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Cheater's hide and seek: Strategic cognitive network activation during ethical decision making[☆]

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ABSTRACT

We consider the dynamic process by which people cognitively activate their social networks during ethical decision making. We compare actors' goals during anticipatory and ex-post phases of ethical decision making, and propose that they trigger hide-and-seek patterns of network activation. Experiment 1 links cognitively activated network structures with self-report ethical behavior. Consistent with "hiding goals," actors randomly assigned to anticipate behaving unethically (versus honestly or in the control condition), activated sparser networks that could better hide unethicality (Experiment 2). Consistent with "seeking" goals, participants randomly assigned to unethical (versus honest) conditions mentally activated dense networks, seeking out social support to uphold their sense of self (Experiment 3a). This network activation process is mitigated when participants affirm themselves (Experiment 3b). Experiment 4 replicates these hide and seek patterns of social network activation in a single study that captures both the anticipatory and ex-post phases of ethical decision making.

Fyodor Dostoevsky selected the name "Raskolnikov" for the protagonist of his classic novel, *Crime and Punishment*, derived from the Russian word *raskolnik*, meaning schismatic. This division refers to Raskolnikov's relationship to society: he is at times alienated and on its fringes and at other times, deeply embedded in relationships with his family and loved ones.

Dostoevsky's complex portrait of the criminal mind is at odds with popular wisdom, which often views unethical actors more simplistically as lone wolves: acting in isolation to pursue self-interested gains. Dostoevsky's insight, however, was that unethical action, particularly in organizations, is often planned and executed in relation to a complex social network of other players, making the focus on the atomized individual an unrealistic assumption (Brass et al., 1998; Rowley, 1997). Social science research has likewise observed than an individual's situation, and particularly, the social networks in which they are embedded, can both constrain and facilitate their behavior (Nisbett and Ross, 1991). In this research, we examine the strategic process by which individuals cognitively activate their social network structures, i.e. mentally call up their social contacts, during various stages of ethical decision making. The psychological process by which people engage with their social networks during ethical decision making is important because it reveals how individuals might plan such behavior and cope with its consequences.

Social network structure is a macro-level variable that can regulate individual-level behaviors and cognitions (Burt, 1992; Granovetter, 1973). Social network density, the extent to which each actor in a network is closely connected to the others, is calculated as the total interconnections in the network divided by total possible ties if all network members were connected (Wasserman and Faust, 1994). For instance, networks are denser when social contacts are interconnected, or relatively sparse when social contacts are independent of one another. Social network structures have two contrasting and important characteristics for ethical decision making.

First, denser networks have stronger norms relative to sparse networks (Burt, 1992; Meyer and Rowan, 1977; Wasserman and Galaskiewicz, 1994). Because most everyone is connected to and in communication with one another, social norms are easily communicated and known (Coleman, 1990; Thibault and Kelley, 1959;

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Homans, 1974). This allows for more control over individual actors (Burt, 1992; Brass et al., 1998), to constrain, monitor, and potentially punish them for unethical behavior (Baker and Faulkner, 1993; Burt, 1992, 2010; Gelfand et al., 2011; Granovetter, 1973; Horne, 2009). As such, much research links dense networks to ethical action and sparse networks to unethical behavior (Brass et al., 1998).

The second characteristic is that dense network structures provide social and psychological support (Durkheim, 1958; Putnam, 2000). Because embedded ties involve trust and personal relationships (Uzzi, 1997; Marsden, 1987; Burt, 1999), "the closer and stronger our tie with someone, the broader the scope of their support for us… and the greater the likelihood that they will provide major help in a crisis. These are important people in our lives (McPherson et al., 2006: 354, cited in Small, 2013: 472)." This pattern emerges, not just in response to social or economic crises, but also as people experience a host of psychological and identity threats (Menon and Smith, 2014; Smith et al., 2012). In response to these unsettling threats, people spontaneously activate denser social structures (Menon and Smith, 2014), trusted ties who can re-affirm their identities (Steele, 1988).

These contrasting effects of network density reveal how neworks might affect ethical decision making. On one hand, the density-as-constraint perspective suggests that dense networks invoke strong norms that can check unethical and socially deviant behavior. On the other hand, density-as-support perspective suggests that dense networks could buffer the unethical actor by providing them with a support.

To integrate these two discrepant views of networks in unethical action, we distinguish between anticipatory preparation for unethical action (see Sheldon and Fishbach, 2015) and post hoc recovery from unethical action (e.g., Shu and Gino, 2012), and propose that they trigger hide-and-seek patterns of network activation. Specifically we propose that anticipating unethical deeds primes "hiding" goals, i.e., escaping structures that exert constraint, detection, and monitoring. Consistent with this, we expect that, in anticipation of unethical act, individuals activate sparser social networks. Following a dishonest act, people have "seek" motives, i.e. they seek to reintegrate with supportive others in their dense social structures. Indeed, as Raskolnikov hatched his plot, he made an acquaintance on the fringe of society—a drunkard whose daughter worked as a prostitute. And as he sought to cope with the aftermath of the crime, he found support in his core networks, his mother, sister, and eventually redemptive love from the prostitute.

This paper proceeds as follows. First we review the ethical decision making literature through a social network lens. Then, we derive testable hypotheses about how people preparing for and recovering from unethical behavior strategically seek out distinct resources from their social network structure. Our critical point is that unethical action is not simply about disengagement from society (Zimbardo, 1969): it involves re-engagement as well. Further, social disengagement and re-engagement predictably align with one's goals during specific temporal stages in ethical action. We test our hypotheses via five datasets. By understanding the psychology of socially embedded ethicality, we consider practical implications, including blindspots that may allow unethical actors to experience illusions of invulnerability and nudges (Thaler and Sunstein, 2008) that might strengthen perceived social constraints.

Socially embedded ethicality

We focus on unethical behaviors that are "either illegal or morally unacceptable to the larger community" (Jones, 1991, p. 367). This definition focuses on social norms that coincide with ethics, but note that the concepts are actually orthogonal (Kohlberg, 1973). To clarify the scope of our research, we differentiate between three sets of action in Fig. 1: actions that are immoral, normative, and moral, which yield five categories of behavior: (1) unethical/counternormative; (2) unethical/normative; (3) normative/without ethical significance, (4) ethical/normative, and (5) ethical/counternormative.

The hypotheses tested in this paper emphasize *socially constructed ethics* (Shweder et al., 1987; Haidt et al., 1993). That is, our research is limited to unethical behaviors that violate social norms (e.g. prototypical examples are stealing, cheating, and lying for personal gain, Segment 1); we compare them to honest actions that are ethical and comport with social norms (Segment 4). This sidesteps thorny questions of what ought to be—regardless of whether the group considers those behaviors acceptable: Segment 2, unethical actions that comport with social norms (e.g. accepting slavery in the 1700 s) and Segment 5, ethical actions that violate the group's norms, e.g. fighting against slavery in the 1700 s).[2] Our research also does not apply to actions that involve social norms without ethical significance (Segment 3, e.g. eating dessert after a meal vs. before a meal), unless they trigger the same psychological goals: incentives to hide the behavior and cope with self-image threat. While we restrict our scope here, we will address these other segments in our discussion.

In focusing on the socially-constructed nature of ethicality, our research is firmly embedded in situational, rather than personality-based explanations for ethicality. In contrast to personality research, which often attributes unethicality to bad apples (e.g. individuals such as Machiavellians with low moral development, Kish-Gephart et al., 2010), social psychologists criticized this atomistic, person-based focus (Nisbett and Ross, 1991; Lee and Gino, 2018), and refocused on "bad barrels." That is, situations facilitate unethical behavior (e.g. wealth, Gino and Pierce, 2009, bright lights, Zhong et al., 2010). Other situational perspectives focus on group cohesion (e.g. entitativity of groups helped in-group members rationalize their prejudice against out-group members, Effron and Knowles, 2015). An analogous set of findings emerges in research on cultural tightness. "Tight" social groups have

