority (77.5%) were in favor of premarital abstinence. At the same time, a significant proportion of these students in Tehran were in favor of premarital social interaction and romantic friendships, but they saw a clear distinction between experiencing romantic love and falling/being in love on the one hand and premarital sexuality on the other.

Regarding the relation between current romantic love status (i.e., currently being in love or not) and mood states, along with sleep patterns and physical activity, the following findings have been reported. Among a sample of 844 young adults,[9] and contrary to common opinion, experiencing a state of romantic love was not entirely a joyful and happy experience; rather, those participants who reported they were in love while also experiencing so-called "dark side" hypomania (i.e., reporting disinhibited stimulation-seeking and irritable-erratic symptoms) also reported being unhappily in love and experiencing more sleep difficulties. The authors concluded that experiencing romantic love might be a critical life event associated with symptoms of depression and anxiety as well as poor sleep.[9] A study of young Iranian adolescents[10] found that female adolescents in love, when compared to those not in love, had higher scores for hypomania and physical activity. These observations were consistent with previous findings from a study of adolescents in love in

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Switzerland.[11] Furthermore, when male adolescents were assessed, those in love had higher scores for hypomania and lower scores for depression compared to those who were not in love,[3] confirming previous results.[9] Remarkably, adolescents in love also had higher scores for state anxiety. These observations were interpreted in the light of a possible cognitive-emotional appraisal bias related to social and cultural issues; it is conceivable that higher anxiety scores were associated with parents' disapproval of adolescents' engagement in romantic relationships. This possibility is consistent with recent findings[8] indicating that a more liberal attitude towards adolescents' social decisions is related to paternal level of education.

To summarize, previous studies have focused on the relationship between romantic love status and mood among adolescents, although cross-sectionally, thus precluding observation of changes and stability of mood states. Moreover, there appear to be also no longitudinal studies focusing on the stability of mood states among adolescents in love, thus leaving a research gap regarding romantic love and mood states among adolescents. The aim of the present study was to bridge this gap by investigating whether – and, if so, to what extent – romantic love status changes over time and to what extent any such changes are related to mood states such as hypomania, depression, and anxiety, as well as sleep patterns. To these ends, adolescents from a previous study of romantic love and mood states[3] were contacted and reassessed.

A further observation is that, over time, the early stage of romantic love fades, though the duration of the change from this early stage into a more stable state of love or to the break-up of a romantic relationship varies. Among adults, periods ranging from 7 months[12] to 12-24 months[13] to 2.3 years[14] have been reported. Among adolescents, to the best of our knowledge, only Brand et al.[11] have addressed this question; they reported an interval of 7 to 9 months. Taking this observation into account, we assessed adolescents from a previous study on romantic love and mood states[3] after an 8-month interval. We believe the results of this study might shed more light on the phenomenon of romantic love, a major feature of developmental tasks[15] which, by definition, emerges during adolescence and which is closely related to mood states such as hypomania, depression, and anxiety.

As this appears to be the first study to investigate links between degree of stability in romantic love and mood states such as hypomania, depression, and anxiety among adolescents, no hypotheses were formulated. Instead, we sought to address the following research questions: first, to what extent are either stability (individuals in love at baseline who are still in love at reassessment; individuals not in love at baseline who are still not in love at reassessment) or change (individuals originally in love who are no longer in love at reassessment; individuals originally not in love who are in love at reassessment) observable over the 8-month study period? Second, to what extent are stability or change associated with mood states such as hypomania, depression, and anxiety? And third, how are stability and change related to sleep patterns?

Methods

Study procedure

As described in detail elsewhere,[3] 201 adolescents (mean age 17.73±1.06 years; 113 [56.2%] females) took part in the first study (henceforth, "baseline"). For the baseline study, the deans of two high schools in Tehran, Iran, gave permission to recruit their students, who were then asked if they were willing to volunteer for the study. Both students and their parents (when students were under age) were fully informed of the aims of the study and gave written informed consent for participation. Note that being in love was not mandatory. For the follow-up study, participants were contacted again via postal mail 8 months after completion of the baseline study. As at baseline, participants were informed about the purpose of the study and assured of the confidentiality of participation and of their responses, and written informed consent was then requested. Participants were also asked to attend school without days off and to follow their normal daily routines during the data collection period, and were instructed again on how to complete a daily sleep log over 7 consecutive days. As was the baseline study, the follow-up study was conducted in accordance with the ethical standards laid down in the Declaration of Helsinki, and was approved by the Ethics Board of the Research Committee of Tehran University for Medical Sciences (Tehran, Iran).

