Article

The Influence of Hypomania Symptoms on Income in Self-Employment

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Abstract

Despite the assumption that symptoms of hypomania are detrimental, they may prove beneficial within self-employment contexts. Drawing on person-environment (P/E) fit theory and using the first National Epidemiologic Survey on Alcohol Related Conditions (NESARC 1), our conservative inferences are that for self-employed individuals, hypomania has a positive association with income, self-employed individuals with higher education have higher levels of income with increasing hypomania score, and older self-employed individuals with a higher hypomania score have a higher income. These findings have implications for the literature on hypomania symptoms and self-employment related labor market outcomes.

Keywords

hypomania score, income, self-employment

Research at the intersection of mental health and the workplace has begun to establish a fundamental understanding of the effects of mental health at work. For example, evidence indicates that the stigma associated with mental health conditions can negatively impact individuals' well-being (Markowitz, 1998), and people with mental health conditions have been shown to have lower performance in certain workplace tasks (Adler et al., 2006). Because of the difficulties that individuals with mental health conditions face in traditional occupations, unemployment and nonparticipation in the labor force tend to be higher among this group (Waghorn & Lloyd, 2005). However, despite the significant attention being paid to the effects of mental health conditions within traditional organizational settings, researchers are just beginning to examine linkages between mental health conditions and self-employment (Verheul et al., 2016).

To examine the relationship between mental health conditions and self-employment, we draw upon personality-environment (P/E) fit theory. P/E fit theory focuses on the match (or lack thereof) between individuals' characteristics and specific aspects of their work

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environment (Kristof-Brown, Zimmerman, & Johnson, 2005). Within organizational contexts, P/E fit has been found to predict a number of important outcomes, including decisions to join an organization (Cable & Judge, 1996), attitudes and behaviors exhibited within specific organizational contexts (Westerman & Cyr, 2004), and intentions to quit (O'Reilly, Chatman, & Caldwell, 1991). Furthermore, the P/E fit framework has been increasingly applied in entrepreneurship and self-employment studies (Prottas, 2011; Prottas & Thompson, 2006). Specifically, recent investigations have employed P/E fit to help understand the association between specific mental conditions and entrepreneurship (Wiklund, Yu, Tucker, & Marino, 2017). In their work exploring the relationship between attention-defcit/hyperactivity disorder (ADHD) and entrepreneurship, Wiklund and colleagues (2017) argued that the impulsive nature associated with ADHD could afford individuals unique benefits in work contexts wherein speed of action is a key aspect of success, such as self-employment and entrepreneurial endeavors. These findings suggest that self-employment could represent a particularly benevolent context (compared to organizational settings) for individuals with certain mental health conditions.

Expanding upon this evidence, we propose that nonclinically diagnosed self-reported hypomania scores could also have potentially nonlinear relationships with self-employment income. According to the American Psychiatric Association (APA), hypomania is a condition associated with bipolar II disorder and relates to abnormally and persistently elevated levels of mood, activity, and energy (APA, 2013). Hypomania merits investigation because it shares certain characteristics with other conditions (e.g., ADHD), such as elevated levels of risk taking and creativity, but also presents contingencies that suggest it has a unique association with self-employment and entrepreneurship. Notably, individuals experiencing hypomania are characterized by inflated levels of self-esteem, elevated mood, and increased levels of goal-directed activity (Angst, 1998; Angst et al., 2003; Bauer, Whybrow, Gyulai, Gonnel, & Yeh, 1994). In terms of self-employment, self-esteem has been shown to improve individual self-efficacy (Arora, Haynie, & Laurence, 2013), which can improve key outcomes within the self-employment process (Bradley & Roberts, 2004). Additionally, moderate levels of elevated mood can be beneficial to self-employment (Baron, Hmieleski, & Henry, 2012), and goal setting and the pursuit of difficult but achievable goals have been shown to positively affect new venture performance (Baron, Mueller, & Wolfe, 2016). Based upon this logic, it is possible that hypomania could have an important association, uniquely distinct from the influence of ADHD, with self-employment.

Furthermore, although hypomania and ADHD do share some commonalities, recent evidence suggests that the reported comorbidity of individuals who have both conditions is over-inflated and is likely much less prevalent than previously believed (Youngstrom, Arnold, & Frazier, 2010). Essentially, it is relatively unlikely that individuals will experience both conditions. Thus, by examining the relationship between hypomania and self-employment, we are better able to identify an additional population of individuals who might benefit from pursuing self-employment beyond those who experience ADHD. Taken together, characteristics of hypomania have been conceptualized as the "hypomanic edge" given the advantages individuals can derive from the condition (Gartner, 2008; Lobban, Taylor, Murray, & Jones, 2012). Thus, drawing on the tenets of P/E fit theory, we theorize that the self-employment setting offers a context wherein individuals can more fully reap the benefits of hypomanic behaviors, which in turn positively influences income.

While certain levels of hypomanic behaviors can be beneficial, in their extreme, these behaviors can be detrimental. As such, we also propose that the accrued benefits of hypomanic behaviors do not occur in a linear fashion but are instead curvilinear. In addition, we explore how key moderators, including education and age, influence this relationship.

We chose to explore these potential moderators based on evidence within the literature suggesting they might have important effects on the association between hypomania and self-employment. With regard to education, it is possible that higher levels of education help individuals better determine the overall potential of the opportunities they identify (Honig, 2004). Additionally, since hypomania has been linked with higher levels of optimism, which can enhance opportunity recognition (De Carolis & Saparito, 2006), it is possible that individuals with more education are better adept at deciding which opportunities are best to pursue, resulting in an overall increase in subsequent self-employment performance. Therefore, it is possible that education could enhance the relationship between hypomania and self-employment.

Conversely, age has been shown to have a substantial negative relationship with hypomania symptoms (Angst et al., 2010), which suggests that any association that might exist between hypomania and self-employment is likely to diminish with age and that age may suppress the relationship between hypomania and self-employment. Essentially, the number of hypomania symptoms, and the strengths at which these symptoms are displayed, has been shown to diminish as individuals grow older (Fiedorowicz et al., 2011). Therefore, if hypomania symptoms do have a positive relationship with self-employment, as individuals grow older and these symptoms fade this relationship could weaken. Our approach, then, not only explores the baseline relationship between hypomania and income but also explores the more complex and nuanced nature of this relationship.

By investigating the relationship between hypomania and self-employment, our study makes several important yet preliminary contributions to this area of increasing interest in entrepreneurship research. First, while substantial research has investigated the consequences that entrepreneurship and self-employment can have in relation to mental health (Pollack, Vanepps, & Hayes, 2012; Stephan & Roesler, 2010), considerably less attention has been given to how certain aspects of mental health could enhance success in these occupations. By showing that nonclinically diagnosed hypomania score can be associated with self-employment income, we extend our understanding of factors that could be positively related to self-employment and entrepreneurship.

Second, we build upon recent findings suggesting that ADHD could prove beneficial within the entrepreneurship context (Thurik, Khedhaouria, Torrès, & Verheul, 2016; Verheul et al., 2016; Wiklund, Patzelt, & Dimov, 2016). Our results suggest that other mental conditions may have positive associations with self-employment, albeit through potentially different mechanisms. While ADHD has been argued to influence self-employment primarily via the effects of impulsivity (Wiklund et al., 2017), because impulsivity is not a primary defining characteristics of hypomania, the relationship between hypomania and self-employment is likely to result from other influences (e.g., elevated mood, self-esteem, goal-driven activity). While we are unable to test for these cumulative and cascading mediating factors, we hope this initial effort toward understanding the association between hypomania and self-employment primes additional interest in further unpacking this relationship.