[2] One of our reviewers inquired about unethical actions that were consistent with a group's social norms. Given that these unethical acts were normative (segment 2), we expected that dense networks would encourage the unethical acts. To test this, we compared group- and self-serving behaviors, suggesting that groups may in fact accept and reward unethical behaviors that benefitted the group. We expected that participants within dense networks who stole for the group would expect significantly less punishment and would rationalize theft as acceptable. One hundred and twenty six participants (68 females; M_{age} = 39.24; SD_{age} = 13.91) participated in a 10 min study on an online panel; all passed attention filters. We first primed participants to either activate dense or sparse subsections of their networks by modifying the standard name generators in network surveys (Burt, 1980), so that people were led to either generate five interconnected contacts or five contacts who did not know each other (following Smith et al., 2012). Participants then read a vignette which assessed their perceptions of an ethical violation. We manipulated whether this violation was personally beneficial or would benefit the group as a whole: a restaurant's billing error that would either save the participant or the group money. We found that those stealing on behalf of the group expected significantly less likelihood of punishment ("If others were to find out about my actions I would be punished") when primed with a dense than a sparse network, $F(1,47) = 5.24$, $p = .027$, $\eta_p^2 = .100$. We then assessed participants' tendencies to rationalize away unethical behavior ("In the past, I've been overcharged on bill so it's okay," "The waiter is to blame; s/he was simply not careful enough," "With a large group at the restaurant, the restaurant made a lot of profit anyway," and "It's okay if the group added extra gratuity to compensate the waiter"; $\alpha = .807$; 1 = *Strongly Disagree*, 5 = *Strongly Agree*). When primed with a sparse network, they expected significantly less punishment when stealing for the self than the group, $F(1,47) = 5.78$, $p = .020$, $\eta_p^2 = .110$. Similarly we found a significant Network prime x Beneficiary interaction, $F(1,120) = 3.90$, $p = .051$, $\eta_p^2 = .031$. Decomposing the interaction, we found that participants who contemplated theft that benefited the group excused that theft more when they activated dense networks as compared to sparse networks, $F(1, 56) = 7.82$, $p = .007$, $\eta_p^2 = .123$. The other conditions did not differ (all *F's* < 2.4; *p's* > .125, $\eta_p^2 = .042$). This confirmed our proposed boundary condition: when group norms are unethical, activating dense networks would embolden unethical action.

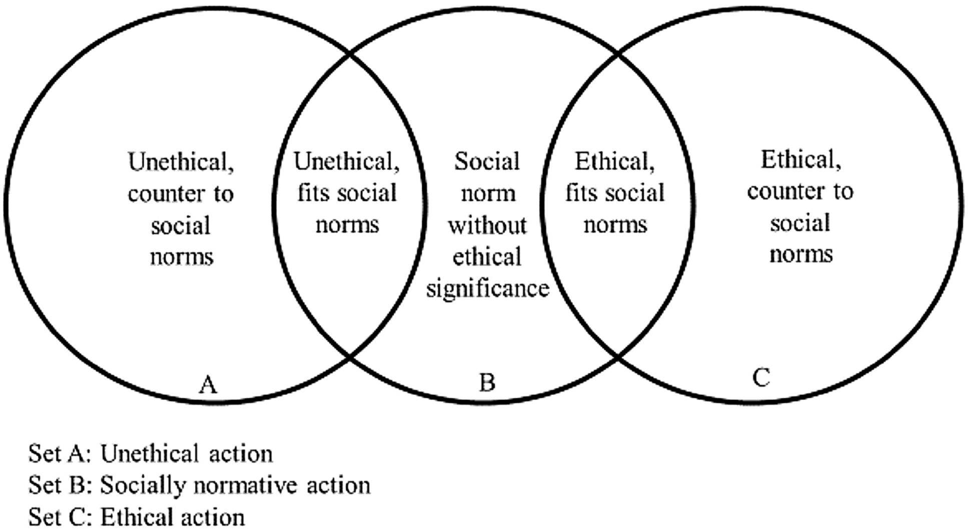


Fig. 1. Socially embedded ethicality.

"strong norms and low tolerance of deviance (Gelfand et al., 2011: p. 1100)," leading to decreased unethical behavior.

While our theorizing is related to these arguments about group cohesion, we build upon them, contending that they do not fully account for *social network structures* within which actors are embedded (see also Simpson and Willer, 2015). We propose that people strategically activate networks as they conceive and execute unethical (or ethical) decisions and behaviors. For social network structures to shape the ethical decision making process, two important pre-conditions must be satisfied. The first precondition is that individual actors possess the agency to manipulate and shift their social network structures over time. The second precondition is that different social network structures are reliably linked to strategic resources that actors need at various points in the ethical decision making process. We consider both of these preconditions in turn.

Cognitive network activation

The first precondition for the strategic use of social network structures in ethical decision making is that individual actors are capable of dynamically shifting their social network structures. Social networks have been conceptualized as three distinct nested categories: the potential network, the cognitively activated network, and the mobilized network (see Shea et al., 2015, Fig. 1; Smith et al., 2012 for reviews). While the potential network is the full network of individuals that an individual is connected to (e.g. knowing 500 people in the world), the *cognitively activated network* is the set of individuals that an actor brings to mind at a given moment (Smith et al., 2012; Haines et al., 2000), consisting of a subset of the potential network (i.e., whom I think about at the moment). Finally, the mobilized network consists of people an actor approaches (e.g., asking for advice, emailing).

Despite the long-standing focus on structural explanations for behavior in the social networks literature (Burt, 1984; Wellman, 1988), recent research on the psychology of networks has allowed researchers to use experimental networks to demonstrate people's personal agency in shaping their social network structures. To distinguish between structural and agentic interpretations, we focus on people's cognitions of their networks (Brands, 2013; Janicik and Larrick, 2005; Krackhardt, 1987, 1990; Carley, 1986). Specifically, we focus on cognitive network activation (Smith et al., 2012), which conceives of networks as dynamically shifting and thereby allows causal tests of these ideas through experimentation. This research finds that people's network representations shift moment-to-moment based on their psychological states (Smith et al., 2012; Shea et al., 2015). When survey participants list key contacts, they do not recall complete networks; rather, they mentally activate specific subsections which happen to be immediately accessible. This process involves psychological construction of cognitive network, whereby people elicit momentarily salient, local worlds.

In particular, we suggest that people engage in this goal-directed process of social construction with respect to their networks to facilitate their goal attainment in their environment (Lewin, 1935; Shea and Fitzsimons, 2016). Although dominant accounts of goals and motivation in psychology have largely ignored interpersonal processes, viewing the actor in isolation from the social world (Carver and Scheier, 1981; Muraven and Baumeister, 2000), the potential role of interpersonal dynamics has been acknowledged by several theories (Lewin, 1935; Kelley and Thibaut, 1978; Rusbult et al., 2009). For example, field theory states that goals create a tension in the "life space," which leads the individual to act to reduce that tension (Lewin, 1935). Field theory further states that objects within the life space can be characterized by their degree of inter-connectedness, centrality, and permeability. The tension that arises from unmet goals dynamically restructures social and physical objects in the life space in order to reduce the tension. Thus, in field theory, goal pursuers engage in strategic manipulation of the social (and physical) environment. In support of these theoretical perspectives, research has found that thinking about specific individuals can motivate people to pursue the goals they commonly pursue with an individual (Fitzsimons and Shah, 2008), or the goals that the individuals have for them (Fitzsimons and Bargh, 2003; Shah, 2003). Likewise, as an individual changes or achieves their goal, individuals instrumental to the now dormant goal become less prominent (and sometimes absent) in their networks (Fitzsimons and Fishbach, 2010), highlighting the dynamic nature of social relationships throughout the goal pursuit process.

We suggest that beyond merely thinking of a helpful individual, people may also cognitively activate overall network *structures*, i.e., dense versus sparse social network structures, to help facilitate ethical behavior. By modeling social networks as dynamically shifting, we theorize and test the propositions that the motivation to commit an unethical act leads people to selectively perceive sparse subsections of their networks to evade detection, while the need to recover from the threat experienced after behaving unethically leads individuals to seek out densely connected social groups. Drawing on network research presented at the outset (e.g., Baker and Faulkner, 1993; Burt, 1992, 2010; Gelfand et al., 2011; Granovetter, 1973), this is because (1) sparse networks can limit social constraints and the possibility of detection, and (2) dense networks help individuals recover from identity threats (Menon and Smith, 2014). We now review these findings in turn.

Structural resources for unethical behavior

The second precondition for the strategic use of social networks during ethical decision making is that different social network structures are reliably linked to key resources needed throughout the ethical decision making process. In assessing the strategic resources derived from social network structures, we divide the ethical decision making process into antecedents and outcomes (Sheldon and Fishbach, 2015). Specifically we argue that as an antecedent to unethical behavior, dense networks constrain action, heightening the possibility of detection. Thus, people planning unethical action will activate sparse social networks. Following the commission of unethical behavior, density offers support, allowing individuals to restore positive moral identity.