Sample

As described in detail elsewhere,[3] of the 201 participants, 81 (48 female and 33 male adolescents) reported experiencing romantic love for another person at the time of the baseline survey, while 120 (65 female and 55 male adolescents) reported not being in love. Eight months later, 157 of those 201 (78.11%) agreed to participate in the follow-up study. Of these, seven participants (2.5% of 157) had incomplete data sets. Therefore, the sample size for computations ranged from 150 to 157 (74.63 to 78.11% of the baseline sample); 90 were female (57.3% of 150) and 67 male (42.7% of 150; mean age: 18.97± 1.34 years). Participants (n=157) and non-participants (n=44, 21.9% of the baseline sample) did not differ significantly in age (t_{199} = 0.56, p = 0.78) or gender (χ^2 [n=201, degrees of freedom {df} = 1] = 0.36, p = 0.55). Of the 157 participants, 62 (40.3%) reported experiencing romantic love for another person at the time of follow-up, while 92 (59.7%) reported not experiencing romantic love (see also Results section for further details).

Materials

As in previous studies,[3,10,16] all questionnaires were presented in Farsi; to ensure accurate translations, we followed the translation procedure proposed by Brislin.[17] First, the English questionnaires were translated into Farsi by two independent translators. The two versions were compared by a native speaker not involved in the translation: agreements were left unchanged. while disagreements

were discussed until consensus was reached. Next, the Farsi version was back-translated into English by another independent translator; finally, the two English versions were compared and potentially misleading items were corrected.

Current state of love

As in the previous study,[3] to assess the condition of being in love or not, participants answered the following questions: "Are you currently in love with another person?" (answers: yes or no); "How many times have you been in love with another person?" and "If you are currently in love with another person, for how many weeks has the relationship lasted so far?"

Hypomania

As in previous studies,[3,9,16] participants completed the Hypomania Check List 32 (HCL-32[18,19]). Briefly, hypomanic state is assessed by aggregating responses to 32 statements concerning behavior (e.g., "I spend more money/too much money"), mood (e.g., "My mood is significantly better"), and thoughts (e.g., "I think faster") over the previous 4 weeks. Answers were dichotomized as yes or no. The higher the overall score, the more pronounced the hypomanic-like features (Cronbach's alpha: 0.82).

State-trait anxiety

As in the previous study,[3] the State-Trait Anxiety Inventory (STAI[20]) was employed. The STAI is a self-rating questionnaire and asks about current (state) and chronic (trait) anxiety symptoms. Typical items are: "I feel tense" (state anxiety); "I feel relaxed," and "I'm happy" (trait anxiety). Answers are given on four-point rating scales ranging from practically always to practically never (scoring is reversed for some items). Higher mean scores reflect greater state or trait anxiety (Cronbach's alphas: 0.84 and 0.88).

Depression

As in the baseline study,[3] participants completed a depression scale,[21] consisting of 16 items asking about typical depression-related symptoms such as depressed mood ("For the last 4 weeks…" "I feel more depressed in the mornings"), lack of satisfying social interaction ("…criticism does hurt me more than before") and leisure activities ("…hobbies and spare-time activities are not satisfying any more"), hopelessness ("…I often feel abysmal"), and sleep complaints ("…sleep is not restoring any more"). Answers are given on four-point rating scales ranging from 0 (not at all true) to 3 (definitely true). The higher the overall score (lowest score: 0; highest score: 48), the more pronounced the depressive symptoms (Cronbach's alpha: 0.83).

Sleep and sleep-related items

As described in the baseline study,[3] a daily sleep log questionnaire was administered. Participants were asked to fill it in twice a day, in the evening and in the morning, for a week. In the evening, participants answered questions about daytime concentration (on an eight-point scale, 1 = very low concentration; 8 = high concentration) and daily physical activity (in minutes). In the morning, the questionnaire asked about sleep quality (1 = very poor sleep quality; 8 = very good sleep quality) and mood (1 = very bad mood; 8 = very good mood). For concentration, mood, and sleep quality, higher scores are more positive. Additional items collected data on sleep onset latency (in minutes) and total sleep time (in hours). Participants had 6-day school schedules, i.e., they went to high school from Saturday to Thursday. As a result, school-night to off-school-night shifts were not computed, and data for all 7 nights were combined to derive composite variables.

