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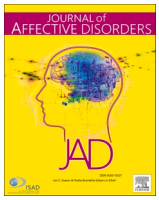

Research paper

Corrigendum to "Subtypes of suicidal ideation among university students - An ecological momentary assessment study" [J. Affect. Disord. 391 (2025) 119865]

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The authors regret to request a corrigendum to correct an error in the calculation of the stress sensitivity variable, which affects the second of the four objectives of the paper. As described in the paper, this variable was calculated through a multilevel regression model where negative affect (NA) at time point t_i was the outcome, predicted by lagged stress (at t_{i-1}) with a random slope, controlling for lagged NA (at t_{i-1}). For each individual, the measure of stress sensitivity should be calculated as the sum of the fixed effect coefficient for lagged stress and the individual's random slope. However, in the published analysis, the variable was incorrectly calculated adding the individual's random slope for lagged NA instead of lagged stress to the fixed effect. We now no longer observe a significant positive relationship between lagged stress sensitivity and the identified suicidal ideation subtypes.

We became aware of the error while conducting further analyses using the same sample data, including the (erroneously) calculated stress sensitivity variable. In this process, we thoroughly revisited the theoretical and methodological basis of our stress sensitivity measure. This led us to conclude that the lagged stress sensitivity variable is not optimal, as it captures the association between stress and NA *several hours later*, leaving time for regulation of the initial emotional response. We consider it appropriate to also conceptualize affective reactivity to stress as the *contemporaneous* association between stress and NA, estimated via a multilevel regression in which momentary NA at time point t_i is the outcome and momentary stress (also at t_{i1}) is the predictor, still controlling for lagged NA (at t_{i-1}), in line with existing work (Lataster et al., 2013; Rauschenberg et al., 2017; van Nierop et al., 2018). Following the discovery of the error, we now include both the corrected *lagged* measure together with the *momentary* stress sensitivity in this corrigendum.

In addition, after thoroughly reviewing the article and original codes of the analyses, we found few minor errors in secondary results reported in Table 2, which have no impact on the study's conclusions and are not cited outside the table.

Abstract

1. Minor edits to the second sentence of the Results subsection: "Momentary stress sensitivity was highest in S2 and S3, in S3 higher stress sensitivity was associated with lower overall and day-to-day variability."

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Methods

1. Third paragraph within the *Measures* subsection, clarifying the calculation of the momentary and lagged stress sensitivity variables (SSmom and SSlag): "We used momentary and lagged stress and NA to calculate momentary and lagged stress sensitivity (SSmom and SSlag, respectively), as previously conceptualized in the literature (Rauschenberg et al. 2022; van Nierop et al. 2018; Wichers et al. 2009), using two separate multilevel regression models. SSmom was calculated with NA as the outcome at time point t_i regressed on stress (at t_1), and controlling for lagged NA (at t_{i-1}), while SSlag was calculated with NA at time point t_i, using lagged stress (at t_{i-1}) as a predictor, and controlling for lagged NA (at t_{i-1}). For each individual, the measure of stress sensitivity (momentary or lagged) was derived from the predicted slope for stress in SSmom or SSlag model, calculated as the sum of the corresponding fixed-effect stress coefficient and the individual-specific random slope (Lataster et al. 2010). This was done using the *lme* function from R's *nlme* package. Stress sensitivity was standardized to ease interpretation of results (see Supplementary Figure 2)."
2. Minor edits to the 3rd paragraph *Statistical Analysis* subsection to add the distinction between SSmom and SSlag. "After assigning each individual to their most likely subtype based on class membership probabilities, we assessed the relationship between SSmom and SSlag and SI subtypes through a multinomial logistic regression with SSmom and SSlag as a predictor in separate models, adjusting for sex, age, field of study and EMA compliance. We then evaluated the association between SSmom and SSlag and each of the two SI variability indicators (i.e., SD and RMSSD) *within* each of the identified subtypes using linear regression models that included the interaction between SI subtype and SSmom and SSlag as predictors of each SI variability indicator, namely SD and RMSSD (Supplementary Figure 2)."