Third, our results broaden our understanding of the potentially positive aspects of negative traits (Judge, Piccolo, & Kosalka, 2009). Prior research has suggested that ''dark side'' traits, such as narcissism and hubris, can have positive effects on key dimensions, such as leadership (Paunonen, Lönnqvist, Verkasalo, Leikas, & Nissinen, 2006) and innovation (Hayward, Shepherd, & Griffin, 2005). Our results reveal further nuances to this perspective and indicate that mental characteristics that have negative outcomes for organizational work contexts may actually be beneficial in environmental settings that provide a better fit for individuals who exhibit these conditions.

Finally, our study makes an important contribution to the existing stream of research on P/E fit theory (Kristof-Brown et al., 2005). Building on the growing literature on how P/E fit

might play a role in self-employment and entrepreneurship (Lee, Wong, Der Foo, & Leung, 2011; Markman & Baron, 2003), our results suggest that individuals with higher hypomania scores could have specific abilities that correspond to the unique demands presented by self-employment as an occupation. From this perspective, it is possible that certain symptoms displayed by individuals with higher hypomania levels (e.g., high self-esteem, enhanced positive mood) could be useful resources that provide better overall P/E fit within self-employment contexts. These findings extend our current understanding of what specific factors are important to consider from the demands-abilities aspect of P/E fit beyond what has been previously examined (e.g., self-efficacy, perseverance, human capital) and provide valuable insight into P/E fit and self-employment.

Hypomania Score and Self-Employment

According to the APA, hypomania is a requisite sub-condition associated with the clinical diagnosis of bipolar II. Hypomania is characterized by abnormally and persistently elevated mood, activity, and/or energy levels (APA, 2013). While the most recent guidelines established for the diagnosis of hypomania state that it is a required component of bipolar II disorder (the other being the presence of at least one depressive episode), recent evidence has indicated that the nonrecognition of pure hypomania as a diagnostic entity in and of itself is problematic (Angst, 2013). Research has shown that hypomania absent any depressive episodes is fairly common among adolescents (Päären et al., 2013), with recent large-scale epidemiological results demonstrating that hypomania frequently occurs independent of depression (Merikangas et al., 2012). These results further highlight the need to examine hypomania as a unique condition outside its inclusion as a component of bipolar disorder.

Although hypomania is often perceived as negative or harmful, individuals with hypomanic symptoms have well-documented characteristics that may prove beneficial in the right environment. For instance, hypomanic symptoms are often associated with high or inflated self-esteem, elevated mood, heightened goal-driven activity, enhanced risk taking, and creativity (Angst, 1998; Angst et al., 2003; APA, 2013; Bauer et al., 1994). Having what is referred to as the hypomanic edge (Gartner, 2008), those with hypomanic symptoms are often considered ''grandiose types'' whose energy, creativity, and enthusiasm underpin their ''spectacular entrepreneurial zeal'' and ''drive for innovation'' (Gartner, 2008, as quoted in Lobban et al., 2012). In this way, certain characteristics of hypomania have the potential to offer distinct benefits to those with symptoms of the condition[1].

With regard to the association between mental conditions (e.g., hypomania) and self-employment, recent research has drawn on P/E fit theory to better understand why individuals who display certain conditions might be well suited for success in entrepreneurial contexts (Verheul et al., 2015, 2016). According to the P/E fit perspective, it is the compatibility between individual and environmental characteristics that determines key career outcomes (Kristof-Brown et al., 2005), including, but not limited to, entrepreneurial intentions (Lee et al., 2011) and performance (Markman & Baron, 2003). From the view of P/E fit, it could be argued that individuals who exhibit hypomanic characteristics may be particularly apt at addressing the environmental demands of an entrepreneurial career. For example, persistently elevated mood could translate into increased optimism, a key factor in entrepreneurship (Ucbasaran, Westhead, Wright, & Flores, 2010), and inflated self-esteem may equate to greater perceived self-efficacy, which can influence several key factors in the entrepreneurial

process (Cardon & Kirk, 2015; Cassar & Friedman, 2009), including performance (Hmieleski & Baron, 2008). Furthermore, increased goal-directed activity could be related to self-regulatory processes, which have been shown to be associated with new venture success (Nambisan & Baron, 2013). Other mechanisms associated with hypomania, such as creativity and risk taking, are central to the entrepreneurial process (Shane & Nicolaou, 2015; Ward, 2004) and are thus likely to translate well into self-employment.

Moreover, prior research has suggested that some of the negative implications of hypomania make the condition challenging in the traditional workplace setting (Michalak, Yatham, Maxwell, Hale, & Lam, 2007). Periods of low mood (i.e., moodiness), impulsivity, erratic sleep patterns, and the social stigma of dealing with hypomanic symptoms present unique challenges to those in the traditional workplace. Hypomanic symptoms also can result in interpersonal conflict, which can create issues with superiors at work (Michalak et al., 2007). It is not surprising, then, that mood symptoms are associated with harmful or negative effects in the traditional workplace (Michalak et al., 2007; Simon, Ludman, Unützer, Operskalski, & Bauer, 2008). As such, drawing on the tenets of the P/E fit perspective, we expect those with hypomania symptoms to fare differently in different types of work settings. We reason that the self-employment context both enables individuals to capitalize on the benefits of hypomanic symptoms and provides an environment that is more conducive to some of the challenging/negative symptoms of hypomania. In this way, we expect measurable differences in performance across settings such that individuals with hypomania who are self-employed realize higher incomes than those who are not self-employed.

While characteristics of hypomania should improve individuals' potential for success in entrepreneurial contexts, at extreme levels, this relationship might not be homogeneously positive. Persistently elevated mood could result in over-optimism, which is perhaps the greatest cognitive bias in many entrepreneurs (Baron, 1998; Cervellati, Pattitoni, Savioli, & Yazdipour, 2013; Hmieleski & Baron, 2009). Heightened levels of over-optimism, for instance, are negatively associated with venture performance (e.g., revenue and employee growth) (Hmieleski & Baron, 2009), and recent evidence suggests that high levels of self-esteem can lead individuals to set unattainable goals, which in turn can be detrimental to entrepreneurial performance (Baron et al., 2016). Additionally, although self-efficacy can improve performance, evidence suggests that there are contexts in which self-efficacy is linked to reduced firm performance (Hmieleski & Baron, 2008). Furthermore, self-efficacy has also been shown to negatively moderate the relationship of certain entrepreneurial activities, such as improvisation, and overall work satisfaction (Hmieleski & Corbett, 2008). Similarly, while goal-driven behaviors can be helpful, extreme levels can prevent individuals from satisfying their basic needs, such as autonomy, competence, and relatedness, which can lead to reduced well-being and performance (Deci & Ryan, 2000). Finally, overly excessive risk taking may prove harmful. Therefore, while moderate levels of hypomania could enhance performance for individuals who are self-employed, high levels of hypomanic characteristics could ultimately be detrimental. Based on this reasoning, we propose the following:

Hypothesis 1a: *Hypomania symptoms will have a stronger positive association with income for those who are self-employed versus those who are not self-employed.*

Hypothesis 1b: *Hypomania symptoms will have a curvilinear (inverted U-shaped) relationship with income for individuals who are self-employed such that moderate levels of hypomania symptoms will be more positively associated with income for self-employed individuals than those with high or low levels of hypomania symptoms.*

Moderating Effects of Education and Age

Previous literature has demonstrated that education has a strong positive influence both on the probability that individuals will become self-employed and on the performance of those who engage in self-employment (Robinson & Sexton, 1994). From a P/E fit perspective, self-employment can be a capital-intensive activity (Dunn & Holtz-Eakin, 1996), and because education can help reduce capital constraints (Parker, 2006), it is possible that individuals with higher levels of education experience better overall fit within the self-employment environment than those with less education. Moreover, education and optimism have been shown to be positively associated with wealth creation and new venture ownership (Parker, 2006). Thus, for individuals who have higher levels of positive mood and optimism stemming from elevated levels of hypomania, it is possible that having more education could enhance their fit within self-employment contexts. More specifically, while the optimism these individuals experience from hypomania could help them identify potential opportunities (Ardichvili, Cardozo, & Ray, 2003; De Carolis & Saparito, 2006), higher levels of education could enable them to better determine which opportunities are most attractive as well as increase the likelihood that they will succeed with their chosen endeavors (Honig, 2004), thereby enhancing the influence that elevated levels of positive mood, as a characteristic of hypomania, might have on self-employment performance.