Hiding motives: social network antecedents to ethical decision making

In rational accounts, the decision maker's tendency to behave unethically is a weighted function of the benefits of behaving unethically versus the potential likelihood of getting caught (Bazerman, 1994; Effron et al., 2015). Experimental studies in behavioral ethics manipulate the likelihood of detection (e.g., dark rooms, Zhong et al., 2010), anonymous versus non-anonymous self-payment (Shu et al., 2011), and end-of-game opportunism (Effron et al., 2015). When one's ability to evade detection is salient in the situation, people are emboldened to behave unethically.

Social network theory provides a social-structural analog to these detection-evading situational cues. Network theorists discuss the norm-enforcing nature of dense networks (Burt, 1982; Durkheim, 1951; Lin, 2001). People in highly dense network structures—where one's network contacts are also connected with each other—experience constraints, whereby their actions are monitored and their autonomy is curbed. Granovetter (1985, 1992:44) states: “My mortification at cheating a friend of long standing may be substantial even when undiscovered. It may increase when the friend becomes aware of it. But it may become even more unbearable when our mutual friends uncover the deceit and tell one another (cited in Burt, 2001a,b).” By comparison, sparse networks have fewer consistent norms and are less able to exert normative pressure to maintain standards (Meyer and Rowan, 1977). The denser the social network, however, the more behavioral influence the context exerts to constrain the actions of its members due to the monitoring capabilities of interconnected individuals (Burt, 1992, 2005; Brass et al., 1998; Coleman, 1990; Gelfand et al., 2011; Uzzi, 1997; Wasserman and Galaskiewicz, 1994). For instance, social balance theory predicts that if Person X and Person Y both have a positive relationship with Person Z, Person X and Y will be less likely to engage in unethical action to each other, so as to avoid eroding their positive relationship with Person Z (Heider, 1946; Venkataramani and Dalal, 2007). Theoretical (Brass et al., 1998) and empirical (Baker and Faulkner, 1993; Gelfand et al., 2011) research discuss the link between social network structure and ethics.

Uzzi (1997), for example, found that densely embedded networks reined in opportunistic behavior that could flourish in less embedded networks. Relatedly, research on price fixing conspiracies found that sparse networks were most effective in allowing parties to evade prosecution because they concealed (rather than spread) communication (Baker and Faulkner, 1993). Aven's (2015) analysis of corruption at Enron likewise found corrupt project members to have fewer communication ties. Previous research regarding the over-estimation of moral dilemmas has found that highly central individuals in a social network believe that their beliefs are more widely shared than less central individuals (Flynn and Wiltermuth, 2010). An analogous set of findings has been reported in research on cultural tightness (Gelfand et al., 2011), given that highly dense networks can be reflected as tight-knit cliques. “Tight” social groups have “strong norms and low tolerance of deviance as compared to people in loose cultures… [people in tight cultures] have the continued subjective experience that their behavioral options are limited, their actions are subject to evaluation, and there are potential punishments based on these evaluations (Gelfand et al., 2011: p. 1100).” Taken together, these findings support a proposition that dense networks can rein in behaviors that run counter to group norms whereas sparse networks can amplify individualistic, and perhaps self-interest behavior (Brass et al., 1998; Burt, 1992, 2005), which may give rise to dishonesty.[3]

While research examining social network position and ethicality offers intriguing associations, it is typically correlational in nature and thus does not establish definitive causal links. These make it impossible to disentangle two alternative explanations: (1) that being situated in a sparse social network frees individuals to act in self-interested, unethical ways, and (2) that people motivated to engage in unethical behavior facilitate it by creating network structures for themselves. We provide causal evidence demonstrating that when people are preparing for unethical action, they respond by cognitively activating a sparser social network structures (i.e., networks associated with less monitoring and control, Brass et al., 1998; Gelfand et al., 2011), perhaps to serve their interactional goals (Cesario et al., 2006).

Hypothesis 1. In anticipation of behaving unethically, individuals cognitively activate lower density social network structures.

Seeking motives: social network activation following ethical decision making

After people engage in unethical action, they are motivated to protect themselves from a possible threat to their moral self-concept. Mazar et al. (2008) document how people maintain their positive self-concept even as it is threatened by their dishonest actions. Specifically, people who recalled an ethical failure experienced ethical dissonance, which is a psychological threat experienced due to a conflict between one's desired moral values and behavioral misconduct. In order to alleviate these threats, transgressors engage in a variety of cognition and behaviors (see Wiltermuth et al., 2015 for a review), such as relaxing their moral norms through moral disengagement and moral forgetting (Bandura, 1990; Shu and Gino, 2012; Shu et al., 2011). Alternatively, they may seek moral redemption by complying with requests to help others (Carlsmith and Gross, 1969; McMillen, 1971; McMillen and Austin, 1971) or engaging in other types of prosocial and ethical behavior (Cialdini et al., 1973; Jordan et al., 2011). Affect control theory (Heise, 1977) suggests that when individuals cannot maintain their desired emotions and self-evaluations, they change their views of the situation in order to regulate the self. After engaging in unethical

[3] We directly test the assumption that sparse networks increase people's tendencies to engage in ethical norm violation. Seventy-six participants (31 male; 44 female; 1 unreported; $M_{age} = 20.37$, $SD_{age} = 1.30$) were randomly assigned to either activate dense vs. sparse subsections of their networks (one participant was excluded for inattention). We accomplished this as in the study reported in footnote 1, leading participants to either generate five interconnected contacts or five contacts who did not know each other (following Smith et al., 2012). After the network prime, participants engaged in an ethical behavior task (Mazar et al., 2008). They had to solve 20 matrices of mathematical problems in 5 min, and then assess their own performance, paying themselves at a rate of $0.50 per correct answer. Although participants were run in groups creating apparent anonymity, the matrices contained a unique identification number which allowed us to match participants' payments with their actual performance. Our dependent variable was thus a dichotomous variable, whether participants cheated (1) or not (0). As predicted, participants in sparse networks were significantly more likely to cheat than participants in dense networks, $X^2(1, N = 75) = 4.078$, $p = .043$. Specifically 36.8% of participants in the sparse condition cheated (fourteen out of 38) whereas 16.2% of participants primed with a dense network cheated (six out of 37). This is causal, not correlational, evidence for the relationship between network activation and ethical behavior.

behavior, individuals might also reconfigure their social network structures as a mechanism to reaffirm their moral self.[4]

While dense networks reduce one's ability to hide, they offer social support (Barnes, 1969; Blau, 1977; Durkheim, 1958)—a resource that people are particularly likely to seek out in times of identity threat (Menon and Smith, 2014). High-density networks help establish shared norms and trusting relationships (Burt, 1992; Meyer and Rowan, 1977; Wasserman and Galaskiewicz, 1994; Coleman, 1988), and reduce loneliness (Stokes, 1985). In a related literature, being part of cohesive network improves emotional adjustment. For example, education research has shown that students who belong to cohesive groups tend to experience less anxiety and performance stress than those who do not (Bowers et al., 1996; Shaw and Shaw, 1962). But beyond thinking of close relational partners or simply a cohesive group of people, social network density offers unique resources to aid in the recovery from unethical behavior. That is, dense networks provide identity (Menon and Smith, 2014) and reputational (Podolny and Baron, 1997) benefits derived from perceptions of social structures (Heise, 1977).

Hypothesis 2. After behaving unethically, individuals cognitively activate denser social network structures.

Overview of the current studies

In the present work, we draw on this social network perspective to test our hypothesis that sparser social networks serve as an antecedent to unethical behavior whereas denser social networks serve as an outcome to unethical behavior. We propose that people who engage in unethical behavior cognitively activate of sparser and denser social network structures. We test these hypotheses in five empirical studies.

Experiment 1 establishes an initial link between cognitively activated network structure and ethical behavior. Experiment 2 randomly assigns participants to prepare to commit an ethical or unethical act, and we then measure their network activation patterns as the dependent variable (testing Hypothesis 1). Experiment 3 randomly assigns people to behave honestly or dishonestly, and examines post hoc network activation (testing Hypothesis 2). Experiment 4 reconciles the first three experiments by measuring network activation before or after the unethical action to isolate network activation as a prospective goal (e.g. preparing to commit the act) and a retrospective rationalization (e.g. self-affirmation following commission).

Experiment 1: Networks and ethical behaviors

Experiment 1 examined the relationship between cognitively activated social network structure and self-reports of ethical behavior.

Method

Participants and design. Eighty-nine participants (56 males, M_{age} = 32.03, SD = 9.91) were recruited from Amazon's Mechanical Turk (Buhrmester et al., 2011). All participants were based in the United States and employed full-time in organizations with ten or more employees. All participants passed attention filters embedded in the survey (e.g., "I will select 'strongly agree' to demonstrate that I am paying attention'). Two participants generated a social network consisting of only one person and were dropped from our sample.