Results

1. Edits to the Stress Sensitivity and SI Subtypes subsection to accommodate inclusion of SSmom and correction of SSlag. "Momentary stress sensitivity (SSmom) was significantly associated with SI subtype. Concretely, while students in the control subsample and S1 presented low mean standardized values of stress sensitivity ($SSmom_{control} = -0.16$; $SSmom_{S1} = -0.09$; $aOR_{S1} = 1.1$, 95% CI = 0.9–1.3), students in S2 and S3 had higher positive standardized values of SSmom ($SSmom_{S2} = 0.36$, $aOR_{s2VsControl} = 1.7$, 95% CI = 1.4–2.2; $SSmom_{S3} = 0.65$, $aOR_{s3VsControl} = 2.3$, 95% CI = 1.7–3.1). Lagged stress sensitivity (SSlag), however, was very similar across subtypes, without significant differences.

   We found a positive linear relationship between SSmom and both SI variability indicators (SD and RMSSD; see Fig. 2), while none was found with SSlag. When examining this relationship by SI subtype, we found that SSmom was significantly associated with SI variability only in S3. In this subtype, those with greater SSmom presented slightly lower variability, both overall and between consecutive daily reports of SI ($\beta = -0.05$, 95% CI = −0.08–0.01; and$\beta = -0.08$, 95% CI = −0.14- -0.01, respectively). No significant associations were found between SSlag and SI variability indicators. See Fig. 2 and Supplementary Table 4."