Additionally, education is positively related to entrepreneurial self-efficacy (Karlsson & Moberg, 2013), which can increase individuals level of satisfaction with regard to entrepreneurial activities (Lee et al., 2011). Furthermore, self-employment as an occupation has been shown to be a better fit for individuals who desire independence (Benz & Frey, 2008; Feldman & Bolino, 2000). From a P/E fit perspective, higher levels of education could provide further reinforcement of the fit that individuals with hypomania symptoms have within self-employment contexts, thereby enhancing the association between hypomania symptoms and income.

Finally, education has been fundamentally linked with intelligence (Mayer, 2000), and previous research has found that intelligence can enhance creativity (Batey, Furnham, & Safiullina, 2010), innovation (Fillis & Rentschler, 2010), and entrepreneurial performance (Ward, 2004). Since increased creativity and innovation have been shown to have positive associations with entrepreneurial intentions (Zampetakis & Moustakis, 2006), creative leadership (Chen, 2007), and new product performance (Im & Workman Jr, 2004), it is possible that these benefits could produce advantages with regard to the P/E fit that individuals experience within self-employment and entrepreneurial contexts. Based on this reasoning, we propose the following:

> ***Hypothesis 2:*** *Education will moderate the relationship between hypomania symptoms and self-employment income such that higher levels of education will strengthen the positive association between low to medium levels of hypomania symptoms and self-employment income and ameliorate the negative association between medium to high levels of hypomania symptoms and self-employment income.*

While education is potentially an important moderator of the relationship between hypomania symptoms and self-employment, it is likely not the only factor that could influence this relationship. Age has been shown to be associated with self-employment and entrepreneurial activity at both the individual (Zissimopoulos & Karoly, 2007; Zissimopoulos, Karoly, & Corporation, 2009) and aggregate (Lévesque & Minniti, 2011) levels. It is possible that age also plays an important role in the relationship between hypomania symptoms and self-employment by influencing the characteristics of hypomania that could relate to

self-employment. In general, age decreases individuals' desire for novelty and sensation seeking (Roth, Schumacher, & Brähler, 2005), which could in turn negatively influence the association between hypomania characteristics and self-employment. More specifically, mood disorders like hypomania have been linked to elevated levels of sensation-seeking behaviors (Bizzarri et al., 2007; Zuckerman & Kuhlman, 2000), and such behaviors have been shown to increase the likelihood an individual will start a new venture (Baron, 1998, 2004). However, because older individuals have a lower desire to engage in novel activities, it is possible that the relationship between hypomania characteristics like increased sensation seeking and self-employment could be reduced for older individuals.

Moreover, evidence suggests that mood disorders in general, as well as the severity of the characteristics exhibited by those who have such conditions, are meaningfully associated with age (Benazzi, 2002). In particular, research has indicated that there is a negative relationship between age and hypomania symptoms (Angst et al., 2010), which further substantiates the potential moderating influence that age could have on the association between hypomania symptoms and income for those who are self-employed. It is possible that as individuals grow older, the hypomania-related symptoms that initially enhanced the P/E fit they experienced within self-employment contexts could diminish, resulting in a lower overall fit with self-employment as an occupation and reduced performance (i.e., income). The effects of these influences could result in age moderating the relationship between hypomania and self-employment, such that the overall association is less pronounced for older individuals. Because we predict that the relationship between hypomania and self-employment will be curvilinear (inverted U-shaped) in nature, this would effectively result in a "flattening" of the curve, thereby reducing the positive relationship between low to medium levels of hypomania scores and income, while also mitigating the potentially negative relationship between medium to high levels of hypomania scores and income, for older self-employed individuals. Based upon this reasoning, we propose the following:

> ***Hypothesis 3:*** *Age will moderate the relationship between hypomania symptoms and self-employment income such that an increase in age will suppress the positive association between low to medium levels of hypomania symptoms and self-employment income and ameliorate the negative association between medium to high levels of hypomania symptoms and self-employment income.*

Method

Sample

When testing the association between hypomania characteristics, self-employment, and income, it is essential to lower omitted variable bias by controlling for potential confounding effects of other mental health symptoms. Lacking a comprehensive control of psychiatric epidemiological conditions, the hypothesized association may be strengthened, weakened, or rendered nonsignificant. Based on this need to control for other clinical diagnoses within the nosological framework of hypomania symptoms, we drew on Wave 1 (2001–2002) of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). Conducted by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) conducted, NESARC—the largest comorbidity study in the United States—used a battery of questions on drugs, alcohol, tobacco, and illicit drug consumption among the civilian non-institutionalized population in the United States. For the purposes of this study, we draw on the extensive battery of the Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders,*

Fourth Edition (DSM-IV) used to measure a variety of psychological conditions, including five mood disorders, four anxiety disorders, and seven personality disorders.

Again, it is important to note that the data we used for this study does not provide clinical diagnoses of psychiatric conditions but rather the level of self-reported characteristics collected by trained data collectors. Our method is in line with the accepted approach in large-scale mental health data-collection efforts that mental conditions lie on a spectrum with normality, so it is important to examine these conditions and their effects even in sub-clinical contexts (David, 2010). To ensure the validity of data collection in Wave 1 of NESARC, 1,800 professional interviewers from the US Census Bureau were trained in a standardized data-collection protocol developed by the NIAAA. These interviewers conducted the surveys (Blanco et al., 2008).

The initial sampling frame of NESARC Wave I was drawn from The Census 2000 Group Quarters Inventory, and participants were randomly selected from systematic samples of group quarters. Minority participants were oversampled, and one adult was selected per household. Data was collected through face-to-face interviews and computer-assisted personal interviews (CAPIs) at respondents' homes. The NESARC I response rate was 81 percent, and the final sample size was 43,093. For additional sampling details, we refer interested readers to https://pubs.niaaa.nih.gov/publications/arh29-2/74-78.htm.

Given the very low prevalence of mental health conditions in the general population, a large sample of 43,093 is salient for testing the proposed hypotheses (Buderer, 1996; Ward, 2013). For example, studies have shown that the prevalence of hypomania is between 2% and 5% (Miller, Dennehy, & Suppes, 2016). As such, the large sample provided sufficient observations for the necessary statistical power (Button et al., 2013). We restricted the sample to those who had a score greater than zero on the hypomania scale and those who were between the ages of 18 and 65 (both years included). The final sample based on case-wise deletion has 3,591 participants. Table A1(a) presents the distributions of the self-employed and employed across key variables.

Measures

An extensive list of the descriptive statistics of all variables employed in our analysis is available upon request.

Income. The outcome measure is a categorical measure of individual income in the past 12 months. We also conducted a robustness check using a continuous measure of the log of income, which led to similar results.

Hypomania score. Hypomania score is the mean of a 13-item (yes/no) scale. This approach is based on Agrawal, Nurnberger, and Lynskey (2010), who drew on a variety of past studies to test the dimensionality of hypomania items. We used all the items listed in their study. The Cronbach's alpha was 0.77.

Researchers involved in the design of the NESARC Wave 1 instrument used established scales and drew on scale instruments mainly from the DSM-IV. It is important to note that we did not use a clinical diagnosis of hypomania—that is, whether one is diagnosed with hypomania (0/1)—but included participants with nonzero hypomania scores. This provides the following advantages. First, the prevalence rate of hypomania in a population ranges from 1 to 4 percent. From a statistical power standpoint, only studying individuals with clinical diagnoses leads to weaker inferences, but more importantly, a clinical diagnosis may relate to conditions so extreme that they may not allow for requisite functioning

within self-employment. Second, using continuous hypomania scores from a population-level study, we can provide a more nuanced theoretical hypothesis on the inverted U-shaped association between hypomania and income for the self-employed.