Procedure. Participants completed the study online. Social network generation and ethical behavior tasks were counterbalanced and we control for this in analyses.

Social network generation. Participants completed a standard ego-network generator task with regards to a workplace advice network. Specifically, participants were asked "From time to time, people face problems and needs to seek out help and advice from others. Now imagine that you are facing a problem with regards to your career and work-life. Please write the first name and last initial of people whom you would approach to attain advice with regards to a problem that you might face in your career and work-life." Participants could list up to ten individuals. After generating their workplace advice network, participants assessed the relationships between each of their contacts (1 = *Do not know each other*, 2 = *Acquaintances*, 3 = *Connected*). Density was calculated at the acquaintance level.[5]

Ethical behavior. We measured ethical behavior using ethical items from the social desirability scale (Crowne and Marlowe, 1960). This scale consists of thirty-three true/false questions assessing behavioral standards that present a conflict between responding realistically and responding in a socially desirable light. For instance, "I never hesitate to go out of my way to help someone in trouble" and "I'm always willing to admit it when I make a mistake" answered as true would indicate high social desirability. Likewise choosing false for items such as "If I could get into a movie without paying and be sure I was not seen I would probably do it" and "I can remember 'playing sick' to get out of something" would also indicate high social desirability. Two independent coders rated each of the items according to their ethical content, leaving an 11-item scale (inter-rater reliability = .85). A participant's score is a sum of the ethically-laden socially desirable responses. We hypothesized that denser social networks—which we hypothesize to enforce higher standards of moral behavior—will be associated with higher levels of socially desirable responses. In less dense network structure individuals should be more likely to admit social transgressions.

Results

Table 1 presents all regression models. A regression model was run examining our dependent measure, ethically-laden social desirability (M = 6.26, SD = 2.21), as predicted by cognitively activated social networks (M_{size} = 6.48, SD = 3.21). Although the intent of this study is to establish a correlational relationship between social networks and espousing ethical beliefs, our use of counterbalancing can highlight whether individuals' social desirability scores change as a function of whether they generated their network before (dummy variable = 1) or after (dummy variable = 0) completing the social desirability scale.[6]

Model 1, the baseline model our task order dummy code, explains 3.9% of the variance (p = .06). The order of the tasks has a marginal effect on our ethics measures, β = .198 (p = .06). Specifically, individuals who generated their social networks prior to completing the social desirability scale report a higher number of ethically-laden socially desirable behaviors (M = 6.13), compared to those who generated their networks after completing the social desirability scale (M = 5.70).[7]

Model 2 adds cognitively activated network density and explains 9% of the variance (p = .03). Consistent with our hypothesis, we find a significant relationship between cognitively activated social network density and ethical behavior, β = .225 (p = .03). Specifically,

[4] Note that this literature captures the general tendencies of the population. Research on abnormal psychology points to unique segments of the population such as psychopaths who may experience neither threat in these situations nor significant attachment to social ties (Patrick et al., 2009). Our theorizing does not apply to this segment of the population.

[5] Results throughout this manuscript are robust to multiple calculations of density (e.g., close ties, weighted means).

[6] Network size is unrelated to ethically-laden social desirability scores ($t < .5$, $p > .66$).

[7] We thank our reviewer who encouraged us to analyze only the items in the social desirable scale that had ethical content. When including items that were socially desirable but lacked ethical content (segment 3 in our Venn diagram), our results followed the same pattern, but were weakened.

Table 1
Summary of regression analysis for variables predicting ethically-laden social desirability in Experiment 1 (N = 87).

Variable	Model 1			Model 2			Model 3		
	B	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Intercept	5.70	0.38		5.19	0.44		4.915	0.54	
Order Dummy	0.90	0.48	.198^t	.914	0.47	.201^t	1.34	0.68	.294^t
Density				1.69	0.78	.225*	2.61	1.315	.347*
Interaction Term							−1.42	1.63	−.177
R^2	.028			.090			.098		
F for change in R^2	3.53^t			4.71*			.76		

$^t p < .10$, $^*p < .05$, $^{**}p < .01$. Order dummy = 1 if network was generated prior to DV.

individuals with denser network structures (+1 SD above the mean) report engaging in more socially desirable behaviors (M = 5.69) while individuals with less dense network structures (−1 SD below the mean) report that they engage in fewer socially desirable behaviors (M = 4.69). Model 3 includes the interaction between order and density, and is not significant ($t < .9, p > .38$); therefore, we interpret the results from Model 2.

Discussion

Experiment 1 demonstrates a statistical relationship between ethics and cognitively activated social network structures. In line with our hypothesis, individuals who activated less dense social network structures were more willing to admit to engaging in ethically questionable behavior. This effect is unique to the density of the individual's social network structure.

We also examined the order of our ethics and network variables in our analyses. We found a significant effect such that individuals who generated their networks prior to completing the social desirability scale had significantly higher social desirability. It could be the reminders of different members of a social network (i.e., highly moral individuals) or a densely connected group of people lead individuals to increase their behavioral standards. The alternative explanation is that answering the social desirability scale in unethical ways leads individuals to subsequently generate sparsely connected social network structures. The current study's design can support both potential causal links. Experiments 2–4 will examine our causal hypothesis more directly by randomly assigning participants to ethical or unethical conditions. Likewise we attempt to rule out tie characteristic explanations (i.e., my network contacts are honest) to triangulate upon a structural explanation for the link between ethics and social networks.

Experiment 2: Anticipating unethical behavior activates a sparser network

Experiment 2 examines the causal relationship between people's ethicality and their cognitively activated social network structure. We hypothesize that dishonest goals lead people to activate sparse networks. To test this hypothesis, we randomly assigned participants to read a vignette in which they thought about engaging in either an honest act, dishonest act, or a control condition, and then measured their cognitively activated social network structures.

We randomly assigned participants to ethicality conditions, as compared to simply measuring their ethical beliefs in a naturalistic and correlational design to isolate the causal pathway from ethicality goals to network structure. This allowed us to rule out reverse causality (e.g. the alternative explanation that people's network structures account for their tendencies to violate ethical norms). It additionally avoided issues of sampling on the dependent variable (cf., Heckman, 1979).

Method

Participants and design. Two hundred and ten participants (M_{age} = 30.19, SD_{age} = 8.04; 63% females,) were recruited from Amazon's Mechanical Turk (Buhrmester et al., 2011) in exchange for $0.65 in Amazon credits. All participants were based in the United States and employed full-time in organizations with ten or more employees. All participants passed attention filters embedded in the survey, manipulation checks at the end of the survey regarding the honesty manipulation, and no participants had participated in our related studies. Eleven participants generated a social network consisting of only one person, making it impossible to compute network scores, and they were therefore dropped from our sample.

Procedure. Participants completed the study online. We utilized a 3-factor design where participants were randomly assigned to an honesty, dishonesty, or control condition.

Ethical behavior vignette. Participants first read the following workplace scenario (adapted from Ruedy et al., 2013):

> You complete a time sheet that will determine whether or not you will earn a $500 bonus. You are 5 hours short of the 500 billable hours required for the bonus. However, you could bill 5 hours spent on a training course to meet the goal without anyone finding out, although this is against company policy.

In the honesty condition, participants were told “Imagine that you decide not bill any training hours. As a result, you will report 495 h for the quarter and will not reach the target for the bonus.” Participants in the dishonesty condition were told “Imagine that you decide to bill the 5 training hours. As a result, you will report 500 h for the quarter and reach the target for the bonus.” Participants in the control condition were given no such information. All participants in our final sample correctly recalled these instructions.

Social network generation. Participants then completed the same ego-network generator task as in Experiment 1 with regards to a workplace advice network. We used a workplace advice network to avoid a potential confound of individuals evoking different types of networks when behaving (un)ethically (for example, activating family members when behaving ethically, a goal instilled by families; family networks, by definition, are more dense than other types of networks). Our key dependent measure was social network density (see Study 1). Additionally, participants assessed their closeness to each individual they nominated in their social network (*I am close to < contact >*), and rated each of those individuals on their ethicality (*< contact > is an honest person*). As additional dependent variables, we then computed their ratings of their average closeness to these contacts and contacts' ethicality. Participants then answered basic demographic questions.

