

How “Dark Side” Personality Traits Affect Social Network Position

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Abstract

This study explored how “dark side” personality traits affect social network positioning. Thirty-one working adults completed the Hogan Developmental Survey (HDS), as well as a Social Network Analysis (SNA) survey measuring friendship, advice and innovation networks. SNA measures of *Indegree* (popularity measure) and *Outdegree* (expansiveness measure) were positively associated with Excitable and Colorful personality traits. In addition, Sceptical and Diligent personality traits were negatively associated with *Indegree* and *Betweenness Centrality* (network position importance measure). Implications and limitations were discussed.

Keywords

Social Network Analysis, “Dark Side Traits”, Personality in SNA

1. Introduction

1.1. Social Network Analysis

There is a growing literature on what has been called the “dark-side” of personality (Furnham, 2015). This usually refers to sub-clinical personality disorders such as Narcissism. The focus of much of this research is the extent to which these dark-side factors lead to management failure and derailment. This study looks at the relationship networks of people as a function of their dark-side profile.

Social network analysis (SNA) attempts to investigate relationships among interacting people. The unit level of analysis in network research consists of a collection of individuals and linkages among them (Wasserman & Faust, 2009). Instead of focusing on individual’s attributes or the prediction power of those attributes, the social network perspective considers these attributes as a product of structural or relational processes. The task of network perspective is to under-

stand how structural properties affect observed characteristics.

Social network analysis stems from [Moreno's \(1953\)](#) research on sociometry—the measurement of interpersonal relations of small groups. The sociogram was devised as a method to investigate. It presents a picture, in which actors (individuals in a network) are depicted as points in a two-dimensional space, while the relationships between actors are portrayed as lines (or ties) linking corresponding points. Since then, the field of SNA has advanced to study interpersonal relations of individuals in various disciplines, such as anthropology ([Schweitzer, 1988](#)), sociology ([Burt, 1987](#)), management ([Kim, Choi, Yan, & Dooley, 2011](#)), communications ([Contractor & Eisenberg, 1990](#)), and social psychology ([Wrzus, Hänel, Wagner, & Neyer, 2013](#)).

1.2. Social Network Analysis and Personality

Social network research has primarily focused on the influence of observable individual attributes such as gender or explaining social networks through *homophily* phenomena (the tendency to associate with similar others). However, there is limited research exploring how individual psychological characteristics may be associated with personal network characteristics ([Kalish & Robins, 2006](#); [Mehra, Kilduff, & Brass, 2001](#)). This is mainly because social network research is mostly concerned with the structure and effects of relations between people, groups or organisations ([Brass, Galaskiewicz, Greve, & Tsai, 2004](#); [Tichy, Tushman, & Fombrun, 1979](#)) rather than psychological dimensions of individuals.

[Burt, Jannotta, & Mahoney \(1998\)](#) were probably the first to integrate personality research in SNA methodology. The authors investigated whether personality traits vary systematically with “structural holes”, which is defined as non-redundant information that is contained by two separate structures/“cliques”. The results indicated that people with the least constrained networks (entrepreneurial networks) had a tendency to seek advice from their colleagues (accuracy of information), perceived themselves to be in a position of authority (independence) and were able to create an aura of excitement (persuasion). The findings were in line with a study by [Kalish & Robins \(2006\)](#). They showed that people who were more individualistic, more controlling, and more neurotic tended to occupy structural hole positions.

[Klein, Lim, Saltz, & Mayer \(2004\)](#) used the Big Five Factor Model ([Goldberg, 1990](#)) to predict SNA's structures. Their study showed that highly educated individuals with low Neuroticism scores secured central positions in advice and friendship networks. However, Openness to Experience was negatively associated with friendship centrality and correlated positively with adversarial centrality. Similar findings were obtained in [Kanfer & Tanaka's \(1993\)](#) study with students. They found that the more Extraverted, Agreeable, and Emotionally stable individuals were better connected in a network. More recently, [Zhu, Woo, Porter, & Brzezinski \(2013\)](#) demonstrated that Extraversion, Agreeableness and Openness scores positively predict SNA characteristics such as the network size, upper reachability and proportion of new contacts.