Education. Education was a categorical variable including the following segments: (a) no formal schooling; (b) completed Grade K, 1, or 2; (c) completed Grade 3 or 4; (d) completed Grade 5 or 6; (e) completed Grade 7; (f) completed Grade 8; (g) some high school (Grades 9 to 11); (h) completed high school; (i) graduate equivalency degree (GED); (j) some college (no degree); (k) completed associate or other technical two-year degree; (l) completed college (bachelor's degree); (m) some graduate or professional studies (completed bachelor's degree but not graduate degree); and (n) completed graduate or professional degree (master's degree or higher). Collapsing Category 9 into 8 led to similar results. The distribution of participants across education categories, based on case-wise deletion is presented in Table A1(b).

Age. We employed date of birth as a proxy for participants' age.

Self-employed. Individuals were coded 1 if they owned a business, professional practice, or farm and were coded 0 if they were employed in a private for- or not-for-profit company or the federal government (excluding the armed forces) or if they were unpaid employees working on a farm or at a family business. All others were coded as missing. Note that NESARC does not provide an additional breakdown of self-employed individuals distributed across business, professional practice, or farm ownership.

Controls. As past work has shown that age, sex, race, having a partner living in one's household, number of children, and number of people in one's household can influence returns from self-employment, we included these as controls (Parker, 2004). To control for overall household endowments, we controlled for household income in the past 12 months. Household endowments could directly influence the labor market outcomes by influencing the willingness to be employed, nature of employment sought, and the effort put forth in employment activities (Hurst & Lusardi, 2004; Kochar, 1995). As height has been shown to influence income (Rietveld, Hessels, & van der Zwan, 2015) and weight and obesity levels have been shown to influence labor market outcomes (Han & Kim, 2016), we included these physiological measures in our controls. Similarly, as health insurance has recently been shown to impact self-employment outcomes, we included a dummy variable for whether the respondent had private health insurance (Gumus & Regan, 2015).

We did not drop any lifetime disorders reported in NESARC Wave 1. Specifically, we included all the available 15 lifetime disorders: dysthymia, manic disorder, panic disorder without agoraphobia, panic disorder with agoraphobia, agoraphobia with no history of panic disorder, social phobia, specific phobia, generalized anxiety disorder, obsessive, paranoid, schizoid, histrionic, antisocial, avoidant, and dependent personality disorder. The mental health disorders were diagnosed based on the Diagnostic Interview Schedule for DSM-IV criteria. The values ranged from 1 to 5, where 1 indicates that the disorder was endorsed and 5 indicates that the disorder was not endorsed (for the purposes of our analyses the values were reverse coded so that higher score relates to worsening condition).

In addition to the direct effects of these conditions, to mitigate concerns of unobserved heterogeneity specific to self-employment and the aforementioned mental health conditions, we also included a control for the interaction "self-employed × condition" Finally, as geographic effects could impact income, we controlled for state fixed effects.

A summary of variable operationalizations and sample descriptives is available in Table A2 in the Supplemental Appendix.

Results

The pair-wise correlations for each variable are presented in Table A3 in the Supplemental Appendix. Our inferences are based on models with controls, for the following reasons. First, our main predictor is personal income and it is directly influenced by a variety of individual level characteristics such as age, gender, education, socioeconomic background, marital status among others. Literature in labor economics, and to an extent in entrepreneurship have found support for these covariates in predicting income. Adjusting for such covariates would be essential in drawing the inferences. Second, the drawbacks of relying on stepwise models in contexts in which psychological conditions are nosologically related have been highlighted in several studies related to our context (Grafen & Hails, 2002; Hurvich & Tsai, 1990; Whittingham, Stephens, Bradbury, & Freckleton, 2006).

Third, Becker et al. (2016) state that the weaker association of covariates with "the DV (e.g., $|r| < .10$)... will not substantively influence results and omitting them will typically increase power and simplify analysis, reporting, and interpretation" (p. 160). The correlations with the personal income variable in Table A3 are $|r| > .10$, except for number of children in household. As such, the inclusion of controls is necessary and the majority of controls are not impotent covariates (Becker et al., 2016). Despite these theoretical and empirical motivations to draw inferences from the full model we are also sensitive to the possibility of false-positives from including controls (Simmons, Nelson, & Simonsohn, 2011). Our aim is to draw the most conservative inferences from Models 1–2 without controls versus Models 3–4 with controls.

Inferences without controls. In Models 1 and 2 in Table 1, controlling for state fixed-effects and using sampling weights provided in NESARC, we test the hypotheses and present the moderation plots in the Supplemental Appendix. In Figure A(1) hypomania score has decreasing returns, and in Figure A(2) self-employed with higher levels of hypomania score have positive and increasing returns. For the self-employed with higher levels of education, income is higher (Figure A(3)) and for the self-employed who are older, income is increasing with higher levels of hypomania score (Figure A(4)). Overall Hypothesis 1a is not supported, Hypothesis 1b is supported, Hypothesis 3 has the significance of $p = .182$, and Hypothesis 3 is supported at $p < .10$.

Inferences with controls. To test for the proposed hypotheses, using the *mixed* routine in Stata 15, we specified a multilevel model with the US states as a Level 2 variable. Table 1 provides the results of a stepwise multilevel model. In Model 3, self-employed individuals have no association with income ($\beta = -0.0833$, $p > .10$). However, consistent with the entrepreneurship earnings puzzle, the direction of association is negative (Hyytinen, Ilmakunnas, & Toivanen, 2013). Education is positively associated with income ($\beta = 0.461$, $p < .01$), and as expected, older individuals have higher incomes, and thereby younger individuals experience lower incomes ($\beta = -0.055$, $p < .01$). Additionally, women have lower incomes ($\beta = -1.661$, $p < .01$), and higher family income is positively associated with individual income. To control for significant unobservable heterogeneity related to strong associations among mental health conditions, we included both the direct and moderation effects (self-employed × condition) of each condition in the regressions. Dysthymia, manic disorder, agoraphobia with no history of panic disorder, and dependent personality disorder are all negatively associated with income. Further, most of the interactions between mental health conditions and self-employment are

Table 1. Multilevel Model Estimates.

	OLS	No controls	Multilevel model	With controls
	(1)	(2)	(3)	(4)
Variables	SIQ10B	SIQ10B	SIQ10B	SIQ10B
Self-employed × hypomania score	21.29	−746.3		1,723**
	(16.14)	(578.7)		(740.6)
Hypomania score × hypomania score	−2.269	−67.67		−170.7
	(5.936)	(171.3)		(141.5)
Self-employed × hypomania	−26.51	1,251*		−1,438*
score × hypomania score	(19.96)	(687.9)		(772.7)
Self-employed × education	0.280			0.803
	(0.282)			(0.495)
Hypomania score × education	−0.239			−0.153
	(0.567)			(0.491)
Self-employed × hypomania	−2.335			−4.940**
score × education	(1.848)			(2.404)
Hypomania score × hypomania	0.0590			−0.0295
score × Education	(0.668)			(0.516)
Self-employed × hypomania score	3.060†			5.521**
× hypomania Score × education	(2.291)			(2.441)
Self-employed × birth year		0.0169		0.191**
		(0.0506)		(0.0766)
Hypomania score × birth year		−0.00707		−0.0747
		(0.0741)		(0.0679)
Self-employed × hypomania		0.380		−0.856**
score × birth year		(0.295)		(0.375)
Hypomania score × hypomania		0.0329		0.0866
score × birth year		(0.0871)		(0.0717)
Self-employed × hypomania		−0.635*		0.709*
score × Hypomania score × birth year		(0.350)		(0.392)
Self-employed	−2.824	−33.94	−0.0833	−381.7**
	(2.496)	(99.13)	(0.335)	(151.2)
Hypomania score	2.535	15.07		149.0
	(5.060)	(145.7)		(134.1)
Education	1.013***		0.461***	0.525***
	(0.0902)		(0.0323)	(0.0972)
Year of birth		−0.0802***	−0.0547***	−0.0436***
		(0.0123)	(0.00445)	(0.0132)
Sex	21.29	−746.3	−1.661***	−1.650***
	(16.14)	(578.7)	(0.136)	(0.136)
Dependent personality disorder			−0.771**	−0.794**

