

BRIEF REPORT

Informing the Dimensional Classification of Mania: A Daily Diary Study of Symptom-Level Structure

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The optimal classification of mania symptoms within dimensional models such as the Hierarchical Taxonomy of Psychopathology remains unclear, although progress has been made recently. We extend dimensional classification research by assessing mania and other domains at the symptom level using a longitudinal, daily diary design (7-day period). Participants ($N = 230$; 1,243 total surveys) were adults recruited online based on having a self-identified history of significant mental health issues. Consistent with recent cross-sectional research, mania symptoms associated strongly with thought disorder at the between-person level, and they also associated strongly with some externalizing features across levels of analysis (i.e., within- and between-person). Regarding specific within-person results, select mania symptoms were more distinctive from other symptoms assessed overall, although mania symptoms still associated robustly with thought disorder in many cases. A subset of mania symptoms (e.g., euphoric mood) also had robust negative within-person associations with internalizing symptoms. These findings inform understanding of mania symptoms' daily associations and dimensional assessment, although several limitations are important to keep in mind. These limitations included some item ratings having limited within-person variability, as well as our study sampling period focusing on only 7 days. We hope that future research will address these limitations in other samples toward improving the dimensional classification and assessment of mania and other symptoms.

Public Significance Statement

This study focused on improving understanding of mania symptoms characteristic of bipolar spectrum disorders by assessing adults' daily experiences over a week. Experiencing mania symptoms was associated with increases in interpersonal difficulties and other symptoms, although sadness and worry were less likely to be reported on days on which mania symptoms of excessive energy were experienced. These findings inform evidence-based diagnosis and address limitations of traditional diagnostic approaches.

Keywords: bipolar disorders, dimensional models, hierarchical taxonomy of psychopathology, factor analysis

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Research procedures complied with the American Psychological Association ethical standards, and all participants provided their informed consent. Study data and materials are available on the Open Science Framework (https://osf.io/u2zav/?view_only=a0746a1403b6430cab83e696c64a1eef), as is a preprint of this article (<https://osf.io/preprints/osf/p8jnu>). This research received ethics board permission from the University of Wyoming Institutional Review Board, and this research was funded using Investigator Startup Funds from the University of Wyoming awarded to Kasey Stanton. The authors have no conflicts of interest to disclose.

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Significant progress has been made toward understanding how symptoms should be organized within the Hierarchical Taxonomy of Psychopathology (HiTOP; Conway et al., 2019), a dimensionally based model proposed to address limitations of the *Diagnostic and Statistical Manual of Mental Disorders* (currently fifth edition, text revision; American Psychiatric Association, 2022). Based on a sizeable literature using factor analysis and other methods, symptoms spanning many traditional disorders now are classified within HiTOP spectra such as internalizing, thought disorder, and detachment (Ringwald et al., 2023). However, the classification of some symptoms across broad-spectrum and more specific subspectrum levels of the HiTOP remains unclear, which limits the HiTOP's applicability as a comprehensive framework for guiding clinical assessment (Ringwald et al., 2023).

Notable areas of uncertainty include the classification of symptoms described in the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition, text revision, as characteristic of hypomania and mania (abbreviated to “mania” subsequently), which include symptoms such as euphoric mood, increased energy, irritability, and changes in activity, among others (American Psychiatric Association, 2022). Dimensional mania classification research traditionally has been limited by use of composite assessment (e.g., yes/no ratings of mania history), which precludes the identification of potentially distinctive symptom-level associations (Ringwald et al., 2023). Fortunately, some progress has been made toward advancing understanding of symptom-level classification in recent years, with recent research indicating that many mania symptoms align with thought disorder at the spectrum level (Forbes et al., 2021; Reininghaus et al., 2016; Stanton et al., 2023). However, symptoms such as increased energy may be separable from thought disorder at finer grained levels of analysis informing subspectrum classification (Bedford & Deary, 2006; Stanton et al., 2023), and symptoms such as racing thoughts may also show crossover with the internalizing spectrum (Forbes et al., 2021; cf. Sato et al., 2002). Still, there are relatively few symptom-level studies overall, and most classification-focused studies were cross-sectional even though manic symptoms are conceptualized as episodic (American Psychiatric Association, 2022). Additionally, some symptom-level studies examined mania in relation to only one or two other spectra (e.g., only thought disorder; e.g., Reininghaus et al., 2016; Stanton et al., 2023).