1.3. Dark Side Personality and Social Networks

There has been an increase interest in so-called “dark side personality”, which is defined as dysfunctional dispositions that influence one’s behaviour and thinking (Hogan & Hogan, 2001). The Hogan Development Survey (HDS; Hogan & Hogan, 1997) is tailored to assess dark side personality traits at work. The HDS is a measurement to assess how individuals behave when they are stressed. It targets maladaptive personalities dealing with psychopathology and normal personality in occupational settings. It is based on the DSM-IV and aims to assess Cluster A, Cluster B and Cluster C disorders (American Psychiatric Association, 2013). Cluster A includes so-called odd disorders which are Paranoid, Schizoid and Schizotypal personality disorders. Cluster C can be categorized into anxious and fearful disorders which are described as Avoidant personality disorders. Hogan’s items that measure Cluster A disorders are Excitable, Sceptical, Cautious, Reserved and Leisurely. Bold, Mischievous, Colourful and Imaginative are items that measure Cluster B disorders and Diligent and Dutiful are aimed to measure Cluster C disorders.

The eleven themes get assessed by a 168-item survey (Hogan & Hogan, 2001; Hogan & Hogan, 1997; Spain, Harms, & LeBreton, 2014). The items are loading on three factors which are Moving Away, Moving Against and Moving Towards Others. According to Horney (1950) the Moving Away factor is a coping mechanism to avoid feelings of anxiety by withdrawing oneself from social situations. Someone who is scoring high on the Moving Against factor has hostility and trust issues and tries to minimise them by having power and control. The third trend Moving Towards includes the need to please everyone and ignoring one’s own need (see Table 1).

Clifton, Turkheimer, & Oltmanns (2009) conducted a study with military recruits and found that measures of centrality and degree connectivity were positively correlated with Narcissistic and Histrionic Personality Disorders. In addition, they were negatively related to Avoidant, Schizoid and Schizotypal Personality Disorders. Studies indicated that scoring high on sub-clinical psychopathy dimensions was positively correlated with creativity, good strategic thinking and communication skills (Babiak, Neuman, & Hare, 2010) as well as entrepreneurship (Akhtar, Ahmetoglu, & Chamorro-Premuzic, 2013).

1.4. The Current Study

The current study used SNA methodology to investigate the links between dark side personality traits and social networks. In order to find out which personality factors interact with social network characteristics, the study used a number of network dimensions, including friendship, advice and innovation networks.

Centrality measures indicate a person’s importance in a network and ability to control information flow. Therefore, Excitable (H1a), Mischievous (H1b) and Colourful (H1c) personality types would be located more centrally within the network, reflecting a desire to use interpersonal networks to influence/exploit others.

Table 1. Description of axis 2 of DSM-IV and Horney's theory.