Results

Participants generated networks of approximately six individuals

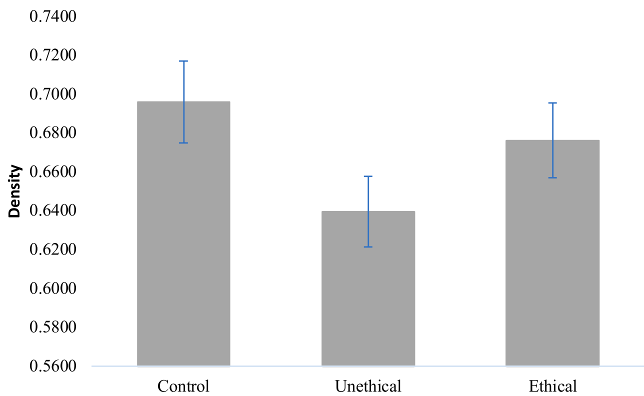


Fig. 2. Network density across conditions, Experiment 2.

(M = 6.13, SD = 3.34).[8] Eleven participants generated networks with only one individual and were removed from subsequent analyses. An analysis of variance (ANOVA) across the three conditions did not reach statistical significance, $F(2, 196) = 2.21$, $p = .10$, $\eta_p^2 = 0.022$.[9] An ANOVA comparing those in the unethical behavior condition compared to those in the ethical/control conditions showed that the intention to cheat lead to the activation of a less dense social network structure, $F(1, 197) = 3.95$, $p = .04$, $\eta_p^2 = 0.02$. Individuals who anticipated cheating behavior activated significantly less dense networks (M = 0.64, SD = 0.16) than individuals preparing to be ethical or in the control condition (M = 0.69, SD = .16).[10] Please see Fig. 2.

Characteristics of social network ties. An alternative explanation is that the effects might be a by-product of tie content. For example, participants in the honest condition might have activated more honest ties (who were themselves in more dense networks), whereas participants in the dishonest condition might have activated more dishonest contacts (who might have been in sparser networks). However, our manipulations did not significantly predict the ethical content of activated social network ties (all $ps > .7$), allowing us to rule out this alternative explanation. Network size did, however, predict the ethicality of tie content, with participants who activated larger networks reporting that their contacts were less ethical on average, $F(1, 196) = 11.15$, $p = .001$, $\eta_p^2 = 0.054$.

Another alternative explanation is that the effects were a by-product of participants activating individuals who differed in closeness. This explanation is consistent with previous research on cohesive relationships which says that group cohesion—regardless of group structure—can influence ethical decision making. Our manipulations did not significantly predict the closeness of activated social network ties (all $ps > .24$), suggesting that this explanation is unsupported.[11]

Discussion

Experiment 2 allows us to establish an initial directional link between unethical motivation and cognitively activated social network structure. Specifically, the results indicate that when people anticipate engaging in unethical behavior (versus an ethical behavior or no behavior), they call to mind sparsely connected social network structures. This support our strategic network activation theory that unethical behavior evokes specific cognitive network activation.

The characteristics of the network ties themselves (their perceived ethicality and relationship closeness) were related to the size of the networks participants activated (i.e., larger network sizes contained less ethical and less close social contacts). Likewise, while ethicality of ties ($r = .13$, $p = .06$) and tie closeness ($r = .289$, $p < .000$) correlate significantly with our dependent variable, they were not independently related to our ethics manipulations.[12] These findings help rule out the alternative hypothesis that individuals engaging in ethical behavior call to mind different "types" of people.

A limit of this experiment is that it involves a vignette study where participants imagined themselves in an unethical situation, as compared to behaving in a real situation which implicated their honesty. The first reason for a follow up experiment was to place participants in a situation which called on them to engage in actual honest or dishonest behaviors. A second question that arises from this experiment is whether network activation is anticipatory or ex-post. Specifically, we hypothesized that network activation was an anticipatory effect, whereby participants who read the vignette thought about the prospect of unethical behavior and mentally activated sparse networks that might allow them to accomplish the goal while avoiding detection. To clearly distinguish these processes, Experiments 3 and 4 directly manipulate the point at which network activation emerges, to distinguish between network activation as a preparatory response to facilitate unethical goal achievement and as a post hoc response following unethical behavior. We also examine additional potential mediating mechanisms.

Experiment 3: Recovery after unethical behavior

To address reverse causality and test Hypothesis 2, in Experiment 3, we experimentally manipulated one's moral self-concept. We test whether negative moral self-concept triggers a high-density network.

Experiment 3a: Recalling a dishonest self activates a high-density network

Method

Participants. One hundred and sixty individuals ($M_{age} = 39.91$, $SD_{age} = 13.49$; 36% male) participated in a 20-minute online study through Amazon's Mechanical Turk and received $0.50 participation fees. We excluded seventeen participants who failed to follow the instructions to write a narrative based on our manipulation, leaving a total of 143 individuals ($M_{age} = 41.26$, $SD_{age} = 14.37$; 37% male).

Design and task. Participants were randomly assigned to one of the three conditions: *negative moral identity, positive moral identity,* and a control condition. To manipulate one's moral identity we used an established method (Reed et al., 2007; Sachdeva et al., 2009) whereby participants in the *negative moral identity* condition received a list of five negative moral traits (*disloyal, greedy, mean, dishonest,* and *selfish)* and those in the *positive moral identity* condition received a list of positive moral traits (*caring, generous, fair, honest,* and *kind*). Participants in the control condition received a list of inanimate objects (*books, keys, house, desk,* and *letter*). All participants were then asked to write a short story

[8] Network size did not differ across conditions, $F(2, 196) = 1.42$, $p = .24$ ($M_{control} = 6.53$, $SD = 3.20$; $M_{ethical} = 5.88$, $SD = 3.05$, $M_{unethical} = 6.72$, $SD = 3.30$).

[9] Post hoc comparisons revealed significant differences between the unethical condition and other conditions, LSD $p < .04$; therefore we collapse across conditions to examine the specific effects of unethical behavior preparation to directly test Hypothesis 1 which pertains specifically to unethical behavior. Likewise, contrast coding yields identical results.

[10] Network size is a marginally significant covariate when added to the ANOVA model, $F(1, 196) = 2.85$, $p = .09$, $\eta_p^2 = 0.014$.

[11] Although the network size control was significantly related to perceived closeness, $F(1, 196) = 14.64$, $p = .000$, $\eta_p^2 = 0.069$, such that individuals with larger activated networks felt significantly less close to their contacts overall, the structure of the network drives the effects.

[12] Likewise covarying for these factors in an ANOVA find that closeness is a significant covariate ($p < .000$) while tie ethicality is not ($p = .577$) but both leave the direction of the results unchanged, albeit marginally significant ($p = .09$). We provide these results for transparency, but solely report the effects on density due to the experimental nature of our study.

Table 2
Example stories in each experimental condition for Experiment 3a.

Negative moral identity	Positive moral identity	Control
"There was a time in my life when I was a selfish person, someone I would not want to be friends with now. One night after everyone had left, I stole a present from under the office Christmas tree that belonged to another employee. It was a mean thing to do, and showed just how greedy and self-serving I was at that stage of my life. It also was disloyal to my employer, which was a nonprofit that gave jobs to poor people. I can't believe what a dishonest person I was back then. I'm so glad that I've changed. I would like to return to the nonprofit one day and atone for what I did."	"One of the best times of my life was when I found what appeared to be an honest man living under a bridge. I felt very caring toward him so I decided to be very kind by giving him a generous portion of my Big Mac sandwich I had just purchased. As he ate a portion of my meal he told me I was very fair toward him. I sure felt good all day after that. I was a little hungry though because he ate more of my meal then I thought he would. I had to go back and get an additional sandwich to fill up my tummy. After that I felt much better and decided to go out and find some more honest people living under bridges that I could give some food to."	"After a long day at work on a Friday, I drove to my friend's house to drop off a book that she loaned me. She wasn't home but told me she kept a set of her keys in the mailbox. I let myself in and dropped the book on her desk in the office. I grabbed a clean sheet of paper from the printer and wrote a short letter to her thanking her for letting me borrow the book. I locked up and returned the keys to the mailbox and drove home. It was another 25 minute drive and by the time I got home I was really beat and just microwaved some left overs and then got into my pajamas and vegged out in front of the television."

about themselves using the words they received. An example of the stories provided in each condition is provided in Table 2.

We used the same methods as in Experiment 1 to elicit network size and density, followed by a demographics survey.

