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## A longitudinal investigation of relational turbulence during the transition to college

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### ABSTRACT

As emerging adults transition to college, they must adapt to new circumstances, both academic and personal. For partners involved in a romantic relationship prior to attending college, this transition has important relational implications, including potential fluctuations in relational uncertainty and interdependence. Guided by relational turbulence theory (RTT), we conducted the present study to model growth trajectories of first-semester students' relationship parameters and experiences of relational turbulence during their transition to college (i.e., during the first eight weeks). Results of latent growth curve modeling revealed that students experienced higher levels of relational uncertainty, interference from a partner, and facilitation from a partner at the very beginning of their first semester in college, but each of these relationship parameters decreased over the first two months of the semester. Additionally, relational turbulence remained stable and did not change throughout the semester but correlated with contemporaneous relationship parameters as RTT predicts.

### KEYWORDS

Relational turbulence; uncertainty; interdependence; latent growth curve model

The relational turbulence model (RTM) and relational turbulence theory (RTT) identify periods of transition as particularly impactful in close relationships (Solomon & Knobloch, 2001, 2004; Solomon, Knobloch, Theiss, & McLaren, 2016). Transitions are periods in which individuals experience changes in their roles, identities, and circumstances, and because they can influence interdependence processes, they are viewed as “pivotal junctures that bring the potential for relationship reorganization, growth, or decay” (Solomon et al., 2016, p. 510). Transitions include developmental instances such as the transition from casual to serious involvement (Solomon & Knobloch, 2001, 2004), but also events external to relationships such as emerging adults' transition to college (Scheinfeld & Worley, 2018). The transition to college can be rife with both academic and relational challenges for first-semester college students (Gerdes & Mallinckrodt, 1994). For instance,

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during the Fall 2020 semester (the period of data collection for this study), approximately one-third of undergraduate students reported problems or challenges with their intimate relationships—almost two-thirds of students experiencing these difficulties also reported that these issues caused moderate to high levels of stress (American College Health Association, 2020). RTT scholars argue that such transitions should give rise to relational uncertainty and alter interdependence, resulting in a turbulent relational period for individuals as they become acclimated to their new environments (Solomon et al., 2016; Solomon, Theiss, Knobloch, & McLaren, 2019).

*Relational uncertainty* describes individuals' confidence in a relationship and is comprised of self uncertainty (i.e., feeling unsure of how important the relationship is to the individual), partner uncertainty (i.e., feeling insecure about how important the relationship is to the partner), and relationship uncertainty (i.e., experiencing doubt that the relationship will last; Knobloch & Solomon, 1999). *Interdependence* describes the degree of influence a partner has on an individual and entails both beneficial and disruptive patterns (Solomon & Knobloch, 2004). Partner *interference* describes the extent to which a partner hinders the achievement of daily goals and activities, whereas partner *facilitation* describes the extent to which a partner helps to achieve these goals and activities. Greater relational uncertainty and partner interference, along with less partner facilitation, produce experiences of relational turbulence within college dating relationships (Goodboy, Bolkan, Sharabi, Myers, & Baker, 2020; Knobloch & Theiss, 2010; McLaren, Solomon, & Priem, 2011; Solomon & Knobloch, 2004). In addition to perceiving the relationship as chaotic, college students experiencing more relational uncertainty and partner interference and less partner facilitation also report less relational satisfaction and emotional intimacy with more negative affect and relational distancing (Brisini & Solomon, 2019; Knobloch & Theiss, 2010).

While two decades of RTM/RTT scholarship consistently demonstrate theorized links between relational uncertainty and interdependence with experiences of relational turbulence (Goodboy et al., 2020), RTM/RTT theorists have identified a pressing need to examine the role of time in turbulence emergence and how turbulence might persist following a challenging transition (Solomon et al., 2019). Longitudinal investigations have enriched RTM/RTT scholarship and theorizing by identifying nonlinear associations (e.g., Solomon & Theiss, 2008) and highlighting unique within-person variations of relational turbulence processes (e.g., Knobloch & Theiss, 2010) which are insightful for studying unique periods of transition (e.g., COVID-19 pandemic; Jones & Theiss, 2021). RTM/RTT would suggest that the transition to college might increase relational uncertainty and partner interference for adjusting college students navigating their educational and personal lives, but less is known about how the nature of these relationship parameters and experiences of turbulence might fluctuate temporally

throughout the college transition. Therefore, we conducted the present study to investigate how RTT's relationship parameters and experiences of turbulence might increase, decrease, or remain relatively stable for first-semester students transitioning to college. The following hypothesis and research question guided our study:

H: Relational uncertainty (self, partner, and relationship uncertainty) and partner interference will be positively correlated with relational turbulence contemporaneously at each data collection period during students' transition to college, whereas partner facilitation will be negatively correlated with relational turbulence.