2. Table 1: addition of SSmom and correction of SSlag results (last two rows of the table).

	Overall	Control	Subtype 1	Subtype 2	Subtype 3
	n (%) Mean (SD)	n (%) Mean (SD)	n (%) Mean (SD)	n (%) Mean (SD)	n (%) Mean (SD)
Sociodemographic					
Sex					
Male	156 (20.6%)	85 (21.0%)	40 (22.9%)	23 (19.2%)	8 (14.0%)
Female	600 (79.4%)	319 (79.0%)	135 (77.1%)	97 (80.8%)	49 (86.0%)
Age	20.7 (2.29)	20.8 (2.50)	20.3 (1.77)	20.9 (2.38)	20.5 (1.76)
Field of Study					
Arts and Humanities	85 (11.2%)	39 (9.7%)	26 (14.9%)	16 (13.3%)	4 (7.0%)
Sciences	91 (12.0%)	44 (10.9%)	18 (10.3%)	19 (15.8%)	10 (17.5%)
Health Sciences	215 (28.4%)	115 (28.5%)	57 (32.6%)	29 (24.2%)	14 (24.6%)
Engineering and Architecture	99 (13.1%)	51 (12.6%)	28 (16.0%)	15 (12.5%)	5 (8.8%)
Social and Legal Sciences	266 (35.2%)	155 (38.4%)	46 (26.3%)	41 (34.2%)	24 (42.1%)
EMA Compliance	78.7 (24.7)	75.7 (28.0)	84.1 (17.0)	80.5 (22.6)	79.5 (21.3)
Thirty-day mental disorders					
Depression (yes/no)	195 (25.8%)	70 (17.3%)	45 (25.7%)	48 (40.0%)	32 (56.1%)
Depression Severity[a]	0 (1.00)	−0.31 (0.93)	0.05 (0.92)	0.57 (0.84)	0.83 (0.98)
Anxiety (yes/no)	106 (14.0%)	34 (8.4%)	25 (14.3%)	29 (24.2%)	18 (31.6%)
Anxiety Severity[a]	0 (1.00)	−0.25 (1.01)	0.04 (0.88)	0.50 (0.88)	0.58 (0.87)
AUDIT score[a]	0 (1.00)	−0.09 (0.93)	0.22 (1.13)	−0.06 (1.00)	0.11 (0.96)
Frequency of SI[a]	0 (1.00)	−0.37 (0.41)	−0.04 (0.83)	0.65 (1.28)	1.37 (1.69)
Lifetime and 12-month self-injurious thoughts and behaviors					
Number of NSSI (LT)	1.05 (2.00)	0.52 (1.40)	1.09 (1.92)	1.89 (2.45)	2.91 (2.96)
12-month NSSI (yes/no)	113 (14.9%)	16 (4.0%)	33 (18.9%)	40 (33.3%)	24 (42.1%)
Lifetime STB					
No SI	380 (50.3%)	275 (68.1%)	70 (40.0%)	25 (20.8%)	10 (17.5%)
Suicidal Idation	136 (18.0%)	65 (16.1%)	37 (21.1%)	26 (21.7%)	8 (14.0%)
Plan	178 (23.5%)	53 (13.1%)	54 (30.9%)	51 (42.5%)	20 (35.1%)
Attempt	62 (8.2%)	11 (2.7%)	14 (8.0%)	18 (15.0%)	19 (33.3%)
SI Age of Onset	15.2 (3.02)	15.8 (2.87)	15.3 (2.93)	15.1 (3.04)	13.8 (3.16)
Number of years with SI (LT)	1.64 (2.48)	0.72 (1.47)	1.74 (2.17)	3.34 (3.05)	4.26 (3.71)
Number of suicide attempts (LT)	0.229 (1.47)	0.06 (0.39)	0.13 (0.48)	0.28 (0.85)	1.67 (4.84)
Worst week with SI (LT)					
Number of days with SI	2.11 (2.65)	1.18 (2.13)	2.46 (2.69)	3.56 (2.66)	4.53 (2.73)
SI duration >1 h or more (yes/no)	178 (23.5%)	40 (9.9%)	49 (28.0%)	56 (46.7%)	33 (57.9%)
Low perceived control over SI (yes/no)	187 (24.7%)	47 (11.6%)	51 (29.1%)	54 (45.0%)	35 (61.4%)
Having tempted fate (LT) (yes/no)	65 (8.6%)	14 (3.5%)	11 (6.3%)	19 (15.8%)	21 (36.8%)

(*continued on next page*)

(*continued*)

	Overall	Control	Subtype 1	Subtype 2	Subtype 3
	n (%) Mean (SD)	n (%) Mean (SD)	n (%) Mean (SD)	n (%) Mean (SD)	n (%) Mean (SD)
12-month STB					
No SI	523 (69.2%)	352 (87.1%)	111 (63.4%)	43 (35.8%)	17 (29.8%)
Suicidal Ideation	123 (16.3%)	36 (8.9%)	41 (23.4%)	34 (28.3%)	12 (21.1%)
Plan	103 (13.6%)	16 (4.0%)	21 (12.0%)	42 (35.0%)	24 (42.1%)
Attempt	7 (0.9%)	0 (0%)	2 (1.1%)	1 (0.8%)	4 (7.0%)
Non-zero probability of acting on SI (yes/no)	93 (12.3%)	15 (3.7%)	15 (8.6%)	36 (30.0%)	27 (47.4%)
Stress Sensitivity (momentary)[a]	*0.00 (1.00)*	*−0.16 (0.91)*	*−0.09 (1.01)*	*0.36 (0.96)*	*0.65 (1.25)*
Stress Sensitivity (lagged)[a]	*0.00 (1.00)*	*−0.09 (0.83)*	*0.10 (1.02)*	*0.12 (1.09)*	*0.08 (1.62)*
Total	756 (100%)	404 (53.4%)	175 (23.1%)	120 (15.9%)	57 (7.5%)