The Present Study: Advancing Understanding of Symptom-Level, Daily Associations

Overall Study Goals and Between-Person Analyses

Our study advances dimensional classification and measurement research by (a) focusing analyses on the symptom level and (b) assessing a range of symptoms longitudinally using a 7-day daily diary design. Specifically, we examined both within- and between-person factor structures of mania, externalizing, thought disorder, and internalizing symptoms in a sample of adults recruited online who self-identified as having significant mental health histories. Classification and diagnosis research traditionally has focused on a between-person level of analysis (Vize & Wright, 2024), and between-person results presented subsequently inform understanding of the degree to which individuals who report experiencing specific mania symptoms also report experiencing other symptoms

on average (e.g., identifying that irritability associates positively with both internalizing and interpersonal difficulties in general).

Importantly, the time frame of between-person assessment may influence mania symptom associations: Specifically, mania may overlap more strongly with thought disorder when shorter recall periods such as the past week are used but potentially more strongly with internalizing with use of past year or lifetime assessment (Forbes et al., 2021). Thus, in addition to addressing limitations of classification research in the ways described, our study advances prior research by explicating symptom associations when they are assessed at the daily level. For example, it is possible that use of a daily recall and reporting period may alter between-person symptom associations, even when compared with relatively brief past week or 2-week recall periods used in other recent research (e.g., Forbes et al., 2021; Stanton et al., 2023).

Contributions of Within-Person Analyses

Within-person results provide complementary information to our between-person results by advancing understanding of how various symptoms associate with one another on given days or occasions. For example, even though individuals with a history of euphoric mood may experience more internalizing symptoms on average (between-level), it is possible they would be *less likely* to experience pronounced internalizing symptoms such as feeling depressed on specific days when feeling euphoric (within-person level). In line with this, Jacobson et al.'s (2023) study of basic mood indicated that between- and within-person factor structures differed from one another and that some positively (e.g., excitement) and negatively valenced (e.g., distress) mood states correlated negatively at the within-person level. Thus, within-person results can be used to inform understanding of symptom course and potentially guide intervention efforts (e.g., if specific patterns of externalizing or self-destructive behavior are identified as being more likely to occur on days when specific mania symptoms are experienced).

In interpreting results across levels of analysis, we recognized that most participants would be unlikely to report symptoms at a level consistent with DSM hypomania or mania criteria, even with targeting recruitment. Acknowledging this, other studies highlight the value of assessing “subclinical” experiences longitudinally to better understand symptom relations and course (e.g., Holmes et al., 2016; Sperry & Kwapił, 2022), and viewing symptom experiences along a continuum aligns theoretically with dimensional perspectives (Conway et al., 2019). Our analyses also were descriptive and exploratory in many ways due to limitations of existing research, particularly at the within-person level. Several general predictions included expecting that some mania symptom ratings, and grandiosity especially, would align strongly with thought disorder across within and between levels of analysis. Next, we expected that mania ratings of racing thoughts and irritability would associate strongly with internalizing. In contrast, other mania ratings of euphoria and increased energy were expected to associate less strongly with internalizing at the between-person level and perhaps even associate negatively with specific internalizing ratings at the within-person level (Jacobson et al., 2023). It also was possible that euphoria and increased energy would be distinct from thought disorder and other symptoms across levels of analysis given their potentially distinctive nature as high-arousal, positive affect-based symptoms (Nagel et al., 2023), though these symptoms have been

shown to associate strongly with thought disorder as discussed (Forbes et al., 2021).