RQ: Does relational uncertainty (self, partner, and relationship uncertainty), interdependence (interference, facilitation), and relational turbulence change throughout students' transitions to college?

## Method

### *Participants and procedure*

Undergraduate students ( $N = 77$ ) who were currently involved in a romantic relationship before they entered college were recruited from communication studies courses at a large university using face-to-face recruitment scripts and a bulletin board advertisement. Participants were offered minimal extra credit for their participation. While many universities were operating remotely at this time due to the COVID-19 pandemic, the university from which participants were recruited was resuming most face-to-face operations (e.g., on-campus residency for first-year students) and conducting courses using face-to-face or hybrid modalities (e.g., students come to a face-to-face class at least once a week). Participants who volunteered were directed to an online survey at four different time points during the first half of their first semester in college (i.e., the Fall 2020 semester). These surveys measured perceptions of relational uncertainty, facilitation and interference from their partner, and relational turbulence across 2-week intervals during the second, fourth, sixth, and eighth weeks of the semester. We only used participants' data if they completed at least three of the four surveys. Missing data were sparse and handled by full information maximum likelihood.

Participants' ages ranged from 18 to 53 ( $M = 18.96$ ,  $SD = 4.13$ ); 52 participants identified as female and 25 identified as male. The majority of participants (~80%) identified as white/Caucasian. Nineteen participants identified their relationship status as casually dating, 56 were seriously committed, one was engaged, and one was married. Relationship duration

ranged from zero to 120 months ( $M = 16.84$ ,  $SD = 20.15$ ). On average, participants reported living 364.40 miles away from their partner ( $Mdn = 80$ ,  $SD = 1200.32$ ).

### **Instrumentation**

Composite reliability ( $\omega$ ) for each measure was calculated using maximum likelihood estimation with the OMEGA macro for SPSS (Hayes & Coutts, 2020). Coefficient  $\omega$  estimates reliability by accounting for varying item factor loadings and error variances, unlike traditional reliability coefficients (e.g.,  $\alpha$ ) which assume equal factor loadings (i.e., essential tau-equivalence)—an assumption which is often violated (see Goodboy & Martin, 2020). Relational uncertainty was captured using three 6-item subscales from Solomon and Brisini (2017) to measure self, partner, and relationship uncertainty. Coefficient  $\omega$  estimates at T1, T2, T3, and T4 were .883, .893, .920, and .945 for self uncertainty; .932, .932, .941, and .959 for partner uncertainty; and .876, .875, .885, and .923 for relationship uncertainty, respectively. Partner interference was measured using four items from Solomon and Knobloch (2004). Coefficient  $\omega$  estimates for partner interference were .855, .857, .830, and .915 for T1, T2, T3, and T4 respectively. Partner facilitation was measured using five items from Solomon and Brisini (2017). Coefficient  $\omega$  estimates for partner facilitation were .876, .899, .951, and .950 for T1, T2, T3, and T4 respectively. Relational turbulence was measured using four semantic differential items from McLaren et al. (2011). Coefficient  $\omega$  estimates for relational turbulence were .889, .929, .953, and .901 for T1, T2, T3, and T4 respectively.