(continued)

Table 1. Continued

	OLS No controls		Multilevel model With controls	
	(1)	(2)	(3)	(4)
Variables	SIQ10B	SIQ10B	SIQ10B	SIQ10B
			(0.380)	(0.381)
Dependent personality			−0.722	−2.888
disorder × self-Employed			(3.377)	(3.503)
Constant	−2.479**	164.2***	118.1***	95.55***
	(1.041)	(24.26)	(9.004)	(26.22)
Controls			Included	Included
State dummies	Included	Included	Included	Included
Sample weight	Included	Included	Included	Included
Observations	4,252	4,252	3,591	3,591
R^2	.192	.106		
Number of groups			51	51
χ^2			3585	3629
p-value			0	0
Change in χ^2 (Change in *df*)				Model 1 vs. Model 2: 22.02(14); $p = .0783$

Note. Standard errors in parentheses.
***$p < .01$. **$p < .05$. *$p < .1$. $^{\dagger}p = .182$.
For the multilevel model, the inferences were consistent when including the sample weight.
Full table available in Table A4 in online Supplemental Appendix.

nonsignificant. For self-employed individuals with panic disorder without agoraphobia or specific phobia, the decline in income is exacerbated. We now move to a discussion of our hypotheses.

In Model 4, our results indicate that hypomania symptoms exert stronger positive effects on income for those who are self-employed versus those who are not self-employed ($\beta = 1{,}723$, $p < .05$), providing support for Hypothesis 1a. Additionally, in Model 4, there is a marginally significant relationship between the squared term of hypomania and income for self-employed individuals ($\beta = -1{,}438$, $p < .10$). To clarify this relationship, Figure 1(a) shows the nonlinear effects of hypomania score on income (note that although the effect is nonlinear, it is not significant in Model 2). Related to Hypothesis 1b, Figure 1(b) shows that with increasing hypomania scores, self-employed individuals do not realize increases in income until about the mid-range; however, income levels are high at very high hypomania scores. Overall, the inverted U-shaped association proposed in Hypothesis 1b is not supported in the model with controls, and the results suggest nonlinear increasing effects.

Related to Hypothesis 2, we proposed that education would further strengthen the nonlinear association proposed in Hypothesis 1b (Table 1, Model 4: $\beta = 5.521$, $p < .05$). In Figure 1(c), we present the margins plots for self-employed and employed individuals. The conditional effects are plotted at mean − 1 standard deviation (*SD*), mean, and mean + 1 *SD*. The conditional effects for employed individuals are not present given the almost flat effects that are close together. However, for the plot for self-employed individuals,

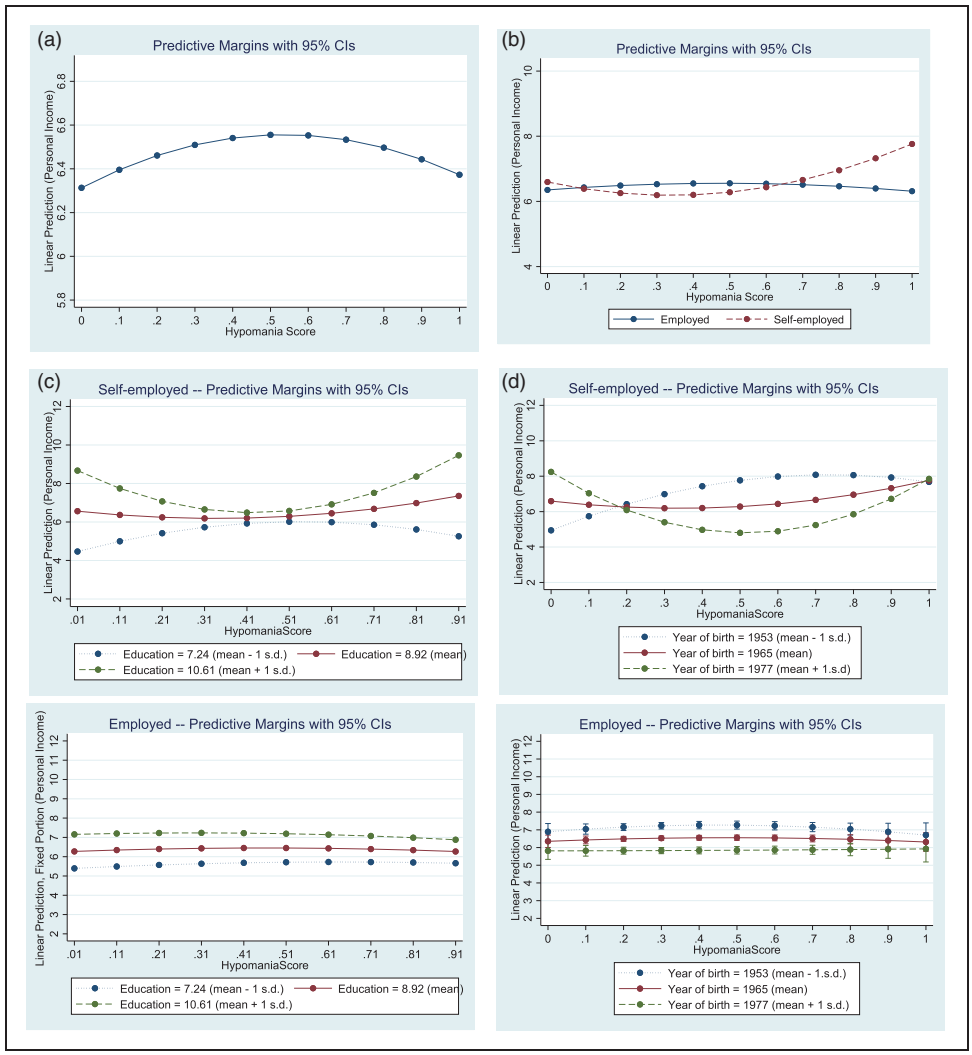

Figure 1. Moderation effects. (a): Squared term of hypomania. (b): Squared term of hypomania and self-employment. (c): Squared term of hypomania, self-employment, and education. (d): Squared term of hypomania, self-employment, and year of birth.

for those with higher education (dashed line), the effects are U-shaped, and for those with lower education (dotted line), the effects are inverted U-shaped. These associations seem to suggest that those with lower education and increasing hypomania scores have lower self-employment incomes. Those with higher education have higher incomes when reporting either low or high hypomania scores.

Related to Hypothesis 3, we proposed that age would weaken the nonlinear association proposed in Hypothesis 1b (Table 1, Model 4: $\beta = 0.709$, $p < .10$). In Figure 1(d), the conditional effects for employed individuals are nonsignificant given the lines are almost flat and very close. The effects for self-employed individuals show that older individuals

(dotted line) realize decreasing incomes with increasing hypomania scores, whereas younger individuals (dashed line) with very low or very high hypomania scores have higher incomes. Interestingly, the effects for older individuals who are self-employed appear to be nonlinear, with a diminishing effect at higher levels of hypomania scores. Overall Hypothesis 1b is not supported, Hypothesis 3 is marginally supported, and Hypothesis 1a and Hypothesis 2 are supported.