DSM	Horney	Hogan
<p>Cluster A (odd disorders)</p> <ul style="list-style-type: none"> Paranoid personality disorder: characterised by a pattern of irrational suspicion and mistrust of others, interpreting motivations as malevolent Schizoid personality disorder: lack of interest and detachment from social relationships, apathy and restricted emotional expression Schizotypal personality disorder: a pattern of extreme discomfort interacting socially, distorted cognitions and perceptions 	<p>Moving Away from People</p> <ul style="list-style-type: none"> The need for self-sufficiency and independence; while most desire some autonomy, the neurotic may simply wish to discard other individuals entirely. The need for perfection; while many are driven to perfect their lives in the form of well-being, the neurotic may display a fear of being slightly flawed. Lastly, the need to restrict life practices to within narrow borders; to live as inconspicuous a life as possible. 	<p>Moving Away from People</p> <p>Excitable Moody and hard to please; intense but short-lived enthusiasm for people, projects or things</p> <p>Sceptical: Cynical, distrustful and doubting others' true intentions</p> <p>Cautious: Reluctant to take risks for fear of being rejected or negatively evaluated</p> <p>Reserved: Aloof, detached and uncommunicative; lacking interest in or awareness of the feelings of others</p> <p>Leisurely: Independent; ignoring people's requests and becoming irritated or argumentative if they persist</p>
<p>Cluster B (dramatic, emotional or erratic disorders)</p> <ul style="list-style-type: none"> Antisocial personality disorder: a pervasive pattern of disregard for and violation of the rights of others, lack of empathy, bloated self-image, manipulative and impulsive behaviour Borderline personality disorder: pervasive pattern of instability in relationships, self-image, identity, behaviour and affects often leading to self-harm and impulsivity Histrionic personality disorder: pervasive pattern of attention-seeking behaviour and excessive emotions Narcissistic personality disorder: a pervasive pattern of grandiosity, need for admiration, and a lack of empathy 	<p>Moving Against People</p> <ul style="list-style-type: none"> The need for power; the ability to bend wills and achieve control over others – while most persons seek strength, the neurotic may be desperate for it The need to exploit others; to get the better of them. To become manipulative, fostering the belief that people are there simply to be used The need for social recognition; prestige and limelight The need for personal admiration; for both inner and outer qualities—to be valued The need for personal achievement; though virtually all persons wish to make achievements, as with No. 3, the neurotic may be desperate for achievement 	<p>Moving Against People</p> <p>Bold: Unusually self-confident; feelings of grandiosity and entitlement; over valuation of one's capabilities</p> <p>Mischievous: Enjoying risk taking and testing the limits; needing excitement; manipulative, deceitful, cunning and exploitative</p> <p>Colourful: Expressive, animated and dramatic; wanting to be noticed and needing to be the centre of attention Imaginative Acting and thinking in creative and sometimes odd or unusual ways</p>
<p>Cluster C (anxious or fearful disorders)</p> <ul style="list-style-type: none"> Avoidant personality disorder: pervasive feelings of social inhibition and inadequacy, extreme sensitivity to negative evaluation Dependent personality disorder: pervasive psychological need to be cared for by other people Obsessive-compulsive personality disorder (not the same as obsessive-compulsive disorder): characterised by rigid conformity to rules 	<p>Moving Toward People</p> <ul style="list-style-type: none"> The need for affection and approval; pleasing others and being liked by them The need for a partner; one whom they can love and who will solve all problems 	<p>Moving Toward People</p> <p>Diligent: Meticulous, precise and perfectionistic, inflexible about rules and procedures; critical of others</p> <p>Dutiful: Eager to please and reliant on others for support and guidance; reluctant to take independent action or to go against popular opinion</p>

Note: Reprinted from *Backstabbers and bullies: How to cope with the dark side of people at work* (pp. 133-135) by Furnham (2015). Bloomsbury Publishing. Reprinted with permission.

Reserved (H2a) and Cautious (H2b) personality types would avoid the central positions in a network due to social inhibition and aloofness that is commonly associated with these personality types. It will also be predicted that Sceptical (H2c), Dutiful (H2d) and Diligent (H2e) would correlate negatively with SNA centrality measures.

2. Method

2.1. Participants

Ethical committee approval was sought and received. Data were collected from a intact department of an engineers working in a firm in London. It is important in this research to study stable teams/groups of individuals who have worked together for some time. Participation in the study was voluntary. In total, 31 out of 40 participants (20 female) took part in the study (77% response rate). The mean age was 27.10 (SD = 15.89). Participants completed the measures as part of an internal employee consultancy project.

2.2. Measures

2.2.1. Social Networks

The data were collected on a number of network ties: innovation, friendship relations, and advice. The study employed a roster method, in which the respondents were asked to place checks next to the names of the people that they considered important for each network. The presented names were generated from the department employees worked in. For example, participants were asked who were the people that they would consider going to in order to discuss an innovative idea (to generate an innovation network). Other network questions included: "Whom would you consider a personal friend?" (friendship network); "Whom might you go for help and advice?" (advice).

2.2.2. Hogan Development Survey (HDS; Hogan, & Hogan, 1997)

Dark Side Personality was assessed which the HDS, which includes 168 items. The internal reliability of the measure has been reported to be good, with Cronbach's alphas ranging from 0.50 to 0.80 (average of 0.64) and test-retest reliabilities over a three-month period ranging from 0.50 to 0.80 (average of 0.68) (Hogan & Hogan, 1997).