### **Results**

To test our hypothesis, we examined correlations among RTT's relationship parameters of relational uncertainty (self, partner, relationship) and interdependence (interference, facilitation) with relational turbulence contemporaneously at each 2-week interval. Partner facilitation was negatively related to relational turbulence every two weeks ( $r = -.364$ ,  $p = .001$  at T1;  $r = -.315$ ,  $p = .005$  at T2;  $r = -.243$ ,  $p = .041$  at T3;  $r = -.381$ ,  $p < .001$  at T4). Self uncertainty ( $r = .457$ ,  $p < .001$  at T1;  $r = .395$ ,  $p < .001$  at T2;  $r = .415$ ,  $p < .001$  at T3;  $r = .295$ ,  $p = .010$  at T4), partner uncertainty ( $r = .396$ ,  $p < .001$  at T1;  $r = .514$ ,  $p < .001$  at T2;  $r = .541$ ,  $p < .001$  at T3;  $r = .468$ ,  $p < .001$  at T4), relationship uncertainty ( $r = .474$ ,  $p < .001$  at T1;  $r = .512$ ,  $p < .001$  at T2;  $r = .569$ ,  $p < .001$  at T3;  $r = .498$ ,  $p < .001$  at T4), and partner interference ( $r = .363$ ,  $p = .001$  at T1;  $r = .330$ ,  $p = .003$  at T2;  $r = .268$ ,  $p = .024$  at T3;  $r = .274$ ,  $p = .017$  at T4) were positively related to relational turbulence at all four time periods over two months. Thus, our hypothesis was supported and replicated previous work on the RTM/RTT.

To answer our research question regarding how RTT parameters might change throughout the transition to college, we modeled unconditional latent growth curve models using robust maximum likelihood estimation (MLR) in Mplus 8.6. We began our analyses by first specifying no-growth models with random intercepts (intercept-only models), then compared them to linear growth models using scaled chi-squared difference tests to determine if global fit could be improved by adding a random slope factor. If a linear growth model provided a significant improvement over a no-growth model but still fit the data poorly, we attempted to model for potential nonlinearity (Grimm, Ram, & Estabrook, 2017). Once a growth model could be tentatively retained, we tested for homoscedasticity of residual variances across time points, and if a scaled chi-squared difference test indicated no significant decline in model fit, we retained the model with residual variances constrained to be equal. See Table 1 for the global fit of retained growth models.

On average, participants' initial levels of self uncertainty ( $\mu_I = 2.275$ ), partner uncertainty ( $\mu_I = 2.687$ ), relationship uncertainty ( $\mu_I = 2.456$ ), and partner interference ( $\mu_I = 2.179$ ) were moderately low on the 6-point scale. Self uncertainty, relationship uncertainty, and partner interference decreased linearly at a rate of  $\mu_S = -.209$ ,  $\mu_S = -.160$ , and  $\mu_S = -.113$  units respectively at each 2-week interval. Partner uncertainty started decreasing

**Table 1.** Fit indices for latent growth curve models.

Model	$\chi^2_{\text{YB}}$	df	SRMR	CFI	RMSEA, 90% [LLCI, ULCI]	$\chi^2_{\text{D}}$	$\Delta df$
<i>Self Uncertainty</i>							
No-Growth, Heteroscedastic	32.683 <sup>†</sup>	8	.194	.737	.200 [.132, .274]	–	–
Linear, Heteroscedastic	10.757	5	.084	.939	.122 [.000, .224]	18.687 <sup>†</sup>	3
<b>Linear, Homoscedastic</b>	<b>13.703</b>	<b>8</b>	<b>.058</b>	<b>.939</b>	<b>.096 [.000, .180]</b>	<b>3.900</b>	<b>3</b>
<i>Partner Uncertainty</i>							
No-Growth, Heteroscedastic	35.542 <sup>†</sup>	8	.153	.826	.211 [.144, .285]	–	–
Linear, Heteroscedastic	17.408**	5	.060	.922	.180 [.092, .275]	18.788 <sup>†</sup>	3
<b>Quadratic, Heteroscedastic</b>	<b>0.976</b>	<b>1</b>	<b>.016</b>	<b>1.000</b>	<b>.000 [.000, .300]</b>	<b>16.447**</b>	<b>4</b>
<i>Relationship Uncertainty</i>							
No-Growth, Heteroscedastic	30.370 <sup>†</sup>	8	.133	.764	.191 [.122, .265]	–	–
Linear, Heteroscedastic	8.664	5	.054	.961	.098 [.000, .204]	20.017 <sup>†</sup>	3
<b>Linear, Homoscedastic</b>	<b>8.786</b>	<b>8</b>	<b>.042</b>	<b>.992</b>	<b>.036 [.000, .141]</b>	<b>2.028</b>	<b>3</b>
<i>Partner Interference</i>							
No-Growth, Heteroscedastic	17.473*	8	.120	.897	.124 [.041, .204]	–	–
Linear, Heteroscedastic	4.221	5	.069	1.000	.000 [.000, .145]	13.879**	3
<b>Linear, Homoscedastic</b>	<b>11.430</b>	<b>8</b>	<b>.059</b>	<b>.963</b>	<b>.075 [.000, .164]</b>	<b>6.336</b>	<b>3</b>
<i>Partner Facilitation</i>							
No-Growth, Heteroscedastic	17.806*	8	.228	.898	.126 [.045, .206]	–	–
<b>Linear, Heteroscedastic</b>	<b>6.966</b>	<b>5</b>	<b>.050</b>	<b>.979</b>	<b>.071 [.000, .185]</b>	<b>9.594*</b>	<b>3</b>
Linear, Homoscedastic	16.785*	8	.110	.908	.119 [.033, .200]	8.923*	3
<i>Relational Turbulence</i>							
No-Growth, Heteroscedastic	10.114	8	.115	.977	.059 [.000, .153]	–	–
Linear, Heteroscedastic	3.810	5	.064	1.000	.000 [.000, .138]	6.765	3
<b>No-Growth, Homoscedastic</b>	<b>10.760</b>	<b>11</b>	<b>.077</b>	<b>1.000</b>	<b>.000 [.000, .118]</b>	<b>1.786</b>	<b>3</b>