Overall inferences from models with and without controls. Considering the models with and without controls in the previous two subsections, we make the following conservative inferences: (a) for self-employed, hypomania has a positive association with income; (b) self-employed with higher education have higher levels of income with increasing hypomania score; (c) older self-employed with a higher hypomania score have a higher income. While the full model inferences are desired given the strong covariation among the psychological conditions and correlations with income above |0.10| (Becker et al., 2016), we err on the side of caution to provide conservative inferences. With these conservative inferences as a backdrop, to provide the readers with the robustness of our inferences for the full model we conduct the additional analyses below.

Additional Analysis

Measure of income. In the full analysis, we used a categorical measure of income as it may be less biased to over- or under-reporting (Hurst, Li, & Pugsley, 2014). The inferences for the results using the log of a continuous measure of income in the data (variable name in the data: S1Q10A) shown in are consistent in direction and magnitude with the main results. Full results of these robustness check models are available upon request.

Ordinal regression. As the outcome variable in the main analysis is categorical, the results using ordinal regression are consistent with the main results. Again, full results of this analysis is available upon request.

Post-Hoc Analysis

Sub-sample of individuals with lifetime hypomania. While the prevalence of hypomania is small in the general population, it could cause unique challenges to participating in the labor force. As such, we used hypomania score in the main analysis. To further understand the nature of self-employment-related income outcomes for those diagnosed with lifetime hypomania, using the same specification as the main specification, in Table 2, we test for the association between self-employment, education, and age on income. Table 2 shows that hypomania scores do not have a significant association with income for those who are self-employed. Based on the estimates in Table 2 and the plot in Figure 2(a), employees with high hypomania scores and higher education may realize higher incomes; however, self-employed individuals with high hypomania scores have no income gains from education. Furthermore, older employed or self-employed individuals with high hypomania scores do not differ significantly on income (Figure 2(b)).

Hypomania score reporting. While our theoretical focus is on income as our dependent variable, it may be of interest to understand whether self-employed individuals differ systematically from employed individuals in their hypomania scores. The DSM-IV scale stem for hypomania score asks respondents to provide responses based on "Had 1+ week period of excitement/

Table 2. Lifetime Hypomania Sub-Sample (Multilevel Model Estimates).

Variables	(1)
Self-employed	41.49
	(84.71)
Education	0.422***
	(0.0612)
Self-employed × education	−0.457*
	(0.246)
Birth year	−0.0607***
	(0.00867)
Self-employed × birth year	−0.0185
	(0.0430)
Controls	Included
Constant	123.3***
	(17.43)
FIPS state code	Level-2
Observations	868
Wald χ^2	Wald χ^2 (43) = 1347.83 Prob > χ^2 = .0000

Note. Standard errors in parentheses.
***$p < .01$. **$p < .05$. *$p < .1$.

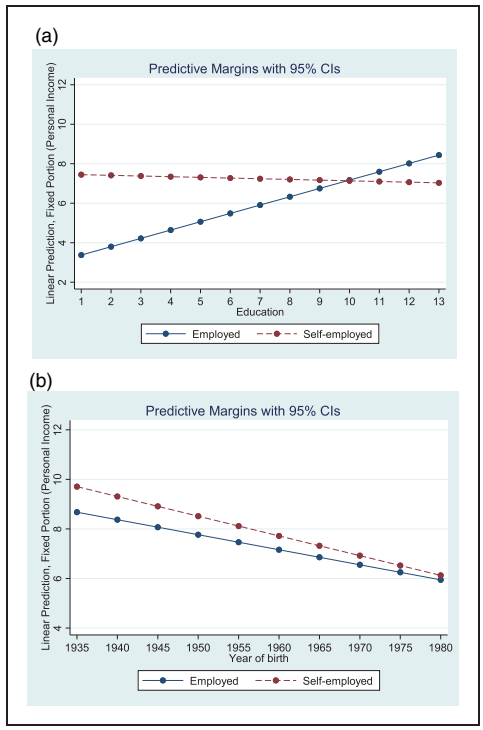

Figure 2. (a): Lifetime hypomania sub-sample—Effects of education. (b): Lifetime hypomania sub-sample—Effects of age.

Table 3. Predicting Self-Employment—Multilevel Model Estimates.

Variables	(1)	(2)
Hypomania score	−0.0268	
	(0.368)	
Hypomania life		−0.0496
		(0.158)
Dysthymia	−0.0564	0.0692
	(0.203)	(0.114)
Manic disorder life	−0.0793	−0.201
	(0.202)	(0.143)
Panic disorder without agoraphobia	−0.273	−0.158
	(0.228)	(0.123)
Panic disorder with agoraphobia	−0.0141	−0.173
	(0.396)	(0.243)
Agoraphobia with no history of panic disorder	−0.538	−0.751
	(1.073)	(0.742)
Social phobia	0.269	0.214*
	(0.223)	(0.114)
Specific phobia	0.231	0.114
	(0.178)	(0.0823)
Generalized anxiety disorder life	0.00978	0.0817
	(0.216)	(0.118)
Obsessive compulsive disorder	0.392**	0.221**
	(0.173)	(0.0887)
Paranoid	0.0888	−0.0241
	(0.204)	(0.129)
Schizoid	−0.643**	−0.358**
	(0.281)	(0.161)
Histrionic	0.109	0.228
	(0.275)	(0.174)
Antisocial	0.268	0.0497
	(0.204)	(0.126)
Avoidant	−0.247	−0.0675
	(0.293)	(0.181)
Dependent personality disorder	−1.712*	−1.032*
	(1.038)	(0.604)
Education	0.0181	0.0635***
	(0.0455)	(0.0135)
Birth year	−0.0390***	−0.0362***
	(0.00634)	(0.00222)
Personal income	−0.0185	−0.0254***
	(0.0226)	(0.00712)

(continued)

Table 3. Continued

Variables	(1)	(2)
Sex	−0.132	−0.0643
	(0.209)	(0.0693)
Native American	−0.598*	0.124
	(0.311)	(0.155)
Asian	−1.137**	0.155
	(0.534)	(0.219)
Black or African American	−0.502	0.466**
	(0.422)	(0.192)
Hawaiian or other Pacific Islander		0.328
		(0.323)
White	−0.823**	−0.0705
	(0.414)	(0.186)
Partner in household	−0.309*	−0.384***
	(0.172)	(0.0615)
Number of children in household	0.168	0.256***
	(0.122)	(0.0456)
Number of people in household	−0.120	−0.176***
	(0.107)	(0.0405)
Family income (12 months)	2.41e−06	9.80e−07***
	(1.47e−06)	(3.16e−07)
Height	0.00270	0.0455***
	(0.0262)	(0.00909)
Weight	0.000931	−0.00164**
	(0.00173)	(0.000711)
Health insurance	1.030***	0.877***
	(0.163)	(0.0553)
Constant	77.80***	62.86***
	(12.60)	(4.506)
Observations	4,002	29,438
Number of groups	51	51

Note. Standard errors in parentheses.
***$p < .01$. **$p < .05$. *$p < .1$.

elation that seemed not normal self." We conducted three tests to lower potential reporting biases from entrepreneurs elated by business activities who may have responded more positively to hypomania items. As an exploratory test, we plotted the density plots, and as a visual test, we found no meaningful difference in reporting. We next list the three empirical tests to further lower concerns for such reporting biases.

First, using a multilevel model (Model 1), Table 3 shows that hypomania score is not associated with self-employment ($\beta = -0.0268$, $p > .10$). In other words, self-employed individuals did not differ significantly from employed individuals in reporting hypomania scores

in NESARC I. Second, we conducted matched-pair sampling using one-to-one matching (Δmean: 0.0263, t-stat = 1.01), one-to-one matching without replacement (Δmean: 0.0238, t-stat = 0.97), and local linear regression (Δmean: 0.0120, t-stat = 0.46). Third, using controls from the main specification, we conducted a quantile regression to assess the effect of self-employment around the median hypomania score. The plot of these analyses is available upon request. Our results indicate that self-employed individuals do not seem to vary significantly across different hypomania scores.