Results

As a manipulation check, two independent coders rated the narratives participants provided on the extent to which participants described themselves as having negative and positive moral identity. We then conducted one-way ANOVAs with conditions as an independent variable and negative and positive moral identity as dependent variables. These models yielded a main effect of conditions, $F(2, 140) = 47.74$, $p < .001$ for negative moral identity, and $F(2, 140) = 87.14$, $p < .001$, for positive moral identity. As expected, participants described themselves as having negative moral identity in negative moral identity condition ($M = 2.64$, $SD = 1.50$), compared to those who were in the positive moral identity condition ($M = 1.18$, $SD = 0.43$; $p < .001$), and controls ($M = 1.01$, $SD = 0.07$; $p < .001$). It did not differ significantly between the positive moral identity condition and controls, $p = .733$. Similarly, participants described themselves as having positive moral identity in positive moral identity condition ($M = 3.40$, $SD = 1.16$), compared to those who were in the negative moral identity condition ($M = 1.66$, $SD = 1.08$; $p < .001$), and controls ($M = 1.01$, $SD = 0.07$; $p < .001$). Participants in the negative moral identity condition were, however, more likely to describe themselves as having positive moral identity than controls, $p = .001$.

An analysis of variance (ANOVA) showed that the effect of recalling one's negative moral identity on network density was statistically significant, $F(2, 137) = 3.18$, $p = .04$, $\eta_p^2 = 0.04$. Planned contrasts revealed that individuals who recalled their negative moral identity ($M = 0.82$, $SD = 0.17$) triggered a more dense network than those in the control condition ($M = 0.73$, $SD = 0.23$), $t(97) = -2.16$, $p = .03$, CI = $[-0.17, -0.01]$, $d = -0.44$, and those who recalled their positive moral identity ($M = 0.73$, $SD = 0.20$), $t(90) = -2.31$, $p = .02$, CI = $[-0.17, -0.01]$, $d = -0.49$.[13]

Discussion

Recalling one's negative moral identity triggered a high-density social network, while recalling one's positive moral identity did not, with no differences between the network densities in the latter condition and the control condition. This finding suggests that recalling a negative moral identity leads to the cognitive activation of denser social network structures. Such structures could potentially buffer the threat to one's positive self-concept and enable social reengagement.

Experiment 3b: Self-affirmation buffers a threat to moral self-concept

In Experiment 3b, we test whether a threat to one's positive self-concept explains the relationship between cheating and subsequently activating a high-density network using a mediation-through-moderation approach (Spencer et al., 2005). We manipulated both cheating (whether participants likely engaged in it or not) and self-affirmation. We predicted that self-affirmation would moderate the relationship between cheating and network density. Specifically, people engaging in an immoral act experience a threat to their self image. We predicted that, consistent with Experiment 2, unaffirmed participants in the likely-cheating condition would sustain that threat to self image and therefore activate high-density networks. However, because self-affirmation reduces that threat (Steele, 1988), we predicted that affirmed participants would not activate high-density networks. Further, self-affirmation would not affect network density among participants in the no-cheating condition as these participants do not face a threat to their self-concept.

Method

Participants. We recruited 160 participants who passed the attention check at the beginning of the survey. One hundred sixty individuals ($M_{age} = 33.15$, $SD_{age} = 10.98$; 58% male) participated in a 20-min online survey through Amazon's Mechanical Turk and received $0.50 as well as a bonus payment of up to $0.90 based on their outcomes on a series of short tasks.

Procedure. Participants first read that they would be playing an online game and would receive a bonus payment based on the outcome of the game. We randomly assigned participants into one of four conditions in a 2 (likely cheating [Opaque] vs. no cheating [Transparent] × 2 (self-affirmation vs. no self-affirmation) between-subjects design.

Self-affirmation manipulation. For the manipulation of self-affirmation vs. no self-affirmation, we gave participants a list of nine personal values and characteristics that people may consider to be important to them (Cohen et al., 2000). Participants in the *self-affirmation* condition were told to choose one or two values that they consider most important to them, write a paragraph about why this value(s) is important to them personally, and give an example of a time when the value(s) was particularly important in their lives. Participants in the *no-affirmation* condition were told to choose one or two values from the list that they considered to be least important to them and to write about why these values might be important to someone else.

Cheating manipulation. For the manipulation of likely-cheating

[13] Network size was a significant covariate when added to the ANOVA model, $F(9, 131) = 1.45$, $p < .001$, $\eta_p^2 = .24$. Adding network size as a control did not change the overall direction of our results, but our conditions were no longer significant, $F(2, 131) = .13$, $p = .16$, $\eta_p^2 = .03$.

vs. no-cheating, we used a die-throwing game adapted from Jiang (2013), in which participants throw a virtual online six-sided die 10 times to earn points that could be converted into real bonus payments. Using a picture of a virtual die, we reminded participants that the pairs of numbers on opposite sides of the die must add up to seven. In each round, the number of points that participants scored depended on the throw of the die (randomly ranging from 1 to 6), and on the side (either the Upside [U] or the Downside [D]) that they had chosen before each throw. The visible side of the die, facing up, was called "U," and the opposite side, facing down, was called "D." If a participant chose "D" and rolled a five, then she would earn two points for that throw, whereas if she chose "U," she would receive five points (See Appendix for the example provided to participants). Each point was translated into three cents, and participants could receive up to \$0.90 after five rounds.

Participants in the *opaque* condition were asked to choose a side of the die ("U" or "D") in their minds prior to each throw. In each round, after throwing the virtual die, they were asked to indicate the side they had chosen before making the throw to determine their points. Because participants in this condition could change their minds and chose the side that corresponds to the maximum points, this experimental condition allowed cheating. By contrast, participants in the *transparent* condition were asked to choose a side of the die and report it before each throw, so they were not able to change their minds later.

Dependent measure. As in the prior experiments, we then used the name generator and demographic questionnaire.

Results

As a manipulation check, we tested whether individuals in the likely-cheating condition reported higher numbers than those in the no-cheating condition by potentially engaging in dishonest behavior. Indeed, those in the likely-cheating condition (M = \$0.65, SD = 0.10) earned significantly more than those in the no-cheating condition (M = \$0.54, SD = 0.10), $t(173) = -6.75$, $p < .001$, CI = [−0.14, −0.07], $d = -1.04$.

We ran a two-way ANOVA. As predicted, we found a marginally significant interaction between cheating and self-affirmation, $F(1, 156) = 3.45$, $p = .06$, $\eta_\rho^2 = .05$. Our interaction term was marginally significant at the 10% significance level, $F(1, 156) = .10$, $p = .06$, $\eta_\rho^2 = .08$. A simple slope analysis supports our mediation hypothesis (see Fig. 3). When participants were not affirmed with core values, the likely-cheating condition activated a denser network, $p = .02$. On the other hand, when participants were affirmed with core values, the relationship between likely-cheating and activating denser networks was weakened, $p = .77$.[14]

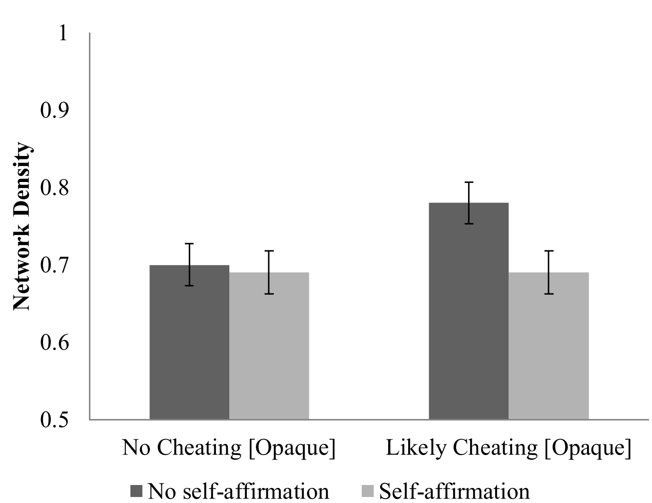


Fig. 3. Network density across conditions, Experiment 3b.

Discussion

Using a mediation-through-moderation approach, we found that a threat to one's positive self-concept explains the relationship between cheating and subsequently activated a high density social network structure.

Experiment 4: Anticipatory and post hoc network activation

In Experiment 4, we again randomly assign participants to conditions where they either had to lie or tell the truth; we then assessed the networks that people cognitively activated. We sought to replicate Experiment 2's finding that people preparing to commit dishonest behavior tended to activate sparse networks using a paradigm that allowed for actual lying or honesty and Experiment 3's findings that post-cheating individuals activate denser networks. To do so, we tested whether this pattern of network activation was preparatory (e.g. to facilitate unethical action) or post hoc (e.g. avoiding dense networks due to negative self-evaluations) by assessing whether the predicted cognitive network activation pattern occurred after or before people behaved dishonestly.

Method

Participants and design. Ninety-four students (33% male; M_{age} = 22.00; SD_{age} = 3.94) from a private Southeastern university completed computer-based laboratory surveys for \$7. We utilized a 2(ethical behavior: honest, dishonest) × 2(network activation: pre-behavior, post- behavior) design.

