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Detecting the dark side of personality using social media status updates

Reece Akhtar^a, Dave Winsborough^{b,c}, Uri Ort^{d,e}, Abigail Johnson^{b,e},
Tomas Chamorro-Premuzic^{a,e,*}



^a Department of Psychology & Language Sciences, University College London, 26 Bedford Way, London, WC1H 0AP, UK

^b Hogan Assessment Systems, 11 South Greenwood, Tulsa, OK 74012, USA

^c Winsborough Limited, Chelsea House, 85 Fort Street, Auckland 1010, New Zealand

^d BrazenX LLC, 134 N 4th Street, New York, NY 11249, USA

^e Teachers College, Columbia University, 525 West 120th St, New York City, NY 10027, USA

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ABSTRACT

Organizations use personality assessments to inform recruitment decisions as they are predictive of work-related outcomes. While accurate, these assessments are time-consuming and expensive. Using digital records of behavior to assess personality may offer an alternative solution to overcome these limitations. In this study, we explore whether the “dark side” of personality (non-clinical dysfunctional dispositions) can be inferred through the language used in Facebook Status Updates. Using the Hogan Development Survey (HDS), machine learning methods, and the Linguistic Inquiry and Word Count, language use was found to hold a relationship with HDS scores. The Excitable, Dutiful and Bold scales held the strongest relationship with language ($R = 0.27, 0.25$ & 0.22 , respectively), while the Cautious, Colorful and Leisurely scales held the weakest relationship ($R = 0.06, 0.07$, & 0.08 , respectively). This study extends previous research by demonstrating that the full spectrum of dysfunctional dispositions can be measured using online language. Implications for theory and practice are discussed.

1. Introduction

As organizations strive to remain competitive, the ability to hire and develop talented people is a priority for leaders. Organizations need talent that not only have technical expertise, but also a suitable personality profile. Specifically, to be motivated, rewarding to work with, and capable of handling ambiguity (Hogan, Chamorro-Premuzic, & Kaiser, 2013). Accordingly, psychometric assessment that can predict these outcomes have proven to be a useful tool for informing selection decisions.

While a preponderance of evidence supports the use of psychometric assessments, they are expensive for the organization and cumbersome for the participant. Accordingly, some have suggested that Industrial-Organizational (I-O) psychologists should explore whether digital records of behavior (emails, social media use, browsing patterns, purchasing history, etc.) could be used to build alternative psychometric assessments that are equally valid while overcoming the logistical issues associated with traditional assessment methods (Chamorro-Premuzic, Winsborough, Sherman, & Hogan, 2013). Such a position is motivated by the proliferation of digital platforms that generate vast amounts of user-generated data: every minute approximately three

million Facebook posts are shared, over 150 million e-mails are sent and > 300,000 tweets are posted to Twitter (Internet Live Stats, 2017).

A growing body of research demonstrates digital records to be accurate measures of individual differences. For instance, Kosinski, Stillwell, and Graepel (2013) found Facebook Likes to reliably predict demographic attributes and the Big Five personality dimensions. Online language has also been found to predict socio-demographics and Big Five scores (Kulkarni et al., 2017; Park et al., 2015). Others have produced similar research using cell-phone usage (De Montjoye, Quoidbach, Robic, & Pentland, 2013), location-aware services (Chorley, Whitaker, & Allen, 2015) and video blogs (Biel, Tsiminaki, Dines, & Gatica-Perez, 2013). Such research has accelerated due to improvements in technology making it easy for psychologists to scrape, mine and study digital records (Kosinski, Wang, Lakkaraju, & Leskovec, 2016).

This study sought to extend this line of research by investigating the extent to which digital records, specifically the online language containing Facebook Status Updates, can infer the dark side of personality (i.e. nonclinical, yet dysfunctional & maladaptive behavioral dispositions; Hogan, 2007). We studied the relationship between online language and the dark side of personality for four reasons: first, the

* Corresponding author at: University College London, Department of Psychology, 26 Bedford Way, London WC1H 0AP, UK.
E-mail address: t.chamorro@ucl.ac.uk (T. Chamorro-Premuzic).

majority of individual difference and digital records research has focused on the “normal” personality dimensions such as the Big Five. Second, the dark side of personality is related to a plethora of work-related outcomes, motivating organizations to actively screen employees for such dispositions (Gaddis & Foster, 2015). Third, we studied online language, over other digital records, as there is a considerable amount of existing research investigating the relationship between personality and language (Park et al., 2015). Furthermore, as language is ubiquitous across digital platforms and mediums, our findings may be more generalizable than if we studied platform-specific records. Last, in contrast with previous research, this paper adopts an approach that is more suitable for the I-O context.

1.1. The dark side of personality

If personality is to be understood as a multitude of continuous and orthogonal constructs, it is hypothesized that the behavioral dispositions that fall at the extremes of these dimensions capture the “dark side of personality”, as they are dysfunctional, maladaptive, strain interpersonal relationships, and negatively impact occupational performance and effectiveness (Hogan, 2007). The dominant model to explore such dispositions is the Dark Triad, which describes three malevolent and dysfunctional non-clinical dimensions: psychopathy, narcissism and Machiavellianism (Paulhus & Williams, 2002). This construct has received considerable attention given its robust psychometric properties and validity (Furnham, Richards, & Paulhus, 2013). For example, a meta-analysis by O’Boyle, Forsyth, Banks, and McDaniel (2012) found the Dark Triad to predict counterproductive work behaviors, such as mistreatment of co-workers, theft, and sabotage.