Method

Participants, Open Science Information, and Data Availability

This study was not preregistered, but data, analytic code, and output are provided on the Open Science Framework (https://osf.io/u2zav/?view_only=a0746a1403b6430cab83e696c64a1eef; Stanton, 2024). Participants were 230 adults (age 18+) recruited online using the Prolific platform. This research received ethics board permission from the University of Wyoming Institutional Review Board, and all participants provided their informed consent. The Prolific platform was used due to its utility for efficiently collecting daily diary data (Stanton et al., 2022), and Prolific provides free filters for targeting recruitment. Only participants residing in the United States were eligible, and we also restricted participation to individuals who self-identified as having a “long-term mental health condition” or “diagnosed, ongoing” mental health issues. This sampling approach was used to increase the likelihood that individuals with a range of mental health histories would be represented in our sample. This recruiting method also is consistent with transdiagnostic approaches for increasing sample variability in histories of symptom experiences (vs. screening by *DSM* diagnosis; Conway et al., 2019; recognizing again that many participants would be unlikely to report high levels of some symptoms during a 7-day study).

With the use of this recruitment method, most participants (59.4%) reported currently taking medication to treat mental health issues, and 40.6% were currently accessing psychotherapy.¹ Regarding specific medications, 48.0% reported currently taking antidepressants, 23.6% antianxiety medication, 10.9% stimulants, 6.1% mood stabilizers, and 5.7% antipsychotics. A small percentage (12.7%) also self-reported having a bipolar spectrum disorder diagnosis (though diagnosis could not be verified with our study design). The mean age was 37.2 years ($SD = 11.4$). Most participants were White/European American (81.2%), 12.7% were Black or African American, 7.0% multiracial, 5.2% Asian American, and 3.1% were Native American or Alaska Native, with small percentages providing other responses (participants could select multiple responses for this item and some others); 12.7% were Hispanic or Latino/Latinx. Next, 54.1% were women, 41.0% men, 4.4% nonbinary, and 1.3% agender, with small percentages providing other responses; 7.0% were transgender. Modal response for highest education level was some college/an associate’s degree (34.9%), followed by a 4-year college degree (33.6%; 17.5% high diploma or equivalent, 11.8% graduate degree, and 1.7% some high school).

Protocol, Adherence, and Response Validity Assessment

Data were collected during the summer of 2023, and all participants completed Day 1 surveys on Thursdays and Day 7 surveys on Wednesdays. Demographic and other descriptive information reviewed was collected at Day 1. Daily surveys could be accessed at 6 p.m. Eastern Time or later, and participants were instructed to complete surveys as close to bedtime as possible. All surveys assessed daily symptom experiences, focusing on that

same day “since waking up.” Supplemental Appendix S1 and S2 provide supplemental information about sample characteristics, the study procedure, and response validity assessment (e.g., use of attention checks). Two hundred thirty-seven participants completed Day 1. There was also one participant who was not able to access the Day 1 survey due to a technical error, but who then completed other daily surveys included in analyses. In total, these 238 participants completed 1,307 surveys across the 7-day study. Of these surveys, 64 (4.9% of 1,307) were invalid and removed (eight participants provided no valid data across days, such that 230 participants provided valid data as reviewed). Thus, 1,243 valid surveys (1,307–1,364) were analyzed, corresponding with a 74.6% completion rate (238 participants $\times$ 7 days = 1,666 possible surveys; 1,243/1,666 = 74.6%). This also corresponded with participants completing an average of 5.4 surveys (1,243/230).