Statistical analysis

Stability vs. change in love status between baseline and follow-up was computed using a chi-square-test, and four distinct subgroups were formed: those being in love at both baseline and follow-up (INLOVESTABLE), those not in love either at baseline or at follow-up (NOTINLOVESTABLE), those in love at baseline but not at follow-up (NOTANYMORELOVE), and those not in love at baseline but in love at follow-up (NEWLYINLOVE). Chi-square tests were performed to calculate odds ratios (OR).

Next, a series of analyses of variance (ANOVAs) for repeated measures was performed with time (baseline vs. follow-up), subgroup, and time-by-subgroup as independent factors, and hypomania, depression, anxiety (state, trait), and sleep-related dimensions as dependent variables. Post-hoc tests were performed following Bonferroni-Holm corrections for p-values. The nominal level of significance was set at alpha $\leqslant 0.05$, and all statistical computations were performed in SPSS® version 23.0 (IBM Corporation, Armonk, NY, USA) for Apple Macintosh®.

Results

Stability and change in love status from baseline to follow-up

Of the 157 participants, 62 were currently in love (40.3%) and 92 (59.7%) were not in love (three missing; n=154) at the time of follow-up. Table 1 shows the number of participants with either stability or change in status from baseline to follow-up (n=150 as at baseline, four cases missing).

The chi-square test revealed a strong association between love status at baseline and 8 months later (χ^2 [n=150, df = 1] = 38.66, p = 0.001): The odds of being in

Table 1 Distribution of participants by love status at baseline and at follow-up: stability and change

	Love status at follow-up		
Love status at baseline	In love	Not in love	n
In love	45	19	64
Not in love	17	69	86
n	62	88	150

love at follow-up were 9.61 times greater for those participants already in love at baseline than for those not in love at baseline (OR = 9.61, 95% confidence interval [95%CI] 4.52-20.44). In addition, the odds of not being in love at follow-up were 3.56 times greater for those participants not in love at baseline than for those in love at baseline (OR = 3.56, 95%CI 2.26-5.60).

Mean duration of relationship was 20.34±4.04 months (range: 12-28 months) for those participants in love both at baseline and at follow-up vs. 4±2.34 months (range: 1-8 months) for those not in love at baseline but in love at follow-up.

Focusing further on stability and change, we found that the love status of 76% of participants remained stable over 8 months (n=114 [76%]), while for 36 participants (24%), love status changed over this period. Specifically, 19 participants in love at baseline were no longer in love at follow-up (12.7%), while 17 participants not in love at baseline were in love at follow-up (11.3%). In other words, of the 150 participants assessed, 69 (46%) reported not being in love, while 81 (54%) reported being in love.

In conclusion, there were four distinct subgroups: those being in love at both baseline and follow-up (INLOVESTABLE), those not in love either at baseline or at follow-up (NOTINLOVESTABLE), those in love at baseline but not at follow-up (NOTANYMORELOVE), and those not in love at baseline but in love at follow-up (NEWLYINLOVE). Based on these subgroups, changes and stability in the dimensions of mood (hypomania, depression), anxiety, and sleep were further explored.

Hypomania, depression, anxiety, and sleep-related dimensions stratified by subgroup

A series of ANOVAs for repeated measures was performed with time (baseline vs. follow-up), subgroup, and time-by-subgroup interaction as independent factors, and hypomania, depression, anxiety (state and trait), and sleep-related dimensions as dependent dimensions.

Table 2 reports all descriptive statistical indices, and Table 3 reports all inferential statistical indices (which, accordingly, are not repeated in the text). Table 4 summarizes the pattern of results.

Hypomania scores changed significantly over time; group differences were significant, as was the time-by-subgroup interaction. Post-hoc tests after Bonferroni-Holm correction for p-values revealed that hypomania scores decreased significantly in the INLOVESTABLE and NOTANYMORELOVE groups, but increased in the NEWLYINLOVE group; there were no significant changes in the NOTINLOVESTABLE group.