2.3. Procedure

Participants completed all measures online. Each participant who agreed to take part in the survey received a personalised link to complete demographic (tenure, age and sex) and social network survey, which was generated by the Socilyzer platform (socilyzer.com). In the description to the study, participants were informed that the completion of the study would take around 20 minutes.

3. Results

The network data was analyzed with UCINET software (Borgatti, Everett &

Freeman, 2002) which enabled to obtain indegree, outdegree and betweenness centrality SNA metrics.

Figure 1 visually represents the social network for the innovation question. Furthermore, it shows the HDS profiles of four network nodes or people in the team (two with the most central and two with the least central SNA characteristics). The HDS scores of for each of the eleven dark-side factors. The higher the score the more that derailer plays a part in that person's interpersonal style at work. Scores 75 or over suggests that these are risk factors for those individuals.

HDS scores for different themes are expressed as percentiles (see **Table 2**).

A statistically significant positive correlation between Friendship *Outdegree* and Excitable factors, $r = 0.36$, $p < 0.05$ was observed, which confirms H1a. Those people who scored high on Excitable also had more out-coming ties towards other actors in the friendship network (or they were more likely to indicate that they have more friends). The results demonstrate that people who were associated with expansiveness SNA friendship network measure were found to be scoring higher on Excitable scale. A very similar effect was found when predicting advice network. There was a statistically significant positive correlation between *Outdegree* and Excitable measures, $r = 0.43$, $p < 0.05$ which means that