Procedure. Participants entered the laboratory and were told they would participate in an "attention to detail task" (Trope and Liberman, 2000). Our methods, adapted from the cognitive dissonance paradigm (Festinger and Carlsmith, 1959), randomly assign participants to engage in more or less ethical behavior to avoid sampling on the dependent variable (Heckman, 1979). Specifically, participants had to complete a task designed to be boring: reading columns of randomized 3-digit numbers and then determining whether they were the same or different. Participants completed twenty trials of this task. We then randomly assigned people to lie or tell the truth. Specifically, participants in the honest condition were told:

> In this task, we are asking you to describe the number column task that you completed in an honest and realistic manner. In this writing passage, you are to convey to the next participants the exact task they are about to complete. Please provide your true opinion. You want to convey your honest opinion of the number column to the next participant.

By contrast, participants in the dishonest condition were told:

> In this task, we are asking you to describe the number column task that you completed in an enthusiastic and positive manner. In this writing passage, you are to convey to the next participants that the task they are about to complete is interesting and exciting. You want to convey to the next participant that they are going to have a good time completing the number column task you just completed. Please be positive, but believable in your description of the task.

[14] We repeated our analysis controlling for network size, which is negatively correlated with network density in this dataset and more generally (McPherson et al., 1991). While network size was negatively correlated with network density, $r = -.30$, $p < .001$, adding network size as a control did not change the significance or direction of our results. That is, our interaction term remained marginally significant, $F(1, 149) = 3.57$, $p = .06$, $\eta_\rho^2 = .09$.

Ten participants did not complete this part of the study and were removed from the sample.

Cognitive network activation. Participants generated their networks either before or after the writing task. In the anticipatory condition, prior to writing about the boring task, but after knowing that they would be honest or dishonest, participants ostensibly received a filler task. In fact, this was the standard ego-network generator where participants listed five network contacts with whom they discussed important matters (adapted from Davis et al., 1998). We chose five-contact networks as they have frequently been used in previous research (see General Social Survey: Burt, 1984). After listing the initials of their five contacts, participants were reminded of the instructions to write a message to the next participant and wrote their message. By using a different name generator, we conceptually replicate the other experiments, ensuring that the results are not due to stylized features of the particular name generator. In the post-condition, participants generated their network after writing their message.

Network density. Participants then completed the dependent variable, density of the activated network. Participants stated whether the contacts knew each other (coded as 1) or were unconnected individuals (coded as 0). We used a binary measure to rule out the possibility that following honest or dishonest acts, participants re-construed the closeness of individuals in their networks. Following Wasserman and Faust (1994), we computed network density as the ratio of the number interconnections between the contacts whom participants named, and the total number of contacts named (five in this study).

Additional measures. Similar to previous studies we assessed the perceived ethicality of ties *(< contact > is an honest person)*. Participants completed the PANAS scale (Watson et al., 1988) with additional items assessing guilt, shame, and immorality. A coder—blind to hypotheses—coded the messages written to the next participant on a variety of dimensions (positive emotion, persuasiveness, detail-orientation) to assess whether this process of (dis)honesty interactions with people's cognitive network activations.

Results

Cognitive network activation. Density was the dependent variable in a 2 (ethical behavior: honest, dishonest) × 2 (network activation: pre- behavior, post- behavior) ANOVA.[15] The main effects were not significant in this analysis (*ps* > .5). An interaction emerged, $F(1,90) = 4.36$, $p = .04$, $\eta_p^2 = .046$. As predicted, participants who anticipated lying activated significantly sparser networks (55.23% density, $SD = 0.26$) than honest participants (69.3% density, $SD = 0.22$), $F(1,46) = 4.22$, $p = .046$, $\eta_p^2 = .084$ (Fig. 4). In the dishonest condition those preparing to lie activated networks that were approaching less density than post-honesty ($M = .68$, $SD = .28$), $F(1,44) = 2.53$, $p = .11$, $\eta_p^2 = .054$. No other effects reached significance, (all *ps* > .3). This reveals that network activation emerges strongly as a preparatory strategy to dishonest behavior, and to some extent, ex-post, as well.

Emotion evaluations. We used 2 (ethical behavior: honest, dishonest) x 2 (network activation: pre-behavior, post-behavior) ANOVA to assess differences in emotion. No significant effects emerged for guilt, shame, or general negative affect (all *Fs* < 1).

Tie honesty. As before, we checked whether the network structure effects were simply a by-product of tie content. That is, perhaps participants activated ties whom they viewed as particularly honest or dishonest, which could license less ethical behavior. Consistent with other studies, this alternative explanation was unsupported. An ANOVA 2 (ethical behavior: honest, dishonest) × 2 (network activation: pre- behavior, post- behavior) revealed an ethical behavior marginal effect, $F(1,93) = 2.87$, $p = .094$, $\eta_p^2 = .031$, whereby participants who were in the honest condition activated more honest ties. However, the

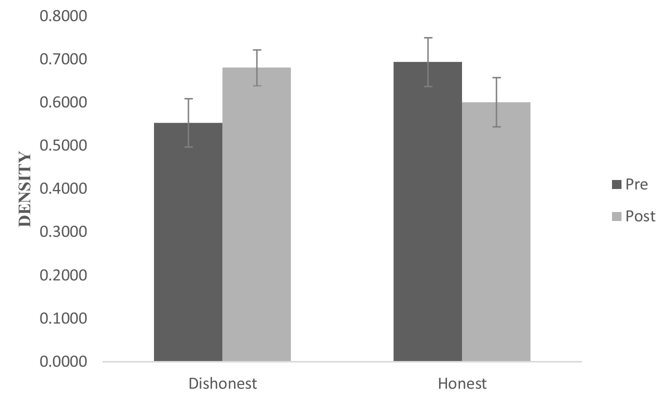


Fig. 4. Dishonesty vs. honesty affects density of cognitively activated networks. Mean levels of cognitively activated network density in Experiment 4.

interaction was nonsignificant ($p > .57$) and tie honesty did not mediate the relationship between honesty goals and cognitive network activation. Thus, it was not tie attributes (i.e., I'm activating dishonest ties to help me lie), but rather network structure (i.e., I'm activating sparser networks to help me lie) that mattered.

Word count. A 2 (ethical behavior: honest, dishonest) x 2 (network activation: pre- behavior, post- behavior) ANOVA on word count revealed a marginally significant effect for ethical behavior, $F(1,93) = 3.38$, $p = .069$, $\eta_p^2 = .037$. Specifically, individuals being honest wrote approximately 58.67 words ($SD = 25.72$) while individuals being dishonest wrote 50.09 words ($SD = 20.82$). No other effects reached significance (*Fs* < .8, *ps* < .3).

Lie content. An independent coder coded the messages participants wrote on the following dimensions: persuasiveness, enthusiasm, believability, detail-oriented, positivity, and negativity. A 2 (ethical behavior: honest, dishonest) × 2 (network activation: pre- behavior, post-behavior) ANOVA for each dimension. No significant effects emerged for persuasiveness, believability, or detail-orientation (*Fs* < 1.2, *ps* < .1). These variables did not mediate the relationship between honest behavior, timing of behavior, and cognitively activated social network density.

We combined the coding for enthusiasm, positivity, and negativity (reverse coded) into a composite variable ($\alpha = .804$) and ran the same 2 × 2 ANOVA. A significant main effect for the Honesty condition emerged, $F(1, 93) = 64.53$, $p = .000$, $\eta_p^2 = .418$. This main effect was qualified by a significant interaction effect, $F(1, 93) = 6.23$, $p = .014$, $\eta_p^2 = .065$. Specifically, individuals preparing to behave dishonestly ($M = 4.33$, $SD = .75$) had significantly higher levels of positivity than individuals preparing to behave honestly ($M = 2.46$, $SD = .87$) and individuals who had previously behaved honestly ($M = 3.00$, SD = .97), *Fs* > 13.0, *ps* = .000, but not individuals who had just behaved dishonestly ($M = 3.99$, $SD = .83$), $F(1, 45) = 2.16$, $p = .15$. Individuals who had just behaved dishonestly had significantly had significantly higher levels of positivity than individuals being honest, *Fs* > 13.00, *ps* < .001. Likewise, individuals behaving honestly had higher levels of positivity when they generated their network after behaving honestly, $F(1, 47) = 4.17$, $p = .047$, $\eta_p^2 = .083$. See Fig. 2. Positivity in the written message did not mediate the relationship between honest behavior, timing of behavior, and cognitively activated social network density.