Trait anxiety scores did not differ significantly over time or between subgroups, nor was the time-by-subgroup interaction significant.

State anxiety scores differed significantly over time and between subgroups; the time-by-subgroup interaction was also significant. Post-hoc analyses after Bonferroni-Holm correction for p-values revealed that state anxiety scores decreased in the NOTANYMORELOVE group and increased in the NEWLYINLOVE group; no significant changes were observed in the NOTINLOVESTABLE, and INLOVESTABLE groups.

Depression scores did not differ significantly over time or between groups; the significant time-by-subgroup interaction reflected the fact that depression scores decreased in the NEWLYINLOVE group.

There were no significant effects for any of the sleep-related items (concentration, physical activity, mood during the day mood; sleep quality, sleep duration, sleep onset time).

Discussion

The key findings of the present study were that, among a sample of Iranian adolescents, four distinct patterns could be identified with respect to romantic love status over an 8-month interval; these patterns were related to specific mood and anxiety state, but not to

Table 2 Overview of descriptive statistics for hypomania (overall score; bright side; dark side), anxiety (trait; state), depression, and sleep-related variables, stratified by the four states of love (in love both at baseline and follow-up; not in love both at baseline and follow-up; not in love at baseline, but in love at follow-up; in love at baseline, but not in love at follow-up)

	INLOVESTABLE (n=45)		NOTINLOVESTABLE (n=69)		NEWLYINLOVE (n=17)		NOTANYMORELOVE (n=19)	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Hypomania								
Total score	20.91 (4.20)	16.21 (2.81)	18.34 (4.52)	19.01 (4.88)	17.47 (2.99)	24.20 (1.15)	20.36 (2.30)	16.47 (4.26)
Anxiety								
Trait	47.64 (9.36)	50.11 (8.82)	47.77 (8.38)	56.11 (9.54)	44.53 (9.77)	45.77 (10.01)	46.68 (7.86)	47.42 (8.68)
State	49.33 (12.71)	47.80 (10.08)	44.52 (10.52)	43.65 (12.07)	43.53 (10.08)	48.26 (11.98)	47.16 (11.50)	42.74 (9.64)
Depression	20.64 (8.07)	20.20 (7.94)	21.93 (6.55)	19.53 (7.47)	22.24 (7.22)	16.23 (9.45)	20.26 (9.45)	19.37 (8.06)
Sleep-related variables								
Concentration	4.94 (1.20)	5.01 (1.34)	5.44 (1.28)	5.21 (1.21)	5.76 (1.54)	5.23 (1.89)	5.45 (1.19)	4.98 (1.43)
Physical activity	4.48 (1.90)	4.23 (1.98)	4.26 (1.95)	4.34 (1.85)	3.94 (1.62)	4.21 (1.99)	3.77 (1.59	4.01 (2.34)
Mood	5.23 (2.34)	5.00 (2.78)	4.98 (2.01)	5.02 (1.34)	5.32 (2.54)	5.02 (2.56)	4.88 (3.21)	5.14 (2.78)
Sleep quality	4.76 (1.43)	5.01 (1.76)	5.21 (1.54)	5.11 (1.39)	5.12 (1.78)	5.01 (1.34)	5.26 (1.89)	5.20 (1.56)
Sleep duration (h)	7.45 (1.12)	7.40 (1.21)	7.07 (1.12)	7.19 (1.54)	6.79 (1.00)	7.00 (1.45)	6.80 (1.15)	7.04 (1.87)
Sleep onset latency (min)	15.45 (10.50)	18.78 (11.23)	20.21 (15.21)	18.56 (14.01)	18.56 (9.68)	17.45 (10.43)	21.02 (13.45)	18.78 (14.34)

Data presented as mean (standard deviation).
INLOVESTABLE = participants in love both at baseline and at follow-up; NEWLYINLOVE = participants not in love at baseline, but in love at follow-up; NOTANYMORELOVE = participants in love at baseline, but no longer at follow-up; NOTINLOVESTABLE = participants not in love either at baseline or at follow-up.