Note. \* =  $p < .05$ ; \*\* =  $p < .01$ ; <sup>†</sup> =  $p < .001$ . Bold indicates the final retained model. Scaled chi-square difference tests compared the preceding models except for the no-growth homoscedastic model for relational turbulence which was compared to the no-growth heteroscedastic model.

**Table 2.** Model Summary for Final Latent Growth Curve Models.

Model	Unstandardized Parameter Estimates									$R^2$			
	$\psi_{IS}$	$\psi_{IQ}$	$\psi_{SQ}$	$\mu_I$	$\mu_S$	$\mu_Q$	$\psi_I$	$\psi_S$	$\psi_Q$	T1	T2	T3	T4
S-Uncertainty	-.052	—	—	2.275 <sup>†</sup>	-.209 <sup>†</sup>	—	0.738 <sup>†</sup>	.020	—	.710	.684	.668	.666
P-Uncertainty	-.524	.139	-.061	2.687 <sup>†</sup>	-.602 <sup>†</sup>	.133 <sup>†</sup>	1.582 <sup>†</sup>	.292	.015	.851	.740	.768	.868
R-Uncertainty	-.076	—	—	2.456 <sup>†</sup>	-.160 <sup>†</sup>	—	0.925 <sup>†</sup>	.047*	—	.774	.752	.750	.767
Interference	-.120*	—	—	2.179 <sup>†</sup>	-.113**	—	0.772 <sup>†</sup>	.071*	—	.736	.685	.675	.713
Facilitation	.087*	—	—	4.497 <sup>†</sup>	-.086*	—	0.701 <sup>†</sup>	.026	—	.599	.846	.694	.751
Turbulence	—	—	—	2.281 <sup>†</sup>	—	—	1.031 <sup>†</sup>	—	—	.707	.707	.707	.707

Note. \* =  $p < .05$ ; \*\* =  $p < .01$ ; † =  $p < .001$ . S-Uncertainty = self uncertainty, P-Uncertainty = partner uncertainty, R-Uncertainty = relationship uncertainty,  $\psi_{IS}$  = intercept–linear slope covariance,  $\psi_{IQ}$  = intercept–quadratic slope covariance,  $\psi_{SQ}$  = linear slope–quadratic slope covariance,  $\mu_I$  = intercept mean,  $\mu_S$  = linear slope mean,  $\mu_Q$  = quadratic slope mean,  $\psi_I$  = intercept variance,  $\psi_S$  = linear slope variance,  $\psi_Q$  = quadratic slope variance.

at a rate of  $\mu_S = -.602$  units but this rate of change decelerated at each 2-week interval ( $\mu_Q = .133$ ).<sup>1</sup> On average, participants reported moderately high levels of partner facilitation ( $\mu_I = 4.497$ ) which decreased linearly at a rate of  $\mu_S = -.086$  units at each 2-week interval. Lastly, participants reported moderately low initial levels of relational turbulence ( $\mu_I = 2.281$ ) and did not experience any significant changes at each of the 2-week intervals. See Table 2 for parameter estimates of growth models including effect size, intercept mean and variance, slope mean and variance, and slope-intercept covariance.