Daily Symptom Assessment

Participants completed 21 items assessing daily symptom experiences. Collectively, these items assessed irritability, internalizing, antagonistic externalizing, disinhibited externalizing, and thought disorder symptoms in addition to mania symptoms. Many of these items were drawn from the Expanded Version of the Inventory of Depression and Anxiety Symptoms (IDAS-II; see Jimenez et al., 2022, for research validating the IDAS-II items for repeated measures assessment). Specifically, participants completed seven items from the IDAS-II Euphoria and Mania scales assessing core mania symptoms such as increased energy, activation, euphoric mood, grandiosity, pressured speech, and racing thoughts. We also administered three IDAS-II Dysphoria items to assess internalizing (e.g., “worried a lot”) and one IDAS-II Ill-Temper item (i.e., “mad at little things”) assessing irritability characteristic of both mania and internalizing. Additionally, participants completed select items from the Comprehensive Assessment of Traits Relevant to Personality Disorders (CAT-PD; Simms et al., 2022) to assess disinhibition (three items), antagonism (three items), and thought disorder (four items). The CAT-PD traditionally provides trait-level assessment, such that items were adapted for daily administration (e.g., rating how “easily distracted” participants felt today vs. generally). Select CAT-PD disinhibited and antagonistic externalizing items that we administered have been validated for daily assessment (Wright et al., 2023). We are not aware of research examining the daily-level structure of this specific set of CAT-PD items including thought disorder ratings, but cross-sectional and longitudinal research supports the CAT-PD items’ utility for dimensional assessment consistent with the HiTOP (Simms et al., 2022; Vize & Wright, 2024). Participants rated all IDAS-II and CAT-PD items using a 1 (*not at all*) to 5 (*extremely*) rating scale.

¹ As discussed subsequently, one participant who completed surveys after Day 1 was not able to complete the Day 1 survey due to an administration error. Therefore, sample descriptive information is based on 229 participants. Given that our study was exploratory in many ways, it was challenging to conduct power analyses a priori. As reviewed, our analyses were based on data from 230 participants (which would compare favorably to some other diary studies) and over 1,200 surveys. However, we recognize issues with focusing on a study assessment period of a single week and relatedly, potential limitations of within-person analyses, as discussed in the main text (see Wright et al., 2023 for additional discussion of study design issues when assessing symptoms at the daily level).

Results

Analytic Overview and Descriptive Statistics

We conducted multilevel exploratory factor analytic models (MEFAs) to examine within- and between-person symptom structures using Mplus Version 8.9 (Muthén & Muthén, 2017). An oblique, geomin rotation was used in models with multiple factors, and MEFAs were conducted using a weighted least squares mean- and variance-adjusted estimator. We also considered using other estimators such as maximum likelihood robust (see Supplemental Appendix S1 for additional details). However, given that our analyses focused on (a) categorical item ratings and (b) strong endorsement of some items was rare as Supplemental Table S1 (frequencies) and S2 (descriptive statistics) show, we believed that using weighted least squares mean- and variance-adjusted was optimal, as done in prior multilevel factor analytic research based on categorical symptom data (McAleavey et al., 2020).

There were only several missing item values within the 1,243 valid surveys analyzed. This is consistent with research examining Prolific's utility for collecting longitudinal data indicating that missing data percentages often are very low within brief daily completed surveys after screening for response validity as done here (Stanton et al., 2022). Supplemental Appendix S1 also provides additional description of missing data. Supplemental Table S3 presents intraclass correlations (ICCs) quantifying between- and within-person variation for symptom ratings, and Supplemental Table S4 presents symptom rating correlation matrices. All ICCs > .55, and though there was variation in ICCs, some ICCs for select mania, thought disorder, and antagonism items were high. For example, one thought disorder item ("had supernatural abilities") had an ICC of .95 and correlated very strongly (e.g., .82 between-person correlation; Supplemental Table S4) with a mania grandiosity item

("felt I could do things others couldn't"). This association indicates one potentially interesting aspect of thought disorder–mania overlap. However, we removed the thought disorder item from MEFAs given these items' redundancy, although we retained the mania item to ensure MEFAs were as comprehensive as possible. Second, we removed an entitlement item with an ICC of .93 ("deserve special privileges") because it (a) correlated strongly with many items and (b) consistently had Heywood factor loadings (loadings > 1.00) when included in MEFAs. Regardless, as Supplemental Table S5 shows, MEFA results including these items were very similar to MEFA results described subsequently (see Table 1).