Table 3 Overview of inferential statistics for hypomania (overall score; bright side; dark side), anxiety (trait; state), depression, and sleep-related variables, stratified by the four states of love (in love both at baseline and follow-up; not in love both at baseline and follow-up; not in love at baseline, but in love at follow-up; in love at baseline, but not in love at follow-up)

	Time	Group	Time by group interaction	Post-hoc analyses
	F	F	F	
Hypomania				
Total score	12.41*	3.98†	3.01‡	Decrease from baseline to follow-up: INLOVESTABLE, NOTANYMORELOVE; increase from baseline to follow-up: NEWLYINLOVE
Anxiety				
Trait	0.86	1.07	2.11	
State	1.17	3.12‡	2.98‡	Decrease from baseline to follow-up: NOTANYMORELOVE; increase from baseline to follow-up: NEWLYINLOVE
Depression	2.01	1.37	2.89‡	Decrease from baseline to follow-up: NEWLYINLOVE
Sleep-related variables				
Concentration	0.67	0.89	0.99	
Physical activity	1.00	0.59	0.79	
Mood	1.02	0.45	0.89	
Sleep quality	0.89	1.01	0.56	
Total sleep time	0.56	0.98	0.66	
Sleep onset latency	0.89	0.59	0.37	

Degrees of freedom: factors time and group: (1, 146); time by group-interaction: (3, 146).
INLOVESTABLE = participants in love both at baseline and at follow-up; NEWLYINLOVE = participants not in love at baseline, but at follow-up; NOTANYMORELOVE = participants in love at baseline, but no longer at follow-up; NOTINLOVESTABLE = participants not in love either at baseline or at follow-up.
*$p < 0.001$; †$p < 0.01$; ‡$p < 0.05$.

Table 4 Graphical and exemplary description of stability and change in hypomania, anxiety, depression, and sleep-related variables, stratified by subgroup

	Hypomania	Anxiety		Depression	Sleep-related variables
		Trait	State		
INLOVESTABLE	↘	→	→	→	→
NOTINLOVESTABLE	→	→	→	→	→
NEWLYINLOVE	↗	→	↗	↘	→
NOTANYMORELOVE	↘	→	↘	→	→

INLOVESTABLE = participants in love both at baseline and at follow-up;
NEWLYINLOVE = participants not in love at baseline, but at follow-up; NOTANYMORELOVE = participants in love at baseline, but no longer at follow-up;
NOTINLOVESTABLE = participants not in love either at baseline or at follow-up.
↘ = decrease from baseline to follow-up; ↗ = increase from baseline to follow-up; → = no change from baseline to follow-up.

sleep-related variables. Specifically, participants who reported they were in love had higher scores for state anxiety. In those newly in love, hypomania and anxiety scores had risen, while depression scores had reduced.

Three research questions were formulated, and each of these will now be considered in turn.

The first research question concerned stability vs. change in romantic love status over time; we found that, over a period of 8 months, the majority (76%) experienced no change in their love status, remaining either in love or not in love. In contrast, 24% experienced a change in status, with 12.7% reporting no longer being love and 11.3% reporting being newly in love. In other words, of the 150 participants assessed, more than half (n=81; 54%) reported experiencing romantic love.

Our second research question concerned the extent to which either stability or change in romantic love status were associated with mood states such as hypomania, depression, and anxiety. A specific pattern did emerge. First, for those stably in love over the 8-month period (INLOVESTABLE; mean duration of relationship: 20.3 months), hypomania scores decreased. This observation is in line with findings[11,13,14] that the early stage of romantic love does fade among adolescents,[22] young adults,[13] and adults,[12,14] and we interpret the decline in hypomania scores among those adolescents stably in love as indicating a decrease in romantic love intensity. This, in turn, may reflect the transition from early-stage intense romantic love to a more companionate love.

In contrast, those participants newly in love (NEWLYINLOVE) had elevated hypomania scores. This pattern of

results also mirrors previous findings.[3,9-11,16] Thus, the present results replicate the extant literature, supporting the view that (early-stage) romantic love is an intense period of life marked by feelings of elation, joy, fun, and excitement. Additionally, in our view, the lower depression scores further reinforce the pattern of results described above.