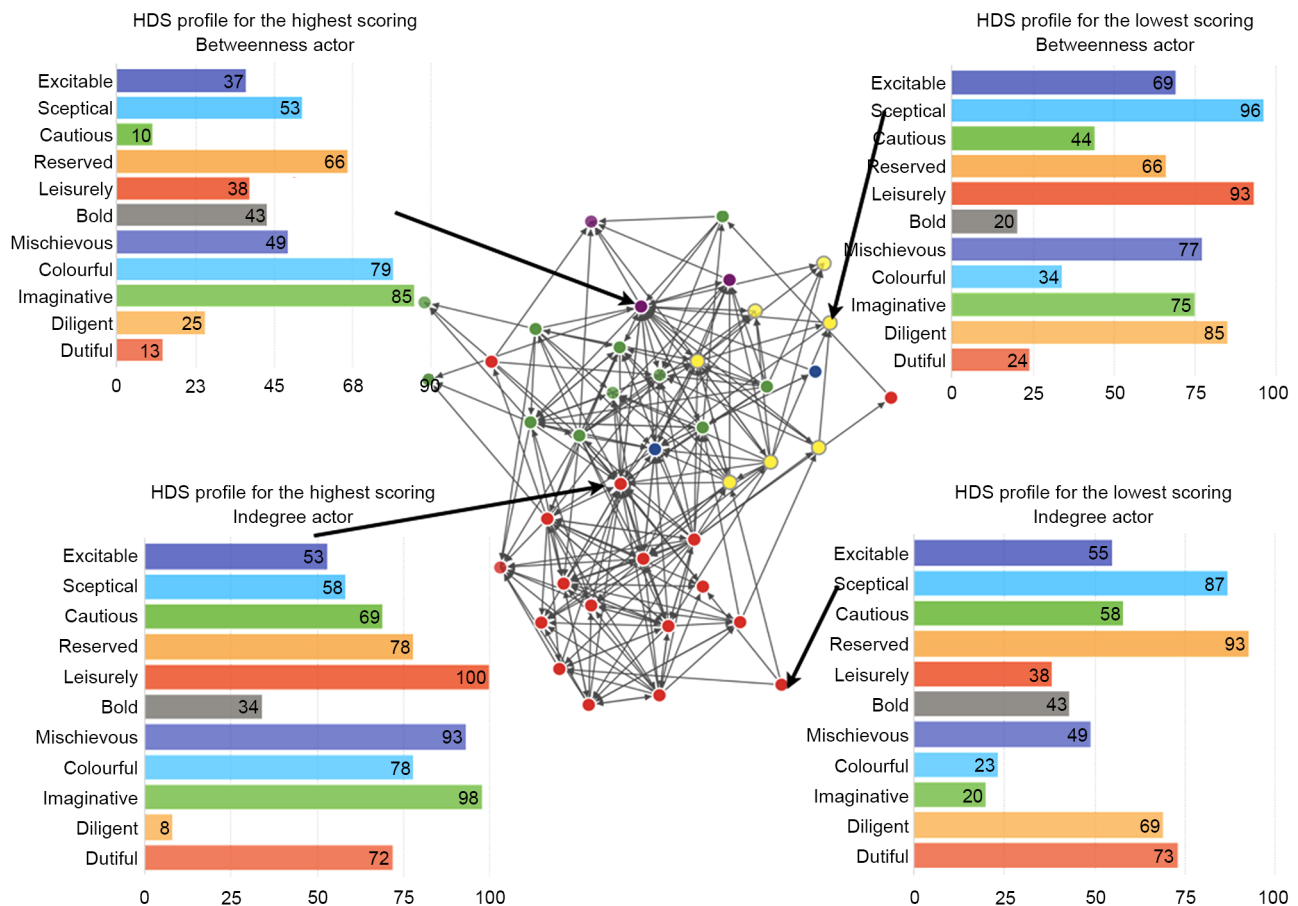


Figure 1. Visual representation of Social Network Analysis for innovation network and HDS profiles associated with the most and the least important network players as defined by *Indegree* and *Betweenness* SNA characteristics. *Note:* Different colours represent different cliques.

Table 2. Inter-correlations of demographic variables, SNA centrality measures of Friendship, Innovation and Advice networks and the HDS themes.

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1) Age	0.56**	-0.19	0.22	0.13	-0.04	0.34*	0.31	0.18	0.19	0.39*	0.39*	0.10	0.03	0.25	-0.10	-0.31	-0.09	-0.06	-0.09	0.10	-0.12
2) Sex		-0.07	-0.01	0.08	0.04	0.07	0.19	-0.06	0.22	0.31	0.01	0.23	0.08	0.06	0.15	-0.47*	0.19	0.07	0.21	0.05	-0.14
3) Friendship Indegree			0.18	0.62**	0.43**	0.02	0.15	0.29	0.03	-0.12	0.09	-0.28	-0.26	-0.31	0.20	-0.13	0.32	0.40*	-0.10	-0.28	0.24
4) Friendship Outdegree				0.53**	-0.02	0.43**	0.18	-0.09	0.27	0.04	0.36*	-0.18	-0.08	-0.14	0.34	-0.18	0.08	0.07	-0.22	-0.22	0.11
5) Friendship Betweenness					0.37*		0.12	0.39*	0.40*	0.15	0.18	0.23	-0.37*	-0.23	-0.26	0.21	-0.22	0.08	0.21	-0.17	0.16
6) Innovation Indegree						-0.01	0.58**	0.71**	-0.07	0.35*	-0.20	-0.38*	-0.19	0.01	0.19	-0.05	0.20	0.29	0.16	-0.41*	-0.05
7) Innovation Outdegree							0.53**	-0.05	0.56**	0.28	0.29	-0.015	0.13	0.01	0.03	-0.08	0.01	0.01	-0.31	-0.19	0.01
8) Innovation Betweenness								0.53**	0.26	0.53**	-0.08	-0.41*	-0.32	-0.02	-0.05	-0.08	0.03	0.18	-0.15	-0.39*	-0.13
9) Advice Indegree									-0.15	0.42**	-0.17	-0.30	-0.10	0.08	-0.03	-0.16	-0.15	0.02	-0.13	-0.16	-0.05
10) Advice Outdegree										0.54**	0.43**	0.06	0.07	-0.15	-0.13	-0.04	0.08	0.14	0.09	-0.10	0.09
11) Advice Betweenness											0.13	-0.08	0.03	0.13	0.04	-0.20	-0.15	0.02	0.23	-0.16	-0.13
12) Excitable												0.45*	0.47**	0.19	0.03	-0.13	0.05	-0.19	0.22	0.21	0.01
13) Sceptical													0.47**	0.30	0.13	-0.33	0.15	-0.24	0.01	0.05	-0.24
14) Cautious														0.47**	0.35	-0.21	-0.26	-0.41*	0.16	0.22	0.07
15) Reserved															0.04	-0.47**	-0.20	-0.47**	0.07	0.03	-0.11
16) Leisurely																-0.28	0.20	-0.05	0.32	-0.18	-0.05
17) Bold																	-0.14	0.10	0.06	0.29	0.06
18) Mischievous																		0.56**	0.23	-0.25	0.03
19) Colorful																			0.08	-0.41*	0.08
20) Imaginative																				0.22	-0.08
21) Diligent																					0.21
22) Dutiful																					

Note: * $p < 0.05$; ** $p < 0.01$.

people who scored higher on Excitable factor were more likely to ask for help and advice from other team members.