For MEFAs based on this slightly reduced item set of 19 items, four within-person factors and two between-person factors had eigenvalues ≥ 1.00 (within-person eigenvalues = 4.49, 3.72, 1.43, 1.27, 0.99, 0.91; between-person eigenvalues = 11.04, 3.13, 0.99, 0.82). We also considered information provided by commonly reported fit indices when evaluating models varying in their number of factors (Table 2), though model interpretation focused primarily on factor definition and interpretability (e.g., factors having several or more clear item markers). Thus, we examined models with an increasing number of factors across within- and between-person levels, an approach also informing mania classification at different levels of breadth.

Within-Person Factor Analytic Results

Table 2 presents model fit information, and fit improved as the number of factors extracted increased as expected. First, internalizing items (e.g., "felt depressed") loaded strongly onto a single general within-person factor, as Supplemental Table S6 displays. In contrast, some mania items had weak (e.g., .14 for "thoughts jumped rapidly") or even *negative* loadings onto this factor (e.g., $-.41$ for

Table 1
Geomin-Rotated Loadings for Daily Symptom Ratings

Within-person factor loading				Between-person factor loading		
Abbreviated item	I	II	III	Abbreviated item	I	II
Felt depressed	.81	.05	.26	Felt elated for no reason	.98	-.25
Felt "on top of the world"	-.81	.44	.00	Had so much energy	.97	-.20
Had so much energy	-.62	.22	.12	Felt "on top of the world"	.95	-.52
Felt elated for no reason	-.62	.25	.22	Felt I could do special things	.90	-.12
Worried a lot	.60	.00	.44	Heard voices or sounds	.90	.15
Blamed myself	.52	.01	.54	Kept racing between activities	.84	-.01
Little things made me mad	.51	.13	.25	Acted without thinking	.84	.06
Neglected my responsibilities	.49	-.01	.22	Felt others were out to get me	.82	.10
Things changed or not real	.28	.23	.13	Took advantage of others	.77	.11
Took advantage of others	.01	.85	-.25	Spoke very rapidly	.75	.24
Acted without thinking	.01	.63	.06	Things changed or not real	.71	.08
Spoke very rapidly	-.19	.61	-.05	Did not care about others	.70	.20
Did not care about others	.22	.59	.00	Thoughts jumped rapidly	.65	.21
Felt I could do special things	-.34	.43	.09	Felt depressed	-.13	.92
Felt others were out to get me	.25	.34	.17	Worried a lot	.01	.90
Heard voices or sounds	.00	.34	.27	Blamed myself	.11	.88
Thoughts jumped rapidly	-.10	-.06	.66	Neglected my responsibilities	.18	.62
Was easily distracted	.28	-.09	.50	Was easily distracted	.30	.53
Kept racing between activities	-.31	.09	.49	Little things made me mad	.39	.45

Note. $N = 1,243$ total daily surveys across 230 participants. Loadings $> .40$ are in bold regardless of sign. Within-person Factors I, II, and III were labeled *Internalizing*, *Antagonism/Thought Disorder*, and *Agitation*, respectively; Internalizing correlated .18 with Antagonism/Thought Disorder and $-.05$ Agitation, respectively; Antagonism/Thought Disorder and Agitation correlated .50. Between-person Factors I and II were labeled *Thought Disorder/Antagonism* and *Internalizing*, respectively; these factors correlated .41.

Table 2
Model Fit Information for Models Varying in Their Number of Factors

Within-level factor	Within-level SRMR	Between-level factor	Between-level SRMR	RMSEA	CFI	TLI	Model χ^2 (df)
1	.188	1	.175	.041	.714	.679	949.4 (304)*
1	.188	2	.065	.039	.757	.710	834.6 (286)*
2	.084	1	.175	.023	.919	.903	469.6 (286)*
2	.084	2	.065	.012	.978	.972	317.3 (268)*
3	.069	1	.175	.022	.927	.907	433.8 (269)*
3	.069	2	.065	.009	.988	.983	278.7 (251)

Note. SRMR = standardized root-mean-square residual; RMSEA = root-mean-square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index.