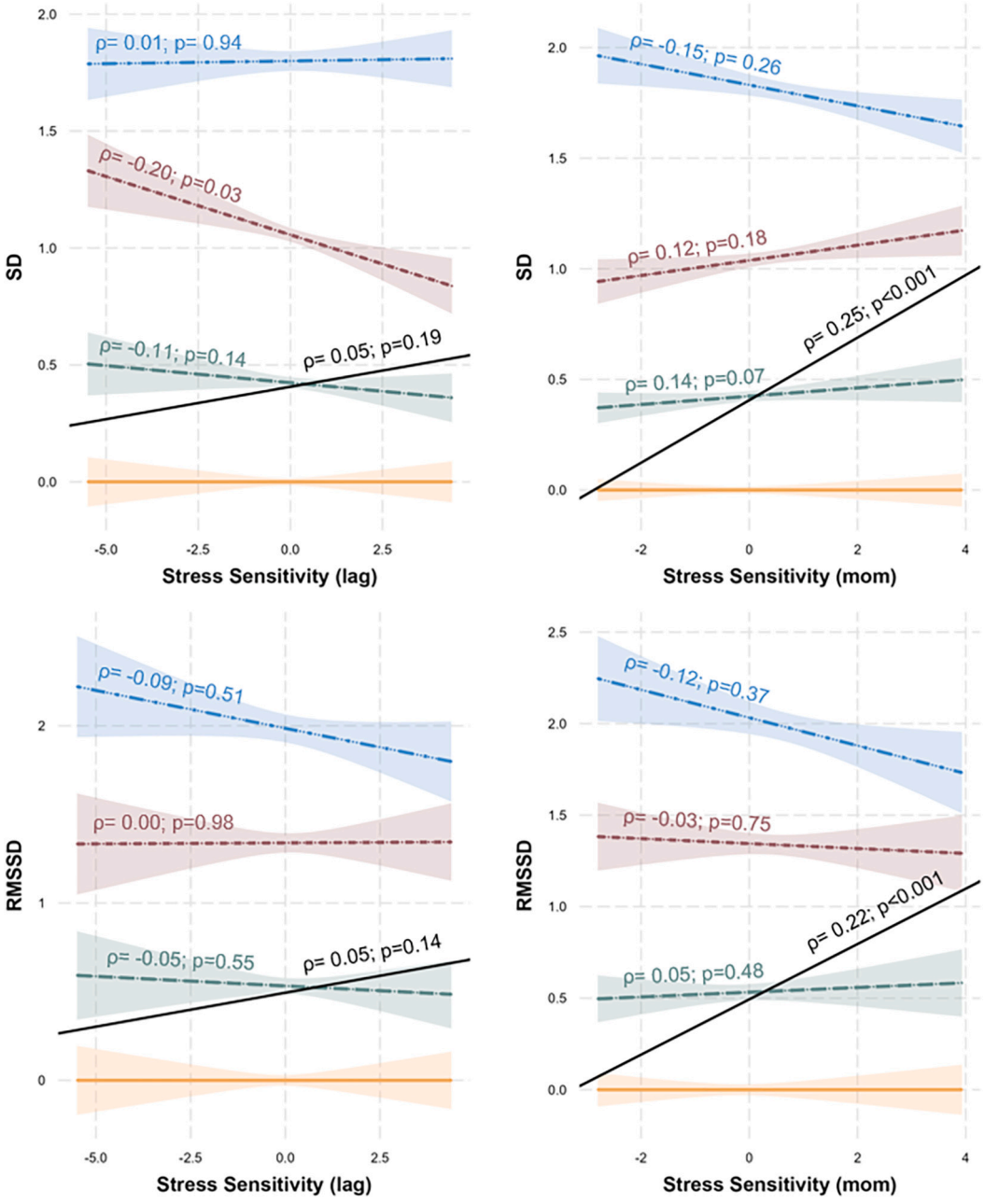
3. Table 2: addition of SSmom and correction of SSlag results (last two rows of the table), and corrections of the OR of 4 variables (number of NSSI in lifetime in row 8, 12-month NSSI in row 9, Number of years with SI in lifetime in row 16, and number of suicide attempts in lifetime in row 17) when subtypes 1 and 2 are the reference categories.