## Discussion

Our findings support previous RTM/RTT scholarship indicating that the relationship parameters of relational uncertainty and interdependence are related to relational turbulence during first-semester students' transition to college. In support of our hypothesis, relational uncertainty and partner interference were positively related to, whereas partner facilitation was negatively related to, experiences of relational turbulence contemporaneously at each 2-week interval during the first eight weeks of students' first semester of college. RTM/RTT scholars suggest that transitions may present moments of heightened relational uncertainty and partner interference (Solomon & Knobloch, 2004), and accordingly, first-semester students reported higher levels of relational uncertainty and partner interference at the beginning of the semester at the peak of the transition—albeit these perceptions were lower to begin with—which gradually decreased as the semester progressed. However, although first-semester students' reports of relational uncertainty, partner interference, and partner facilitation all decreased as the semester progressed, we did not observe



any changes in relational turbulence despite its correlations with RTT's relationship parameters at each time point. We discuss implications of our findings while acknowledging some limitations to our study.

Interestingly, the first-semester students in our study did not report heightened relational uncertainty, partner interference, or relational turbulence entering college; instead, they reported moderately low initial starting points. It may be that the actual process of transitioning to college does not have such acute impacts on relationship development as other types of transitions. For instance, RTT theorists explain that transitions can occur due to changes that are internal to the dyad (e.g., transition to parenthood; Theiss, Estlein, & Weber, 2013) or external (e.g., transition to college); transitions can also range from comparatively minor to life-altering, and they can happen gradually or suddenly (Solomon et al., 2016). Second, changes in relational perceptions may occur in advance of this timeframe as students anticipate the looming transition. There may be increased upheaval during this period, or alternatively, students may be prepared to maintain their relationship and therefore not have their relationships be fundamentally changed by the first months of college. These potential explanations may also in part explain why we did not observe significant fluctuations in relational turbulence.

Despite decreases in relational uncertainty and interdependence processes, relational turbulence itself remained relatively unchanged across all time periods. While our contemporaneous analyses indicated that relational uncertainty and interdependence were associated with experiences of relational turbulence as theorized, our longitudinal analyses suggest that time plays a unique role in that relational turbulence may persist over time following a transitional period. While this finding is consistent with Solomon et al.'s (2016) definition of relational turbulence as a "global and persistent evaluation of the relationship" (Solomon et al., 2016, p. 514), it also further reinforces RTT scholars' calls to investigate how the "length of time spent navigating a transition corresponds with the degree of relational turbulence that persists after the challenging period" (Solomon et al., 2019, pp. 330–331).

Although levels of relational uncertainty and partner interference were already low just two weeks into the semester, these relationship parameters continued to decrease even further as the semester progressed. RTM/RTT scholars would suggest that potentially detrimental relationship parameters during transitions improve (decrease) over time as individuals become acclimated to their new situations (Solomon et al., 2016). It appears that students acclimate to their new college surroundings and begin to find ways to integrate and balance their new collegiate obligations (e.g., attending classes, studying, forming new social relationships) with their existing romantic relationship, which is consistent with the college adjustment literature (Gerdes & Mallinckrodt, 1994). It is also important to consider that this study was conducted during the COVID-19 pandemic. The pandemic itself was



a period of transition for romantic dyads (Goodboy, Dillow, Knoster, & Howard, 2021; Jones & Theiss, 2021; Jones, Yoon, Theiss, Austin, & Lee, 2021) and may have served as a confounding factor and unavoidable limitation to our study. Specifically, there may have been decreases in interdependence processes due to lifestyle changes brought on by the pandemic (Goodboy et al., 2021; Jones et al., 2021) which might explain the low initial levels of partner interference and relational uncertainty that we observed as well as their subsequent declines.

Despite these limitations, our study has implications for RTT scholarship moving forward. As observed during other life transitions, first-semester students committed to relationships formed prior to college experience relational turbulence stemming from their relational uncertainty, partner interference, and lack of partner facilitation. Our findings also suggest that relational uncertainty and partner interference appear to be higher during the initial weeks of the college transition, but decline as students adjust to college and the semester progresses, which speaks to previous calls to incorporate the role of time in RTT scholarship.

## Note

1. We advise some caution regarding our findings on partner uncertainty as quadratic growth models run the risk of improving model fit based on idiosyncratic characteristics of a sample rather than actual theoretical backing (Preacher, Wichman, MacCallum, & Briggs, 2008).

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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