Next, we believe the significantly higher state anxiety scores of both groups of adolescents in love demand particular attention. First, the present pattern of results replicates previous work.[3,16] However, the data available to us do not provide a deeper understanding of underlying psychological mechanisms. Third, and as extensively discussed in the previous paper,[3] it is conceivable that states of physiological arousal were erroneously interpreted by respondents as anxiety (see Schachter and Singer's seminal work on the elaboration of emotions[23]). Furthermore, Marazziti et al.[24] have argued that anxiety, obsessive-compulsive disorders, and states of intense romantic love share a common alteration of the platelet serotonin transporter. We also note that obsessive-compulsive disorder was classified as an anxiety disorder in the DSM-IV. In this regard, Hatfield & Sprecher[25] emphasized the obsessive dimension of romantic love. Similarly, Leckman & Mayes[26] and Fisher et al.[27,28] stressed both the behavioral and neurophysiological similarities between intense early-state romantic love and traits of obsessive-compulsive disorders. Likewise, to assess the degree of romantic love, Marazziti et al.[13] suggested modifying items from the Yale-Brown Obsessive-Compulsive Scale. Unlike in the DSM-IV, in the DSM-V, obsessive-compulsive disorders are no longer listed as an anxiety disorder, taking into account that obsessive-compulsive disorders and anxiety disorders do differ with respect to neuropsychological and neurobiological dimensions. On the other hand, given that the sociocultural environment in Iran does not support or encourage adolescent romantic love, it is possible that adolescents currently in love in our sample really did experience anxiety, and at least two considerations favor this view. First, as already observed in the previous study,[3] the state anxiety of participants in love was disconnected from depressive symptoms, suggesting that state anxiety was a discrete emotional response. Second, findings from other studies have shown an association between elevated anxiety in adolescents and parental disapproval of their involvement in romantic relation;ships.[29] Furthermore, as recently reported,[8] a majority of Iranian female university students surveyed were in favor of premarital romantic relationships but against premarital sexual activity. However, given that romantic relationships almost by definition also involve sexual experiences,[7] it is possible that the observed anxiety scores reflect this conflict between striving for romantic experiences and avoiding sexual issues. Finally, in line with these considerations, anxiety scores significantly declined in those adolescents who were in a romantic relationship at baseline but not at follow-up, suggesting that the factors triggering and maintaining anxiety had disappeared.

Our third research question concerned the extent to which stability or change in romantic love status is related to sleep patterns and sleep-related issues. We found no evidence of a connection. This is at odds with studies reporting an association between romantic love status and sleep variables,[11,16] but in line with other research findings.[3] Again, the available data shed no light on underlying psychological mechanisms, though it is conceivable that the structure of family functioning was such as to constrain the sleep patterns of these adolescents, as parental control over their adolescent children's leisure-time activities is greater in Iran than in Western countries. In this aspect, Bajoghli et al.[30] were able to show that family functioning, sleep, and psychological functioning among family members were highly associated, and that such associations could only emerge among tightly related members of a family.

Despite our new findings, several considerations caution against overgeneralization. First, we relied entirely on self-report data, and experts' ratings would have helped to correct for possible self-rating biases. Second, the data available could not clarify why, for instance, those adolescents who were in love also experienced state anxiety, or why romantic love status was unrelated to sleep or sleep-related issues. Third, sexuality and sexual activity were not assessed, though sexual experiences represent an important step in psychosocial and psychosexual development.[7] Fourth, a major limitation of the follow-up study was that if participants were not asked whether they were in love (or no longer in love) with the same person or a different partner. Theoretically, one might imagine that a person with a proneness to hypomania could have been in love with one person at baseline and again in love, but with another person, at follow-up; in such a case, being in love would rather mirror an underlying hypomania, while hypomania would not reflect a state of love. Future studies should therefore assess more thoroughly whether a change in partners occurred over time. Finally, the present pattern of results might have emerged due to further latent, but unassessed dimensions, which may have influenced two or more dimensions in the same or opposite direction. Future research might therefore use objective measurements to assess, e.g., sleep patterns or psycho-physiological markers, such as the stress hormone cortisol.

In conclusion, among a sample of Iranian adolescents, over a period of 8 months, there was both stability and change in romantic love status. Experiencing romantic love was associated with increased hypomania scores in the short term and with anxiety scores both in the short and in the longer term. Sleep and sleep-related dimensions were unrelated to romantic love status.

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Disclosure

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