Overall, we infer that in our sample, there is no significant variation in hypomania scores between employed and self-employed individuals based on the mean-based analyses (multilevel model and matched-pair analysis) and median-based analysis (quantile regression) we conducted.

Psychological conditions association with self-employment. As an auxiliary analysis, we explored the association between hypomania and all other available psychological conditions. The discussion related to Table 3 in the previous section shows that hypomania is not significantly associated with self-employment. With growing interest in understanding the role of psychological conditions that may enable self-employment, researchers may be interested in understanding such associations in our data. Table 3, Model 2, which includes all the psychological conditions and the controls from the main specifications, shows that those with obsessive-compulsive personality disorder are positively associated with self-employment in both models, whereas individuals with schizoid personality disorder and those with dependent personality disorder are less likely to be self-employed in both models.

Discussion

Mental health conditions are epidemiologically prevalent within the United States, and can significantly influence individual, organizational, and economic outcomes. Evidence suggests that in the United States, nearly half of the population will experience some form of mental health condition over the course of their lifetime (Kessler et al., 2007), and the resulting economic impact is estimated to cost US firms more than $200 billion in the form of increased health care costs and loss of worker productivity (Roehrig, 2016). Individuals with mental illness have been shown to be among the most socially and economically marginalized members of society (Waghorn & Lloyd, 2005). As a result, a rich tradition of research has emerged that examines mental health conditions in the workplace setting (Egan et al., 2007; Goetzel et al., 2004; Harter, Schmidt, & Keyes, 2003). We build on and extend this stream of research by examining the association between hypomania characteristics and self-employment.

With regards to our contribution to the literature, we address the primary issue of incompleteness in terms of our understanding of the relationships between mental health conditions and self-employment. There is a large body of work on the potential consequences of mental health, particularly within the employment setting (Brown & Lent, 2016). However, we are just beginning to explore the role that mental health conditions could play within the self-employment context. Aside from a few preliminary forays into examining the associations between mental health conditions (e.g., ADHD) and self-employment (Thurik et al., 2016; Wiklund et al., 2017), our current understanding of the broader role of mental health in self-employment and entrepreneurship suffer from what can be considered an incompleteness problem (Locke & Golden-Biddle, 1997). Namely, we lack an understanding of how most prominent mental health conditions positively or negatively influence individuals who pursue self-employment. By introducing and expanding upon our understanding of how a prevalent

mental health condition (i.e., hypomania) relates to self-employment, this study contributes to the existing literature by developing a more complete understanding of the role of mental health in self-employment.

In presenting our results, we indicate that additional mental health conditions (i.e., hypomania) could prove beneficial for individuals who are self-employed, primarily as a result of enhanced P/E fit. These results suggest that a greater understanding of the association between mental health and self-employment could be gained by further examining how other mental health conditions might relate to income from self-employment. This study represents an initial step towards such an understanding. Building off recent research suggesting that certain mental conditions might improve P/E fit within a self-employment context (Wiklund et al., 2016, 2017), we propose that the unique traits characterized by hypomania might also prove beneficial for individuals who pursue self-employment as an occupation. As such, the purpose of this paper is to help address the current incompleteness of our understanding of the relationship between mental health and self-employment, and in so doing contribute to our knowledge of the role that mental health can play in the entrepreneurial process.

Our findings extend research regarding the mental health factors that could be associated with self-employment and entrepreneurial endeavors. The results of our study indicate that hypomania symptoms do have a positive association with income for those who are self-employed versus those who are not self-employed. Although we hypothesized an inverted U-shaped relationship between self-reported hypomania symptoms (using nonclinical data collected by trained interviewers) and income, our results do not support this hypothesis. Interestingly, while our results do not indicate that low to medium levels of hypomania symptoms are positively associated with self-employment income, high levels of hypomania symptoms do have a positive relationship with self-employment income (Figure 1b and Figure A(2)). This finding suggests that the ''too much of a good thing'' phenomenon often associated with other individual influences, such as personality characteristics, on work performance (Le et al., 2011) might not be present in the relationship between hypomania and self-employment. Instead, perhaps high levels of hypomania, and more particularly the characteristics associated with this particular condition (e.g., elevated mood, increased activity, grandiosity), are required to meet the demands and persisting difficulties individuals face when pursuing self-employment as an occupation. However, it is important to note that there could be limits to this relationship, and for individuals with clinical levels of hypomania, this positive association might not exist in other samples.

Furthermore, our results provide important insights into the boundary conditions and nuances of the relationship between hypomania symptoms and self-employment income. Conservatively, with regards to education, hypomania symptoms may be positively associated with income among self-employed. The results with the controls show that for individuals with lower levels of education, hypomania symptoms have an inverted U-shaped relationship with self-employment income, suggesting that for these individuals, moderate levels of hypomania symptoms are most beneficial. While these results might seem somewhat counterintuitive, research from cognitive neuroscience can provide some insight into the underlying mechanisms behind these effects in the model with controls. According to this research stream, the decision-making process can be divided into three distinct stages—(a) option generation, (b) option selection, and (c) option action (Kalis, Mojzisch, Schweizer, & Kaiser, 2008)—and hypomania symptoms could have differential influences on each stage of this process. While hypomania could help motivate option selection and action by increasing the perceived rewards individuals believe they can

obtain as well as the overall need to be highly active, it is also possible that hypomania negatively influences option generation.

While these results might seem counterintuitive, because hypomania has been linked to activity within the same regions of the brain (i.e., prefrontal cortex) (Harmon-Jones et al., 2002) as option generation (Kalis et al., 2008), it is possible that hypomania could in some way interfere with individuals' ability to generate larger numbers of options to consider for any given decision-making scenario. For individuals with higher levels of education, the positive benefits that hypomania could produce with regard to option selection and action could outweigh the potential negative effects of reduced option generation. Assuming that the options individuals with more education generate are higher quality due to their additional education, reducing the number of options they generate could reduce the potential "paralysis by analysis" effect that often occurs in situations with a large number of potential alternatives (Schwartz, 2009). This reduction in the potential delay in option selection could result in improved decision making and performance at higher levels of hypomania symptoms. Conversely, for individuals with less education, it is possible that this reduction in the number of options they generate in decision-making scenarios could be detrimental enough to reduce the benefits they receive from selection and action. It is possible that because they have less education, they need to be more comprehensive in terms of the number of options they consider to determine the optimal solution to a given decision. By limiting their options, they could reduce the likelihood of making an optimal decision, thereby lowering overall performance. Therefore, related to the results from the models with controls more moderate levels of hypomania symptoms could be most beneficial for individuals with less education as such symptom could afford them the opportunity to capitalize on selection and action benefits without incurring the penalties related to reduced option generation within decision-making contexts. However, considering the analyses with and without the controls, we infer that with increasing hypomania symptoms, self-employed with higher education have a stronger association with income.

Regarding the moderating influence of age, our conservative inferences suggest that hypomania symptoms have a positive association with income for older self-employed individuals. Given that older individuals are more capable of managing their mood disorders (Angst et al., 2010), it is logical to assume that the influence that hypomania symptoms have on older individuals will be suppressed. For younger individuals, the U-shaped relationship found in the analyses with controls, indicates that perhaps the factors that result in the main relationship we found between hypomania symptoms and self-employment income are even more pronounced. If hypomania symptoms can indeed assist individuals in coping with adversity and increase the overall resilience of individuals who experience adversity, then it is possible that these factors are particularly useful for younger individuals. Evidence suggests that young individuals face particularly high levels of adversity when pursuing entrepreneurial endeavors and that the ability to persist in the face of such obstacles is especially important for young entrepreneurs (DiGregorio & Cordova, 2014). As a result, it is possible that the elevated moods and increased activity associated with high levels of hypomania symptoms could translate into even greater benefits for younger individuals. Again, considering the analyses with and without the controls, we infer that with increasing hypomania symptoms, older self-employed have a stronger association with income.