We did not find any significant correlation between the trait Mischievous and SNA variables. Therefore, H1b was not supported.

However, a positive correlation between Friendship *Outdegree* and Colorful was observed which confirms H1c. Results indicated that participants who scored higher on Colorful also received more incoming ties in the friendship network.

H2: *Negative correlations were expected among SNA centrality/degree and Reserved (H2a), Cautious (H2b), Sceptical (H2c), Dutiful (H2d) and Diligent (H2e).* Reserved and Cautious personality traits did not correlate significantly with any SNA variables. Therefore, H2a and H2b were not supported but there was support for H2c. A significant correlation was observed between Friendship *Betweenness* and Sceptical, $r = -0.37$, $p < 0.05$.

The results demonstrate that the higher people scored on Sceptical HDS factor, the less likely they were to occupy a central position in a friendship network, or vice versa. A very similar effect was observed when predicting Innovation *Betweenness*: the more participants scored on Sceptical scale, the less likely they were to tie groups together (or vice versa), as demonstrated by the statistically significant negative correlation between Sceptical factor and Innovation *Betweenness*, $r = -0.41$, $p < 0.05$. Additionally, Sceptical personality type correlated negatively with Innovation *Indegree*, $r = -0.38$, $p < 0.05$. Participants who scored higher on this personality factor also tended to receive less incoming ties in the innovation network. In other words, those who were popular when it came to discussing innovative ideas, were found to be scoring lower on the Sceptical factor.

Dutiful did not correlate significantly with any SNA variables, which was not in line with H2d. We found a negative correlation between the factor Diligent and Innovation *Indegree*, $r = -0.41$, $p < 0.05$. The higher participants scored on Diligent, the less incoming ties they received in the innovation network. Furthermore, Diligent correlated negatively with Innovation *Betweenness*, which means that individuals who secured central positions in the innovation network, tended to score lower on the Diligent HDS theme. Therefore, the results confirm H2e.

In order to test predictive validity of HDS personality factors, various multiple regression models were run with demographic variables in the first step, personality factors in the second step and SNA measures as dependent variables. However, none of the analysis revealed significant results.

4. Discussion

Overall, the results demonstrated that SNA characteristics had good predictive validity and some support was found for the generated hypotheses. Firstly, some HDS personality factors were positively related to the SNA characteristics. Specifically, Excitable HDS theme was positively related to friendship and advice

network SNA characteristics; whereas, Colourful HDS theme was positively related to friendship network dynamics. Secondly, Sceptical personality trait influenced friendship and innovation networks negatively; whereas, Diligent factor negatively influenced innovation network SNA measures.

The presented findings extend the previous research (Klein et al., 2004, Mehra et al., 2001) of how personality factors affect social network characteristics by looking at how “negative” personality traits influence individuals’ social structural worlds.

The results indicated that Excitable contextual personality factor was positively related to the *Outdegree* measures of friendship and advice networks. People who scored higher on this personality dimension tended to say that they have more friends as well as seek help and advice from others more often. Even though Clifton et al. (2009) did not find this factor to be related to any social network characteristic, the result is not surprising given that this personality trait is associated with enthusiasm, passion and interest (even if it is often short lived).

Another positive relationship was observed between the *Indegree* and Colorful (Histrionic) HDS theme for the friendship network. People scoring high on the Colorful theme tended to be more popular in the friendship network. That is, people with this personality profile tended to attract other people towards them in the organisation. The finding supports the hypothesis and its demonstrated that individuals who score high on Colorful scale have a desire to be noticed and feel the need to be at the centre of attention. In other areas of research, it has been established that high scores of Colorful dimension positively predicted occupational abilities (Furnham, Trickey, & Hyde, 2012) and reduced the number of years it took to get promoted (Furnham, Crump, & Ritchie, 2013).