	SUBTYPE 1	SUBTYPE 2		SUBTYPE 3	
	OR [95% CI][b] *ref: control*	OR [95% CI][b] *ref: control*	OR [95% CI][b] *ref: S1*	OR [95% CI][b] *ref: control*	OR [95% CI][b] *ref: S2*
Thirty-day mental disorders					
Depression (yes/no)	1.9 [1.2–2.9]	3.4 [2.1–5.3]	1.8 [1.1–3.0]	6.4 [3.5–11.5]	1.9 [1.0–3.6]
Anxiety (yes/no)	2.1 [1.2–3.6]	3.7 [2.1–6.4]	1.8 [1.0–3.2]	5.2 [2.6–10.1]	1.4 [0.7–2.9]
Anxiety Severity[a]	1.5 [1.2–1.8]	2.4 [1.9–3.1]	1.6 [1.3–2.2]	2.7 [1.9–3.7]	1.1 [0.8–1.6]
AUDIT score[a]	1.4 [1.2–1.7]	1.1 [0.9–1.3]	0.7 [0.6–0.9]	1.3 [0.96–1.6]	1.2 [0.9–1.6]
Frequency of SI[a]	2.7 [1.9–3.8]	4.7 [3.4–6.5]	1.7 [1.4–2.2]	6.9 [4.8–9.9]	1.5 [1.2–1.8]
Lifetime and 12-month self-injurious thoughts and behaviors					
Number of NSSI (LT)	1.3 [1.1–1.4]	1.5 [1.3–1.6]	1.2 [1.0–1.3]	1.7 [1.5–1.9]	1.2 [1.0–1.3]
12-month NSSI (yes/no)	5.3 [2.8–10]	11.7 [6.2–22]	2.2 [1.3–3.8]	17.8 [8.5–37]	1.5 [0.8–2.9]
Lifetime STB					
No SI	ref	ref	ref	ref	ref
Suicidal Idation	1.4 [0.9–2.3]	1.5 [0.9–2.5]	1.0 [0.6–1.8]	0.8 [0.4–1.9]	0.6 [0.2–1.4]
Plan	3.1 [2.0–4.8]	4.9 [3.1–7.8]	1.6 [1.0–2.6]	3.7 [2.0–7.0]	0.8 [0.4–1.5]
Attempt	3.6 [1.6–8.3]	6.5 [2.9–14.5]	1.8 [0.9–3.9]	21.6 [9.2–50.3]	3.3 [1.5–7.2]
SI Age of Onset	1.0 [0.9–1.0]	0.9 [0.8–1.0]	1.0 [0.9–1.1]	0.8 [0.7–0.9]	0.9 [0.8–1.0]
Number of years with SI (LT)	1.5 [1.3–1.6]	1.8 [1.6–2.0]	1.2 [1.1–1.4]	2.0 [1.8–2.3]	1.1 [1.0–1.3]
Number of suicide attempts (LT)	1.6 [1.0–2.5]	2.1 [1.4–3.2]	1.3 [0.9–1.9]	3.3 [2.2–5]	1.6 [1.2–2.1]
Worst week with SI (LT)					
Number of days with SI	1.3 [1.2–1.4]	1.5 [1.3–1.6]	1.1 [1.0–1.2]	1.7 [1.5–1.9]	1.2 [1.0–1.3]
SI duration >1 h or more (yes/no)	4.1 [2.5–6.7]	8.6 [5.2–14.2]	2.1 [1.3–3.4]	15 [7.9–28.5]	1.7 [0.9–3.4]
Low perceived control over SI (yes/no)	3.6 [2.2–5.7]	6.6 [4.1–10.7]	1.8 [1.1–3.0]	13.6 [7.3–25.5]	2.1 [1.1–4.0]
Having tempted fate (LT) (yes/no)	2.3 [1.0–5.2]	5.7 [2.7–11.9]	2.5 [1.1–5.6]	19.8 [9–43.4]	3.5 [1.6–7.4]
12-month STB					
No SI	ref	ref	ref	ref	ref
Suicidal Idation	3.3 [2.0–5.5]	4.2 [2.4–7.1]	1.2 [0.7–2.1]	2.8 [1.4–5.9]	0.7 [0.3–1.5]
Plan	3.6 [1.8–7.2]	13.5 [7.2–25.5]	3.7 [2.1–6.8]	20.1 [9.6–42.3]	1.5 [0.8–2.9]
Attempt	*/	*/	0.8 [0.1–8.9]	*/	9.6 [1.0–89.9]
Stress Sensitivity (momentary)[a]	1.1 [0.9–1.3]	1.7 [1.4–2.2]	1.6 [1.2–2.0]	2.3 [1.7–3.1]	1.3 [1.0–1.8]
Stress Sensitivity (lagged)[a]	1.2 [1.0–1.5]	1.2 [2.3–3.7]	1.0 [0.8–1.3]	1.2 [0.9–1.6]	1.0 [0.7–1.3]