* $p < .05$.

“so much energy”). Next, when extracting two within-person factors, internalizing items loaded strongly and positively onto the first factor we labeled *Internalizing*. Select mania items assessing increased energy and euphoria had weak-to-moderate negative loadings on Internalizing (e.g., $-.28$ for “elated for no reason”), with these and other mania items assessing activity and racing thoughts also loading strongly ($\geq .50$) onto the second within-person factor we labeled *Mania*. The Internalizing and Mania factors correlated only .04.

An Internalizing factor again emerged when extracting three within-person factors as Table 1 shows, although items assessing euphoric mood and increased energy now had stronger negative loadings onto this factor (e.g., $-.62$ for “had so much energy”). Select mania (e.g., .61 loading for “spoke very rapidly”), thought disorder, and externalizing (e.g., .85 loading for “took advantage of others”) items loaded onto a second factor labeled *Antagonism/Thought Disorder*. Third, mania items assessing racing thoughts and increased activity loaded $\geq .49$ onto the third factor we labeled *Agitation*. Some internalizing items also had moderate-to-strong loadings on this factor, indicating it was negatively valenced (vs. positively). Notably, the Agitation and Antagonism/Thought Disorder factors correlated .50; however, Internalizing correlated only .18 and $-.05$ with Antagonism/Thought Disorder and Agitation, respectively, as Table 1 describes.

When extracting four within-person factors, only two items (i.e., “took advantage of others” and “spoke so rapidly”) had their strongest loadings on the fourth factor, and the item “spoke so rapidly” also had moderate cross loadings $> .30$ (Supplemental Table S6). Issues with factors being challenging to interpret and having no/few item markers persisted in models with more factors, such that we do not present additional details of those models here.

Between-Person Factor Analytic Results

In contrast to the pattern of loadings for a single within-person factor wherein item loadings varied, all items loaded at least moderately and positively (i.e., $\geq .40$) onto a general between-person factor (Supplemental Table S7). Next, as Table 1 shows, examination of two-factor between-person results indicated that mania items (e.g., “elated for no reason”; “spoke rapidly”) loaded strongly onto the first factor with thought disorder and antagonism ratings (all loadings $\geq .65$), which we labeled *Thought Disorder/Antagonism*. Internalizing (e.g., “worried a lot”) and select disinhibition items (e.g., “easily distracted”) loaded strongly onto the second factor we labeled *Internalizing*. When extracting three between-person factors, only

one item had its strongest loading onto the third factor (“thoughts jumped rapidly”; loading = .82; see Supplemental Table S7). These issues with factors having few clear item markers persisted when examining models with four or more between-person factors.² In summary, we were able to identify a maximum of three interpretable within- and two between-person factors (Table 1).

Discussion

Our findings informing understanding of mania symptoms’ dimensional assessment and classification are consistent with recent cross-sectional research using other time frames of assessment (e.g., past week experiences; Forbes et al., 2021), although some aspects of our results differed. Results also should be interpreted in light of study limitations highlighted subsequently. First, regarding aspects of consistency with prior research, many mania symptoms associated strongly with thought disorder, at the between-person level especially when examining how symptoms associated on average. These associations with thought disorder also tended to be stronger than mania’s associations with internalizing, providing additional support for classifying specific mania symptoms within thought disorder.