Discussion

Experiment 4 indicates that people cognitively construct social environments that pave the way for and to some extent, to recover from unethical action. People who anticipate telling a lie psychologically activate less dense networks, people who have just told a lie activate more dense cognitive network structures. These patterns vary in a

[15] Coding: 1 = Honest, 0 = Dishonest; 1 = Post, 0 = Pre.

predictable and strategic fashion as people prepare for ethically-loaded choices and recover from them.

General discussion

Five experiments using diverse methods and samples establish modest but significant and consistent effects whereby individuals strategically situate the self within different cognitive social network structures while preparing for and recovering from unethical behavior. When preparing to behave unethically, people cognitively activate sparse networks that theoretically reduce detection and monitoring. When recovering from unethical behavior, they cognitively activate dense networks that affirm their moral identities. This cognitive social network strategy serves to attenuate the negative self-evaluations that frequently occur in light of unethical behavior, and occurs in response to tensions in the lifespan (Lewin, 1935), leading the individual to reconstrue their social networks. These findings show how social network analyses powerfully inform psychological conceptions of the situation (Oishi and Kesebir, 2012). They reflect "the tripod on which social psychology rests" (Nisbett and Ross, 1991, p. 8), connecting the person (through individual goals and motivation), the situation (through social network structure), and construal (through selective perception of that structure), showing how each element operates in concert during the commission of unethical acts.

The findings also expose people's psychological processes as they anticipate and prepare for moral choices and behavior. This preparatory, strategic process (c.f. Cesario et al., 2006) complements the large body ex-post-conceptions of immoral action as moral justification (Mazar et al., 2008; Shu and Gino, 2012). In preparation for unethical action, people disengage from both their psychological constraints (by rationalizing them away, Bandura, 1999) and, as the present research indicates, their social constraints (by activating sparser social networks). We suggest that anticipatory processes are crucial from a practical perspective, because they could spawn illusions of invulnerability, exacerbating unethical actors' overconfidence about evading detection and hence their likelihood to deceive.

Further research might consider more nuanced relationships between structure and ethics. For instance, consider Durkheim's (1958) two forms of suicide, one caused by disengagement from social ties (i.e. anomie, social breakdown) and the other caused by over-embeddedness in groups (e.g. jihad, kamikaze suicides). Just as people could harm themselves with these two contrasting structures, people could likewise harm others for parallel reasons. Hypothesis 1 is consistent with Durkheim's anomie explanation, suggesting that people engaging in self-serving deviance loosen the psychological grip of networks upon them by activating the least dense sections of the network.

However, as we noted at the outset, the concept of ethical norm violation involves conventional, group-sanctioned morality by definition (Kohlberg, 1973). As such, when conventional norms are immoral (Segment 2 in Fig. 1), over-embeddedness in the dense group can cause people to engage in unethical behavior that conforms with those unethical group norms. While the experimental study reported in footnote 1 provides initial evidence of this process by comparing ethical decisions on benefiting solely the individual versus the group, further research might consider the interplay between networks and ethics within densely embedded groups (such as the Mafia or the Nazis) where unethical behavior is the norm.

In such situations, people on the periphery who are freer to violate norms would deviate in ways that represent ethical action. Indeed, we suggest that the most provocative possibilities may lie in studies that explore the 5th segment of Fig. 1—where actions are ethical but not socially normative. This potentially yields a paradox of the periphery: it can harbor both self-serving deviance and socially-beneficial deviance involving higher-level moral reasoning (e.g. devil's advocates and whistle blowers who push the frontiers of conventional moral reasoning, Kohlberg, 1973).

An opportunity for further managerially relevant research lies in uncovering designs that nudge people to increase ethical decision making (e.g., Lindelauf et al., 2009). These arguments suggest that managers must harness dense and sparse network structures with nuance: i.e., reducing the pull of dense networks on unconventional ethical thinkers embedded within them (Janis, 1972), and increasing the monitoring on self-serving deviants on the peripheries. By creating restraints that encourage conformity in the face of ethical norms and freedom to deviate in the face of unethical norms, organizations can harness the potential power of both dense and sparse networks.

Implications for network research

Our results have implications for how network research can broaden the interplay between network structure and unethical behavior. We now consider some implications of this research on cognitive network research. First, our research shows the ways that inaccuracies in cognitive network perception might be both adaptive and costly to the perceiver. On one hand, these patterns reveal the highly adaptive ways that people activate their social networks to facilitate goal accomplishment (c.f. Shea and Fitzsimons, 2016). On the other hand, when one's goals are unethical, this selective network perception can encourage risky behavior. When people think about their social networks not as they are, but rather as they need them to be, such wishful thinking might spawn illusions of invulnerability, whereby people may underestimate their odds of being caught. That is, by cognitively activating and selectively perceiving sparse subsections of their networks, they fail to recognize the true constraints in their networks.

More generally, by showing how unethical behavior is an antecedent to cognitive network activation, we counter structuralist perspectives which often assume that individuals, along with their transitory feelings and psychological attributes, take a backseat to largely stable and persistent relationships (Spillman, 1995; Vaisey and Lizardo, 2010) in which they are embedded. This research assumes a dynamic and constructivist approach (c.f. Hong et al., 2000) to cognitive networks, documenting the dynamic psychological factors that are antecedents to network construal. Just as feelings of threat (Smith et al., 2012), challenge one's identity (Menon and Smith, 2014), emotion (Shea et al., 2015), and social exclusion risk (Derfler-Rozin et al., 2010) can dynamically shift how we view our networks on a moment-to-moment basis, so too can having specific goals in mind (Shea and Fitzsimons, 2016). Rather than viewing networks as structural givens and perceptions of networks as objective and static, we show how psychological states—our feelings, hopes, identities, and desires—construct our images of the structures within which we operate.

This research also contributes to the literature linking social network structures to social identities (Smith et al., 2012; Menon and Smith, 2014). Dense, over-connecting mechanisms have been shown to promote positive mental health outcomes (Durkheim, 1958) and arise in response to ostracism (O'Connor and Gladstone, 2015), and this research suggests a further strategic use of densely structured social groups to maintain a positive sense of self.

Conclusion

According to Buckle (1857/2012), "society prepares the crime, the criminal commits it." However, this research supports the notions that criminals can also prepare society, selectively enacting local worlds that allow them to deceive. When people envision sparse social networks, they escape to hideaways that psychologically liberate them from social constraints. Upon behaving unethically an individual can also re-construe their networks to be denser, supporting their social identity. More optimistically, the present findings suggest practical psychological tools to counteract these responses. Just as "*anticipatory self-sanctions*" allow people to abide by personal standards and regulate ethical conduct (Bandura, 1999), we suggest that *anticipatory and ex post social regulation* can likewise constrain deviance. By reminding people of specific network structures that sanction social deviance, people can enact honest selves who withstand their groups' watchful scrutiny.

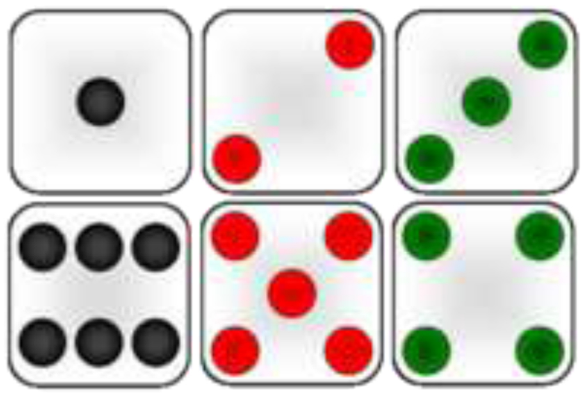
Appendix

Cheating manipulation (die-rolling) for Experiment 3b

Please read the following instructions very carefully.

In this game, you will be asked to roll a six-sided die five times.

In each round, the number of points that you score depends on the throw of the die as well as the side that you have chosen in that round. Each round consists of one throw. Before throwing, you have to choose the relevant side for that round. **Please note that the pairs of numbers on opposite sides of the die add up to 7: 1 vs. 6, 2 vs. 5, and 3 vs. 4, and vice versa**. In the game, the visible side facing up of the dice is "the up side" (i.e., "U"), and the opposite, invisible side facing down is "the down side" (i.e., "D"). **Note that the die outcomes are random, and the outcome you see on the screen corresponds to the upside.**



For instance, if you have chosen "D" and the die outcome turns up to be "4", you will earn 3 points for that throw, whereas if you have chosen "U" in your mind, you earn 4 points. Across the 5 rounds, you can earn a maximum of 30 points (minimum of 10 points). Each point is worth 3 cents, so you can make between $.30 and $.90.

We are going to ask you a question to test if you understood the rule of the game. Unfortunately, if you do not get these follow-up questions right, you cannot participate in this study. Please press NEXT when you're ready to take a quiz and play!

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