4. Supplementary Table 4: addition of SSmom and correction of SSlag results.

	Stress sensitivity (lagged)		Stress sensitivity (momentary)	
	SD *EMM [95% CI]*	RMSSD *EMM [95% CI]*	SD *EMM [95% CI]*	RMSSD *EMM [95% CI]*
Control	0 [−0.04–0.04]	0 [−0.02–0.02]	0 [−0.03–0.03]	0 [−0.02–0.02]
Subtype 1	−0.01 [−0.05–0.03]	−0.01 [−0.04–0.01]	0.01 [−0.03–0.06]	0.02 [−0.01–0.04]
Subtype 2	0 [−0.05–0.05]	−0.05 [−0.08 – −0.02]	−0.01 [−0.07–0.04]	0.03 [0–0.06]
Subtype 3	−0.04 [−0.09–0.01]	0 [−0.02–0.03]	−0.08 [−0.14 – −0.01]	−0.05 [−0.08 – −0.01]

5. Fig. 2: addition of SSmom and correction of SSlag results.



Discussion

1. Minor edits to the first paragraph: “Importantly, these subtypes also presented higher rates of suicidal plans and attempts at 12-month follow-up. In students with more severe SI, higher momentary stress sensitivity was associated to lower variability, both overall and day-to-day fluctuations.”

2. Addition of a section at the end of the third paragraph to debrief the differences observed in the results between SSmom and SSlag: “Our study advances this growing body of evidence by identifying distinct SI subtypes and examining their relationship with stress sensitivity using both a momentary and a lagged measure of stress sensitivity. We found that momentary stress sensitivity increased significantly in each subtype but did not observe this relationship for lagged stress sensitivity. This may reflect that the lagged measure conflates emotion generation and regulation processes (McRae et al., 2012), as the time lag allows for regulation of the emotions that may have emerged associated to stress. Thus, momentary stress sensitivity may provide a clearer encapsulation of a person's affective reactivity to stress.”

3. Edits to the second sentence of the fourth paragraph: “Instead, we found that students with more severe SI (S3) and higher momentary stress sensitivity displayed more persistent suicidal thinking, with lower overall and day-to-day variability”.

4. Minor edits to the second sentence of the Conclusions subsection: “Stress sensitivity may contribute to more inflexible suicidal thinking”.

Bibliography

1. Addition of one reference: “McRae, K., Misra, S., Prasad, A. K., Pereira, S. C., & Gross, J. J. (2012). Bottom-up and top-down emotion generation: implications for emotion regulation. Social cognitive and affective neuroscience, 7(3), 253-262.”

The authors would like to apologise for any inconvenience caused.