Next, when interpreting within-person results in particular, it is important to recognize that our study focused on a short sampling period of 7 days, and there was little within-person variation for some items. Still, the amount of within-person variation differed across items (e.g., roughly 30% for some mania items assessing increased energy and elation; see Supplemental Table S3), and we hope that our results provide data informing future studies wherein symptoms are assessed over longer sampling periods and/or with more intensive assessment approaches within days (e.g., multiple assessments per day; see Vize & Wright, 2024, for additional discussion). Keeping these issues in mind, interesting findings include euphoria and increased energy having robust *negative* loadings on internalizing factors at the within-person level. Select mania items (e.g., euphoria, increased energy) also loaded negatively onto a single within-person factor, in contrast to our between-person results and other studies

² We also evaluated the fit of models with four or more within-person factors and/or three or more between-person factors. Fit generally improved, even if only slightly, beyond a model with three within- and two between-person factors (e.g., for a model with three factors at each level, root-mean-square error of approximation = .008 and between-level standardized root-mean-square residual = .052). Even though various indices often indicated better fit to some degree (as expected with having more factors to account for variance), we still did not deem these models viable due to the item loading patterns as described.

finding that many symptom indicators load moderately to strongly onto a general between-person factor (Ringwald et al., 2023). Regarding other within-person findings informing how symptoms covary on specific days, mania symptoms such as increased activity and racing thoughts also were more distinct from other symptoms at the within-person level, as evidenced by them loading onto a separate Agitation factor when extracting three within-person factors. Still, Agitation correlated .50 with an Antagonism/Thought Disorder factor, and other mania ratings such as grandiosity associated most strongly with thought disorder item content across levels of analysis.

One unanticipated finding involved select antagonism ratings (e.g., “took advantage of others”) associating strongly with mania and thought disorder across levels of analysis. These results could be driven by idiosyncrasies of our specific item set, as we analyzed only 19 items due to our use of brief daily assessment, seven of which assessed specific mania symptoms in a goal to assess this domain as thoroughly as possible. Additionally, self-report measures of mania and antagonism/interpersonal issues often correlate strongly (Nagel et al., 2023; Stanton et al., 2017). Although this would require use of a much different study design, interview-based assessment could potentially be useful for teasing apart experiences of grandiosity characteristic of mania from grandiosity characteristic of narcissistic personality disorder if interviewers are able to clarify definitions with participants (e.g., narcissistic grandiosity may be more stable). Similarly, assessing participants’ perceptions of self-report item content would be helpful to ascertain the degree to which participants interpret self-report items assessing euphoria (e.g., feeling “on top of the world”) as simply reflecting experiences of normal range positive mood versus mania per se. Daily within-person positive and negative mood factors have been shown to associate negatively as reviewed (Jacobson et al., 2023), though again, we still did not anticipate that euphoria and increased energy would load as strongly onto internalizing factors as they did.

We hope that future research will address these interesting empirical questions, and other related assessment questions will be important for future research to address as well. For example, although we predicted that racing thoughts would load strongly onto internalizing factors based on prior work, our racing thoughts indicator (“thoughts jumped rapidly to different ideas”) loaded strongly onto factors with other mania and thought disorder indicators instead. Our use of longitudinal assessment and the wording of this item may account for discrepancies from prior research, and findings of this nature provide potentially helpful information concerning discriminant validity. Specifically, although further research is needed, items assessing thoughts racing about ideas and achievements may better differentiate mania from internalizing than nonspecific items assessing not being able to slow one’s thoughts.

Other Future Directions, Limitations, Constraints on Generalizability, and Conclusion

Other limitations in addition to those described are worth noting. First, we believe there is value in assessing symptoms along a spectrum (Holmes et al., 2016), and there was at least mild endorsement of many symptoms across our 1,243 daily surveys (e.g., 8% of 1,243 surveys corresponds with roughly 100 surveys). However, possibly related to some of the within-person variation issues described above, strong endorsement (i.e., “4” or “5” responses a 5-point scale) of some symptom experiences was rare

for some thought disorder, externalizing, and mania items even with targeting recruitment. Lastly, we were only able to include a few items traditionally used to assess specific HiTOP spectra, and we did not assess spectra such as detachment. Therefore, we hope that research will explicate mania symptoms’ associations with other symptoms not assessed here and that research will integrate use of other methods (e.g., see Dunster et al., 2021, for other methods for assessing sleep and activity changes). Acknowledging these issues, our findings provide insight into mania’s symptom relations when using daily diary assessment, which we hope provides useful data guiding future dimensional assessment research.

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