Despite its validity, the Dark Triad is not a complete taxonomy of the dark side of personality as it is confined to agentic, selfish and callous behaviors (Jonason, Li, & Teicher, 2010). An alternative model of maladaptive individual differences is the HDS, which extends the dimensionality of the Dark Triad and re-conceptualizes the eleven DSM personality disorders (PDs) as non-clinical and continuous dimensions (Hogan & Hogan, 2009).¹ Unlike the Dark Triad, the HDS was designed specifically to assess a wide array of problematic dispositions that impact interpersonal relationships and effectiveness within the workplace. It is built upon Socioanalytic theory, which posits that humans are unconsciously motivated by the need to get along, get ahead, and find meaning (Hogan, 2007). The extent to which an individual is motivated by these needs is expressed through their personality. Dysfunction arises when the individual has poor self-awareness, is under stress, or lacks the ability to regulate their emotions. As a result, their pursuit of these three needs is inhibited — straining their autonomy, emotional well-being and relationships (Hogan, 2007). Evidence surrounding the validity and utility in using the HDS is summarized in a meta-analysis by Gaddis and Foster (2015).

1.2. Language & the dark side of personality

Ranging from psychoanalytic theory to the lexical approach, language has long served as the foundation for personality theory and measurement. This is because language is the most effective way for individuals to describe themselves, others and the world (Tausczik & Pennebaker, 2010). Given that the “bright side” of personality can be accurately measured through language use, it is not surprising that the same is true for the dark side.

Researchers commonly employ the Dark Triad when exploring the relationship between online language used and dark dispositions. For

instance, Sumner, Byers, Boochever, and Park (2012) used the Linguistic Inquiry and Word Count method (LIWC; Pennebaker, Booth, Boyd, & Francis, 2015) to classify the language used on Twitter, and found psychopathy and Machiavellianism to be correlated with swear words and expressions of anger, while narcissism scores were correlated with sexual content. Preoiuc-Pietro, Carpenter, Giorgi, and Ungar (2016) also explored the relationship between the Dark Triad and Twitter activity. Using the bag-of-words method to classify language, they found narcissism to be positively correlated with word topics that represented the banal (everyday activities, TV shows, etc.), alongside emotions of trust and positivity. Psychopathy was correlated with topics that represented aggression and violence. Machiavellianism was correlated with expressions of gratitude, yet, held weaker correlations with language when compared to the other two personality dimensions. Finally, Carey et al. (2015) studied the relationship between Narcissism and personal pronouns, exploring the hypothesis that narcissistic individuals tend to talk about themselves. Analyzing short essays, they refuted this hypothesis. There was no relationship between narcissism scores and the use of personal pronouns, a finding that challenges common assumptions about the narcissistic personality dimension.

This research demonstrates that dark dispositions can be inferred through the analysis of online language, yet there are notable limitations with this body of work. First, and as previously described, the Dark Triad is not a complete model of dark personalities. The HDS offers a broader perspective on dysfunctional dispositions. Therefore, analyzing the relationship between HDS scores and online language may reveal a more nuanced relationship across more dimensions. In addition, given the criterion validity of the HDS, it stands to reason that predicting negative dispositions online may generalize to behavior in the workplace (Back et al., 2010; Buckels, Trapnell, & Paulhus, 2014).

Second, the reviewed literature has largely relied on Twitter data as it is easier to scrape than other platforms, such as LinkedIn, Whatsapp, or Facebook. Given that social media platforms vary in their functionality and purposes (e.g. Twitter is a micro-blogging platform, while Facebook functions as a shared online journal), the style and content of language use may vary. It is possible that the relationship between language and dark dispositions may be potentiated across platforms. Furthermore, since platforms offer users different gratifications, certain dimensions of the dark side may be over- or under-represented in comparison to other platforms (Hughes, Rowe, Batey, & Lee, 2012). For this reason, research that has relied on Twitter users may have produced findings that are not generalizable to the broader population. Accordingly, there is an opportunity to investigate the extent to which previous findings can be replicated in samples collected from other platforms.

1.3. Research aims & objectives

While previous research has established that the dark side of personality can be inferred by online language, there remains gaps in knowledge due to theoretical and methodological limitations. This paper sought to address these limitations by using the HDS as an alternative measure of the dark side and Facebook posts as an alternative source of language. Using the HDS to assess eleven dysfunctional personality dimensions, we aimed to not only replicate the relationship between language and scales that are analogous with the Dark Triad (e.g. the Bold, Skeptical & Mischievous scales), but also extend such understanding through the analyses of dimensions that have been overlooked by researchers and may be of interest to I-O psychologists, HR practitioners and organizational leaders. Further, we sought to address the over-use of Twitter data by using a total sample of 51,712 Facebook users. This enabled us to comparatively explore whether online platforms moderate the relationship between personality and language. To explore these research questions, we used the LIWC method to classify Facebook status updates and machine learning methods to build cross-validated predictive models.

¹ The HDS scales and their DSM equivalent are: *Excitable* (borderline PD); *Skeptical* (paranoid PD); *Cautious* (avoidant PD); *Reserved* (schizoid PD); *Leisurely* (passive-aggressive PD); *Bold* (narcissistic PD); *Mischievous* (antisocial PD); *Colorful* (histrionic PD); *Imaginative* (schizotypal PD); *Diligent* (obsessive-compulsive PD); and *Dutiful* (dependent PD).

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