Results also indicated that Colorful was positively related to the *Betweenness* measure in the friendship network and *Indegree* measure for Innovation. This pattern of results applied to Mischievous HDS factor as indicated by small and medium effect sizes for Innovation and Friendship *Indegree* measures, respectively. The results confirmed the previous finding that being manipulative is related to innovation potential (Zibarras et al., 2008).

The sceptical personality trait was found to correlate negatively with *Indegree* and *Betweenness* measures of innovation network. People scoring high on this scale inhibited innovation processes in a team network by not allowing other team members to come to them to discuss innovative ideas and were less likely to become central players in the innovation network (or less likely to become gatekeepers of innovative information). This could be due to the cynicism and distrustful nature often found in people with Sceptical personalities, and, also, due to their tendency to interpret neutral actions of others as negative or malevolent. Even though Clifton et al. (2009) found that Paranoid PD correlated positively with *Outdegree* measure, the current result is not surprising given the evidence that Sceptical personality traits tended to be correlated negatively with work success (Furnham et al., 2012).

The current findings show a similar pattern of relationship between friendship *Betweenness* measure and Sceptical personality trait. That is, people with high Sceptical personality traits were less likely to act as links of different “cliques” in the friendship network. Their distrustful personality traits did not allow them to become central players in the friendship network. In other words, people with a highly pronounced Sceptical trait were more likely to possess peripheral positions in the friendship network (see **Figure 1** for illustration).

Another “dark” personality trait that possibly inhibits innovation processes in the corporate world is the Diligent characteristic. As with the Sceptical quality, people with the Diligent trait seem to be at the periphery of innovation network. They were less likely to become central players or information gatekeepers when it came to discussing innovative ideas. In addition, highly scoring Diligent people were less likely to seek others’ help when it came to discussing novel opinions. It is possible that their perfectionist nature and desire to control everything that happens inhibit new ideas coming towards them. People scoring high on this trait are known for their rigidity towards rules and regulations, all of which might hinder their lateral thinking and imaginative approach to problem solving. This finding is consistent with the evidence of increased psychological flexibility being associated with labour market growth, productivity, and ability to adapt to fierce and competitive markets (Nicoletti & Scarpetta, 2003; Malhotra, Grover, & Desilvo, 1996). It also supports the previous findings of highly dependent individuals being unable to pose structural hole positions in networks (Burt et al., 1999) and perfectionism correlating negatively with innovation potential (Zibarras, Port, & Woods, 2008).

The study has limitations which possibly had an impact on the results. The sample included only employees who were working in an engineer firm, which makes it difficult to generalize the results. One of the main limitations is that the study design is cross-sectional. It is therefore not possible to make any judgments about causality. It is recommendable to do a longitudinal study on dark side personality traits and SNA in future. Another limitation is the use of self-report measures. On the one hand, self-reports have the tendency to increase correlation and on the other hand participants might not answer the questions honestly.

5. Conclusion

In conclusion this study adds to the growing literature in two areas: the impact of dark-side variables at work (Furnham, 2015) and how personality affects social networks (Burt et al., 1998; Clifton et al., 2009). Studies such as this help to explain how and why certain dark-side factors relate to derailment. The Cluster A/Moving Away from people suggests that people with those traits would be less well networked with obvious implications for work performance. This study showed how sceptical, suspicious and vigilant individuals from this cluster tended to be poorly networked with all the benefits that they provide. The Cluster B/Moving Against other people traits are associated with leader-

ship ambition and emergence but also derailment. This study highlighted the role of being colourful, melodramatic and cheerful in the development of social networks.

Some findings in this study are certainly worth further exploration particularly the role of Excitable in social networks. Excitable people can be very volatile, ambivalent and mercurial but if physically attractive as well as intelligence they may have a special allure. This suggests that to fully explore how, when and why dark-side factors are related to social network development, other factors need to be considered like the working history of the group as well as the social and task competency of each individual in that group.

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