Additionally, our results further recent research on the connection between mental conditions (e.g., ADHD) and self-employment (Thurik et al., 2016; Verheul et al., 2015, 2016). Our results reinforce the notion that mental conditions are not uniformly negative for occupational performance, and our exploratory analysis suggests that hypomania could prove beneficial for individuals who pursue self-employment. We extend the perspective that

conditions like ADHD could provide distinct benefits for those who are self-employed and demonstrate that other similar conditions, such as hypomania, could also have characteristics that enhance individuals' performance in self-employment and entrepreneurial endeavors. It is our hope that these results contribute to alleviating the social stigmas associated with mental health (Bharadwaj, Pai, & Suziedelyte, 2015; Corrigan, 2004) and demonstrate that individuals who exhibit such conditions can be particularly productive in certain environmental contexts.

Furthermore, we extend the rich literature examining the ''light side'' of ''dark characteristics'' from organizational (Judge et al., 2009) as well as entrepreneurial (Rauthmann & Kolar, 2012) perspectives. Building upon prior research into how supposed ''dark triad'' personality traits relate to entrepreneurship (Sumner, Byers, Boochever, & Park, 2012; Tucker, Lowman, & Marino, 2016), we extend this research beyond personality traits into potential mood disorders. Just as recent evidence has suggested that dark personality traits can prove beneficial for entrepreneurship and self-employment (Hmieleski & Lerner, 2013, 2016), our results broadly indicate such positive relationships between potential mood disorders and income for individuals who are self-employed. This finding adds important nuance to our understanding of how factors that are often considered negative in general could indeed be positive influences within specific entrepreneurial contexts.

Finally, our study provides us with valuable insight into research regarding P/E fit and the role it may play in self-employment. While research has long stressed the importance of P/E fit within organizational settings (Kristof-Brown et al., 2005) and attention on the relevance of this perspective within entrepreneurial contexts has been growing (Lee et al., 2011; Markman & Baron, 2003), our results extend this logic to help account for why self-employment might provide a particularly benevolent environment for individuals with higher hypomania scores. Contextual factors can exert substantial influence on the nature and extent of self-employment (Welter, 2011), and it is possible specific institutional factors affect the overall P/E fit between individuals with higher hypomania scores and self-employment. For example, prevalent cultural norms could establish certain aspects of hypomania (e.g., elevated mood, high self-esteem) as more socially acceptable within the contexts of self-employment. Furthermore, it is possible that individuals who exhibit such characteristics might have advantages in certain social contexts that allow them to better leverage their own social capital (e.g., social networks, family, friends) when pursuing self-employment as an occupation. Our findings help extend our understanding of how P/E fit can influence self-employment and shed additional light on the notion that context matters when considering the self-employment process.

Limitations and Future Research

As with all studies, it is important to note the limitations of our current work. First, while we present evidence of the association between hypomania and self-employment income as well as theoretical justification for the potential mechanisms driving this relationship, we do not explicitly examine what factors could *mediate* this relationship. Future research will need to examine how factors like risk taking, optimism, confidence, and positive affect could serve as potential mediators or moderators of the relationship between hypomania and self-employment. This research could focus not only on which of these factors might best mediate this relationship but also on whether or not hypomania has differential effects on self-employment income depending on the path through which that influence takes place.

Second, while we follow well-established conventions with regard to using self-reported instruments collected by trained interviewers to measure hypomania scores, self-report bias

could still influence our results. Future research employing more objective measures or even clinical diagnoses will be needed to further substantiate our results. The use of clinical diagnoses would also be beneficial to determine whether or not the relationships we present extend beyond the sub-clinical range of hypomania and are generalizable to individuals with more severe conditions.

Third, while we present evidence related to the association between hypomania characteristics and income for self-employed individuals and control for the potential influence that other conditions might have on this relationship, we do not explicitly examine how other mental conditions might influence other self-employment outcomes. Future research will need to extend this work and examine what relationship other conditions—mental health in a more general sense—might have with self-employment.

Fourth, our study explores performance in self-employment, not the likelihood of entering self-employment. Although our results do not show any significant difference in hypomania between employed and self-employed, a fruitful line of research might explore how hypomania and other mental health conditions influence individuals' probability of entering self-employment.

Fifth, while we examine the moderating influence that specific demographic variables (i.e., education and age) might have on the relationship between hypomania characteristics and self-employment income, there are numerous other factors that could moderate this relationship. For example, personality characteristics can influence how mood disorders relate to key outcomes (Soloff, Lynch, Kelly, Malone, & Mann, 2000), which suggests that such factors could potentially moderate the relationship between hypomania and self-employment as well. Additional research into the potential cognitive, emotional, and social influences on the relationship between hypomania characteristics and self-employment will be needed in future studies. In addition, the moderators we did include could be decomposed empirically to further explore the underlying subdimensions. For example, while we offer evidence on the broader moderating role of education, future research might further zoom in on education to offer a more nuanced investigation. Parceling out the specific drivers of education (e.g., intelligence, self-efficacy) and their potential interactions could lead to a more detailed understanding of why education influences hypomania and potentially other mental health conditions in the business setting.

Sixth, it is possible that hypomania symptoms may overlap with ADHD symptoms. As such, the nosological association between hypomania and ADHD symptoms may be of interest in future research. Although the data did not include a measure for ADHD, we took several steps to lower the effects of closely related networks. We included the direct effects of several alternative mental conditions and their interactions with self-employment in all our models. This approach not only lowers the omitted variable bias but includes variance related to a variety of psychological disorders, potentially reducing the limitations of not including ADHD measures. Furthermore, the hypomania scale is well established, and we expect that its psychometric properties are distinct from those of the ADHD battery.

Finally, in Table 3 and the associated discussion on matched-pair sampling and quantile regression, self-employed individuals do not vary systematically from employed individuals on the hypomania scale. While recent studies have shown the association between ADHD and self-employment, we did not find such effects. As such, the effects of hypomania may not be consistent with those of ADHD. In other words, if the effects of ADHD overlap with those of hypomania, one would expect the effects of hypomania in predicting self-employment to be positive. Nevertheless, parsing the relationship between hypomania and ADHD is a valuable direction for future research.

A broader research endeavor to address in future studies is identifying a core group of mental health conditions that may be detrimental or beneficial to self-employment choice and outcomes. It is possible that a constellation of mental health conditions could be positively associated with self-employment outcomes. Furthermore, mental health scores could be the undergird to cognitive outcomes and may interact with personality-related factors to provide a richer understanding of self-employment dynamics at the intersection of mental health, personality, and cognition.

Conclusion

While recent evidence has suggested that certain mental conditions can be related to self-employment and entrepreneurial endeavors (Wiklund et al., 2017), research has only begun to identify the associations between mental conditions and self-employment. To address this, we tested the link between hypomania scores and self-employment and examined what potential moderators might influence this relationship. Building off previous work on the relationship between ADHD and self-employment (Wiklund et al., 2016), our study is the first to our knowledge to examine the association between another prevalent mental condition (i.e., hypomania) and income differences between employed and self-employed. Our findings contribute to a more comprehensive understanding of how certain mental conditions act within a P/E fit framework to determine which individuals might be best suited to succeed in self-employment environments. In sum, our study helps further validate the notion that mental conditions, while traditionally stigmatized within organizational contexts, can perhaps provide an important advantage for individuals who decide to pursue self-employment opportunities.

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Supplemental Material

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Note

1. Hypomania shares certain key characteristics with ADHD, such as elevated levels of risk taking, and creativity. Indeed, evidence suggests a level of comorbidity for hypomania in individuals with certain sub-types of ADHD (Reich, Neuman, Volk, Joyner, & Todd, 2012). Although there is some overlap between key characteristics of ADHD and hypomania, several characteristics described are unique to hypomania, and these unique hypomania symptoms together result in a distinct influence on self-employment. In addition, ADHD is not a mood disorder and encompasses effects that are not consistent with hypomania, such as high levels of hyperactivity and lack of focus.

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